Youth Competition Times

Non Technical Popular Category

RRB NTPC

(Computer Based Test)

Stage-I

Practice Book

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Computer Graphics by

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1st Stage Computer Based Test (CBT)
Common for all Notified Posts of this CEN 05 & 06/2024.

Exam Duration in Minutes	No. of Questions (each of 1 mark) from			Total No. of Questions
	General Awareness	Mathematics	General Intelligence and Reasoning	
90	40	30	30	100

The examination duration will be 120 Minutes for eligible PwBD candidates accompanied with Scribe. The section wise distribution given in the above table is only indicative and there may be some variations in the actual question papers. **There will be negative marking and 1/3 mark shall be deducted for each wrong answer.**

The 1st Stage CBT is of screening nature and the standard of questions for the CBT will be generally in conformity with the educational standards prescribed for the posts. The normalized score of 1st Stage CBT shall be used for short listing of candidates for 2nd Stage CBT as per their merit. **Candidates who nd are shortlisted for 2 Stage CBT availing the reservation benefits of OBC(NCL)/SC/ST/EWS, PwBD and ExSM shall continue to be considered only against OBC(NCL)/SC/ST/EWS, PwBD and ExSM for all subsequent stages of recruitment process.** The Questions will be of objective type with multiple choices and are likely to include questions pertaining to:

a. **Mathematics:** Number System, Decimals, Fractions, LCM, HCF, Ratio and Proportions, Percentage, Menstruation, Time and Work, Time and Distance, Simple and Compound Interest, Profit and Loss, Elementary Algebra, Geometry and Trigonometry, Elementary Statistics etc.

b. **General Intelligence and Reasoning:** Analogies, Completion of Number and Alphabetical Series, Coding and Decoding, Mathematical Operations, Similarities and Differences, Relationships, Analytical Reasoning, Syllogism, Jumbling, Venn Diagrams, Puzzle, Data Sufficiency, Statement- Conclusion, Statement- Courses of Action, Decision Making, Maps, Interpretation of Graphs etc. c.

c. **General Awareness:** Current Events of National and International Importance, Games and Sports, Art and Culture of India, Indian Literature, Monuments and Places of India, General Science and Life Science (up to 10th CBSE), History of India and Freedom Struggle, Physical, Social and Economic Geography of India and World, Indian Polity and Governance- constitution and political system, General Scientific and Technological Developments including Space and Nuclear Program of India, UN and Other important World Organizations, Environmental Issues Concerning India and World at Large, Basics of Computers and Computer Applications, Common Abbreviations, Transport Systems in India, Indian Economy, Famous Personalities of India and World, Flagship Government Programs, Flora and Fauna of India, Important Government and Public Sector Organizations of India etc.

Minimum percentage of marks for eligibility in various categories: UR-40%, EWS- 40%, OBC (Non creamy layer) -30%, SC-30%, ST-25%. These percentages of marks for eligibility may be relaxed by 2 Marks for PwBD candidates in case of shortage of PwBD candidates against vacancies reserved for them.

PRACTICE SET - 1

1. **Which of the following number is NOT divisible by 8?**
   (a) 35792 (b) 35112
   (c) 35412 (d) 35552

2. **One-fourth of a number is equal to three-eighth of another number. If 30 is added to the first number, then it becomes six times that of the second number. The first number is:**
   (a) 12 (b) 20
   (c) 10 (d) 15

3. **Which of the following fractions is the largest?**
   $\frac{7}{9}, \frac{6}{7}, \frac{22}{25}$ and $\frac{11}{13}$
   (a) $\frac{11}{13}$ (b) $\frac{22}{25}$
   (c) $\frac{7}{9}$ (d) $\frac{6}{7}$

4. **The value of $0.1\overline{6} + 0.1\overline{5} - 0.1\overline{3}$ is**
   (a) $\frac{23}{63}$ (b) $\frac{17}{90}$
   (c) $\frac{34}{45}$ (d) $\frac{19}{99}$

5. **The sum of A fraction and its inverse is $2\frac{25}{66}$. Find the greater number of the two:**
   (a) $1\frac{15}{22}$ (b) $1\frac{5}{6}$
   (c) $1\frac{20}{33}$ (d) $1\frac{5}{11}$

6. **If 2334/33.1 = 261, then 23.34/3.31 = ?**
   (a) 0.261 (b) 2.61
   (c) 26.1 (d) 261

7. **The LCM of the numbers 36, 54, 72 and 96 is :**
   (a) 1064 (b) 764
   (c) 864 (d) 964

8. **Three numbers are in the ratio 4 : 5 : 7, and their LCM is 5600. Their HCF is :**
   (a) 40 (b) 10
   (c) 20 (d) 30

9. **Find the LCM of 17/31, 34/62 and 48/93.**
   (a) 816/31 (b) 802/31
   (c) 912/31 (d) 804/31

10. **What is the smallest number with 7 factors exactly?**
    (a) 100 (b) 36
    (c) 64 (d) 16

11. **64 students of Class 10 took part in a mathematics quiz. If the number of girls was 16 more than the number of boys, then find the ratio of the number of boys to the total number of students who took part in the quiz.**
    (a) 4 : 9 (b) 3 : 5
    (c) 3 : 8 (d) 5 : 8

12. **The ratio of the sum of money Arun and Ahaan had is 9 : 5. If Arun gives ₹12 from his share to Ahaan, then the ratio will change to 4 : 3. How much money did Arun have initially?**
    (a) ₹144 (b) ₹126
    (c) ₹108 (d) ₹90

13. **20% of the population of a city died due to war and of the remaining population, 5% died in an epidemic. If the present population of the city is 15,200, then find the population of the city before the war.**
    (a) 20,000 (b) 19,680
    (c) 23,500 (d) 20,100

14. **The cost of a washing machine is 40% less than the cost of a TV. If the cost of the washing machine increases by 18% and that of the TV decreases by 10%, then what is the change in the total cost of 5 washing machines and 2 TVs?**
    (a) Decreases by 6.5% (b) Decreases by 6.4%
    (c) Increases by 6.5% (d) Increases by 6.8%

15. **The length of the three sides of a triangle are 12 cm, 15 cm and 21 cm, respectively, Find the area (in cm^2) of the triangle.**
    (a) $36\sqrt{6}$ (b) $30\sqrt{6}$
    (c) $72\sqrt{6}$ (d) $48\sqrt{6}$

16. **A rectangle has a length 3m more than its width and a perimeter numerically equal in value to its area. The integer part of the value of its diagonal is:**
    (a) 7 (b) 9
    (c) 8 (d) 6

17. **A can do a piece of work in 15 day and B can do the same work in 20 days. The time taken by them working together to do the same work is:**
    (a) $7\frac{4}{7}$ days (b) $10\frac{4}{7}$ days
    (c) $8\frac{4}{7}$ days (d) $9\frac{4}{7}$ days

18. **A can do a piece of work in 24 days and B can do $\frac{2}{5}$ of the same work in 12 days. Both work together for 6 days. How much work in still left?**
    (a) $\frac{17}{20}$ (b) $\frac{13}{20}$
    (c) $\frac{11}{20}$ (d) $\frac{9}{20}$

19. **A student reaches school on his bicycle in 3/2 hours at a speed of 8 km/h. On the return journey he rests for half an hour and takes a route which is 1 km shorter. What should be the percentage increase in the speed of the bicycle so that he reaches home in the same time?**
(a) 37% (b) 37.5%
(c) 30.5% (d) 35%

20. **On increasing the speed 5 km/hr of a train. It takes 2 hour less in covering a distance of 300 km find its general speed?**
(a) 30 km/hr (b) 25 km/hr
(c) 20 km/hr (d) 35 km/hr

21. **The compound interest on a sum of money at 5% per annum for 3 years is ₹ 6305 Find the simple interest (in ₹) for the same sum at the same rate of interest for the same number of years.**
(a) ₹4,000 (b) ₹6,000
(c) ₹5,000 (d) ₹3,600

22. **A certain sum was invested at 40% p.a compound interest for two years and the interest was compounded annually. If the interest was compounded half-yearly, the amount payable of maturity after two years would have been ₹ 4,544 more. What was the sum invested?**
(a) ₹ 42,500 (b) ₹ 40,000
(c) ₹ 42,000 (d) ₹ 37,500

23. **The selling price of 32 items is equal to the cost price of 38 items. Find the profit percentage.**
(a) 16.25% (b) 15.79%
(c) 18.75% (d) 19.25%

24. **Pavan sold an item at a loss of 12.5%. If he could have sold it for ₹ 56 more, he would have made a profit of 22.5%. What should be the selling price of the item to make a profit of 25%?**
(a) ₹ 182 (b) ₹ 190
(c) ₹ 185 (d) ₹ 200

25. $\left(1-\frac{1}{n}\right)+\left(1-\frac{2}{n}\right)+\left(1-\frac{3}{n}\right)+$ **.....up to n terms will result as:**
(a) $\frac{1}{2n}$ (b) $\frac{1}{2n-1}$
(c) $\frac{1}{n^2}$ (d) $\frac{n-1}{2}$

26. **If $x^2 + ax + b$, divided by $x - 3$, then the remaining 22 is obtained and the expression $x^2 + bx + a$, when divided by $x - 3$ then the remaining 24 is obtained. What is the value of a+b?**
(a) 23 (b) – 23
(c) – 7 (d) 7

27. **Find the value of $(\sin\theta + \text{cosec}\,\theta)^2 + (\cos\theta + \sec\theta)^2$**
(a) $7 + \cot^2\theta + \tan^2\theta$
(b) $5 + \cot^2\theta + \tan^2\theta$
(c) $7 - \cot^2\theta + \tan^2\theta$
(d) $5 - \cot^2\theta + \tan^2\theta$

28. **In triangle ABC, if the angles are in the ratio 4 : 3 : 5, find the angles.**
(a) 20°, 50°, 70° (b) 60°, 45°, 75°
(c) 20°, 15°, 25° (d) 40°, 30°, 50°

29. **If the mean of numbers 33, x, 47, 83 and 109 is 67, what is the mean of 50, 64, 100, 126 and x?**
(a) 84 (b) 81.8
(c) 80.6 (d) 80

30. **The maximum weight lifted by 750 participants are recorded and it is found that the Mean and the Median of this distribution are both more than the Mode. If the Mean and the Median are 184 Kg and 178 Kg respectively, then which of the following is the most likely value of the Mode (in Kg).**
(a) 168 (b) 166
(c) 162 (d) 172

31. **Select the option that is related to the third term in the same way as the second term is related to the first term?**
Gravity : Discovery : : Telephone : ?
(a) Experiment (b) Explore
(c) Construct (d) Invention

32. **Heart is related to 'Cardiology' in the same way as kidney is related to_____**
(a) Nuclear Medicine (b) Nephrology
(c) Neurology (d) Rheumatology

33. **In the given letter-cluster pairs, the first letter-cluster is related to the second letter-cluster following a certain logic. Study the given pairs carefully, and from the given options, select the pair that follows the same logic.**
ABC : EFG
PQR : TUV
(a) XYZ : BCD (b) PKL : RSM
(c) MNO : PQR (d) GHI : DEF

34. **Select the option that is related to the third number in the same way as the second number is related to the first number :**
343 : 1331 : 729 : ?
(a) 2187 (b) 2197
(c) 2184 (d) 2211

35. **In a certain code language, TOUGH is written as 20152178 and PLEAD is written as 1612514. How will CLOVE be written in the same language?**
(a) 31115215 (b) 31215225
(c) 31215324 (d) 31315235

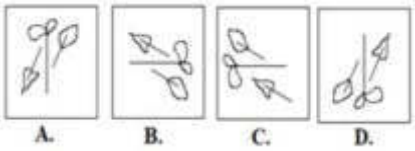
36. **If 'SKIRT' is coded as 'MECLN', how will 'BLOUSE' be written using the same coding language?**
(a) VFIMOY (b) VFOMIY
(c) VFIOMY (d) VFMOIY

37. **In a certain code language, 'cip civ cin' is written as 'life is good', 'cip cin er' is written as 'love is life' How will 'love' be written as in that language?**
(a) cip (b) oob
(c) er (d) cin

38. **The word ORANGE has been coded using 4 different codes.**
Code 1 : PSBOHF
Code 2 : NQZMFD
Code 3 : QTCPIG
Code 4 : PTDRLK
Which of the given codes is used to write the word FISH or GKVL?
(a) Code 2 (b) Code 1
(c) Code 4 (d) Code 3

39. **Among the four words listed below, three are a like in some manner and one is different. Select the odd one.**
(a) Fear (b) Intelligence
(c) Happiness (d) Anger

40. **Four figures have been given, out of which three are alike in some manner and one is different. Select the odd one.**



(a) C (b) A
(c) D (d) B

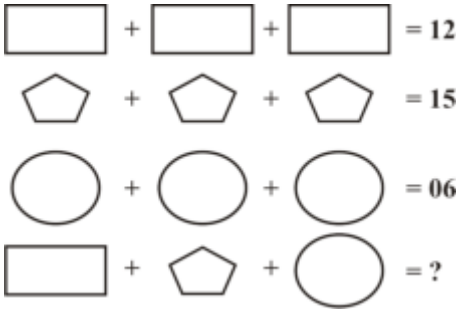
41. **Select the number from among the given options that can replace the question mark (?) in the following series**
22, 23, 26, 27, 30, 31, ?
(a) 31 (b) 35
(c) 34 (d) 33

42. **Select the number from among the given options that can replace the questions mark (?) in the following table.**

28	63	94
8	18	?
6	9	13

(a) 69 (b) 48
(c) 76 (d) 75

43. **Study the given pattern carefully and select the number that can replace the question mark (?) in it**



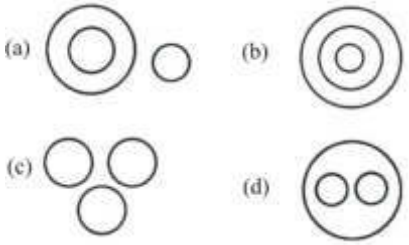
(a) 12 (b) 8
(c) 13 (d) 11

44. **Mahesh was facing east when he started from home. He took two right turns and one left turn to reach his school. In which direction, is he facing after reaching his school?**
(a) North (b) South
(c) West (d) East

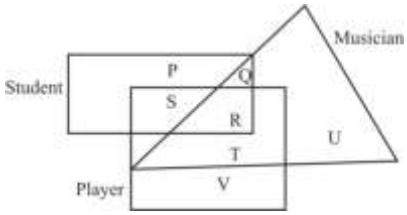
45. **Pointing to a photograph, Rohit said, "She is the daughter of the only son of my father." How is Rohit related to the girl in the photograph?**
(a) Cousin (b) Brother
(c) Father (d) Uncle

46. **If G stands for 'add', H stands for 'multiply', J stands for 'subtract' and K stands for 'division' then find the value of**
125 J 110 K 5 G 7 H 2
(a) 117 (b) 133
(c) 89 (d) 114

47. **Select the Venn diagram that best represents the relationship between computers, desktop and laptops.**



48. **Study the given figure and answer the given question.**



Which area represents the students who are musicians but not players ?
(a) R (b) S
(c) U (d) Q

49. **A team is to be selected from 13 players P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12 and P13. There will be seven players in the team. P2 cannot be selected with P1, P6 or P4. P7 cannot be selected with P2, P10, P11 or P13. If P8 and P13 both are selected, then P5 must be selected, P4 cannot be selected with P2, P6, P12 or P11.**
Which of the following is a correct selection of the team?
(a) P1, P3, P4, P5, P8, P9, P13
(b) P1, P6, P11, P12, P13, P3, P4
(c) P2, P3, P5, P7, P8, P9, P13
(d) P1, P3, P4, P5, P6, P8, P9

50. **Statements :**
A. All buses are trucks.
B. All trucks are trains.
Conclusions:
I. No train is bus.
II. Some trucks are bus.
(a) Only conclusion I follows
(b) Only conclusion II follows
(c) Both conclusion I and II follow
(d) None of the conclusion follows

51. **Statement :**
1) All red are pink.
2) Some pink are black
3) Some black are blue.
4) All blue are white.
Conclusion :
I. Some black are white.
II. Some blue are pink.
III. Some pink are red.
IV. No red is white.
(a) Only conclusion I and IV are follows
(b) Only conclusion II and IV are follows
(c) Only conclusion II follows
(d) Only conclusion I and III follows

52. **In this question a statement is followed by two conclusions numbered I and II. You have to assume everything in the statement to be true and decide which of them logically follow (s) beyond a reasonable doubt from the information given in the statement.**
Statement:
Before leaving for college, Sita is learning to cook basic meals from her mother.
Conclusions:
I. Sita didn't know how to cook.
II. Sita wants to throw a party for her friends before leaving for college.
(a) Only conclusion II follows
(b) Neither conclusion I nor II follows
(c) Only conclusion I follows
(d) Both conclusions I and II follow

53. **In a party, each couple has at least one child (minor) and the party has 12 couples (married couples). Then which of these conclusion will be possible?**
(a) There are at least 24 men in the party.
(b) There are at least 36 person in the party.
(c) There are only 12 men in the party.
(d) There are 22 women in the party.

54. **A statement is given followed by two assumptions numbered I and II. You have to assume everything in the statement to be true and decide which of the assumptions is/are implicit in the statement.**
Statement:
Children below the age of 5 years should not be allowed too much of screen time a day.
Assumptions:
I. Too much screen time for growing children will affect them adversely.
II. Limited screen time is not detrimental to children below 5 years of age.
(a) Neither assumption I nor II is implicit
(b) Only assumption I is implicit
(c) Only assumption II is implicit
(d) Both assumption I and II are implicit

55. **Read the given information and statements carefully and decide which option is True with respect to the statement.**
If a sum of money is lent at simple interest, then the:
Statements:
1. Money gets doubled in 6 years if the rate of Interest is 16%.
2. Money gets doubled in 5 years if the rate of interest is 18%.
(a) Both statements 1 and 2 are incorrect
(b) Only statement 1 is correct
(c) Only statement 2 is correct
(d) Statement 1 and 2 are correct

56. **Each consonant in the word 'COMPARE' is changed to the letter following it in the English alphabetical order, and each vowel is changed to the letter preceding it in the English alphabetical order. Which of the following letters will appear twice in the group of letters thus formed?**
(a) Only Q (b) Only D
(c) D and N (d) Only N

57. **Of the three given equations, the first two are solved on the basis of a certain system. Find the correct answer for the unsolved third equation on the same basis.**
32 × 34 = 96
25 × 14 = 29
18 × 51 = ?
(a) 58 (b) 15
(c) 18 (d) 59

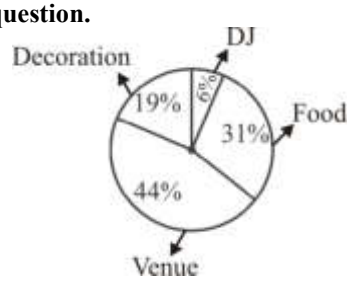
58. **Find the number of triangles in the diagram given below:**

(a) 29 (b) 32
(c) 31 (d) 30

59. **If today is Thursday, what will be the day after 560 days?**
(a) Thursday (b) Friday
(c) Wednesday (d) Sunday

60. **The following pie chart shows the expenditure distribution of a party. The blue part represents decoration expense, green part represents DJ expense, red part represents the food expenses and yellow part represents venue expenses.**

Study the pie chart and answer the following question.



How much was spent on decoration and DJ together if the total expenditure was ₹32,700?

(a) ₹7359 (b) ₹8175
(c) ₹8347 (d) ₹7725

61. **During the Indus Valley, period from where were the shells procured for craft production?**

(a) Jaipur (b) Shortughai
(c) Nageshwar (d) Ropar

62. **Most Ashokan inscriptions were in the …….. language while those in the northwest of the subcontinent were in Aramaic and Greek:**

(a) Tamil (b) Prakrit
(c) Sanskrit (d) Pali

63. **Which of the following literature is not written in Sanskrit?**

(a) Tirukkural (b) Ratnavali
(c) Rajatarangini (d) Meghdoot

64. **When was Goa captured by the Portuguese?**

(a) 1605 AD (b) 1590 AD
(c) 1510 AD (d) 1485 AD

65. **George Lemaitre is associated with_____.**

(a) The Big Bang Theory
(b) Invention of electric current
(c) Deoxyribonucelic acid
(d) Discovery of solar system

66. **Which country is known as 'Hermit Kingdom'?**

(a) North Korea (b) Australia
(c) Japan (d) Thailand

67. **Cape Comorin, the southernmost tip of mainland India is located in which of the following states?**

(a) Andhra Pradesh (b) Kerala
(c) Tamil Nadu (d) Karnataka

68. **Which committee recommended that Fundamental Duties be included in the Constitution of India?**

(a) JB Kripalani Committee
(b) Swaran Singh Committee
(c) AV Thakkar Committee
(d) HC Mookherjee Committee

69. **In whom does the supreme command of the Defence Forces of the Union vest as per the Constitution of India?**

(a) Chief of the Army Staff
(b) President
(c) Prime Minister
(d) Defence Minister

70. **Which one of the following bodies are not Bretton Woods Institutions?**

(a) World Bank
(b) International Monetary Fund
(c) World Trade Organisation
(d) United Nations

71. **Which of the following goals does NASA hope to achieve by launching the Helio Swarm research mission?**

(a) Improving the understanding of the dynamics of the Sun
(b) Understanding the intense seasonal episodes of Pluto
(c) Improving the understanding of MARS
(d) Improving the understanding of Ionosphere

72. **India is not a member of which of these groups?**

(a) South Asian Association for Regional Cooperation
(b) Association of South-East Asian Nations
(c) Shanghai Cooperation Organization
(d) Bay of Bengal Initiative for Multi-sectoral Technical and Economic Cooperation

73. **The inputs used in the production of goods or services to make an economic profit are known as ……. .**

(a) factors of production
(b) factors of supply
(c) factors of presentation
(d) factors of sales

74. **Which of the following is the full form of SIDBI?**

(a) Small Industries and Domestic Bank of India
(b) Small Inter Development Bank of India
(c) Small Industries Development Bank of India
(d) Small Indian Development Bank for Industry

75. **Which of the following persons played the shehnai at the Red Fort to celebrate the occasion of India's independence in August 1947?**

(a) Ali Ahmed Hussain Khan
(b) Anant Lal
(c) Bismillah Khan
(d) Vasant Desai

76. **The National Library of India is situated at?**

(a) Kolkata (b) New Delhi
(c) Chennai (d) Mumbai

77. **How many language universities are located in India as on June 2022?**

(a) 6 (b) 16
(c) 26 (d) 20

78. The Dree Festival, an important agricultural festival, is primarily celebrated by the Apatani tribe in the state of……..
(a) Kerala (b) Madhya Pradesh
(c) West Bengal (d) Arunachal Pradesh

79. Who among the following is NOT a Nobel Prize winner?
(a) Mahatma Gandhi (b) Kailash Satyarthi
(c) Rabindranath Tagore (d) Amartya Sen

80. Who is the author of the book 'Lady Doctors: The Untold Stories of India's First Women in Medicine'?
(a) Kunal Basu (b) Kavitha Rao
(c) Anuradha Roy (d) Jairam Ramesh

81. Every year, 'Parakram Divas' is celebrated on the birth anniversary of which Indian Nationalist?
(a) Rani Lakshmi Bai
(b) Bhagat Singh
(c) Lala Lajpat Rai
(d) Netaji Subhash Chandra Bose

82. Dada Saheb Phalke Award is related to which field?
(a) Literature (b) Cinema
(c) Journalism (d) Volleyball

83. Which country has launched the world's first '6G device' in May, 2024 ?
(a) Russia
(b) Indonesia
(c) Japan
(d) Australia

84. Who took oath for fourth Prime Minister of 'Singapore' in May, 2024 ?
(a) Lawrence Wong
(b) Mikhail Mishustin
(c) Jaremiah Manele
(d) Luis Montenegro

85. The Yellowstone National Park is located in:
(a) USA (b) Canada
(c) Spain (d) France

86. The S.I. unit of resistivity is:
(a) ohm/m (b) ohm
(c) mho (d) ohm m

87. What is wrong statement about kinetic energy?
(a) During static state the energy contained in the object is called kinetic energy
(b) The energy received by an object based on its speed is known as kinetic energy
(c) K.E.=1/2(mv^2)
(d) Moving objects have kinetic energy

88. Approximate escape velocity on the surface of the Earth.
(a) 13.8km / s (b) 11.2 km / s
(c) 21.3 km / s (d) 4.3 km / s

89. What is the boiling point of water ?
(a) 210^0 Fahrenheit (b) 212^0 Fahrenheit
(c) 214^0 Fahrenheit (d) 208^0 Fahrenheit

90. If ammonia is a gas then camphor is a?
(a) The gas (b) Solid
(c) Liquid (d) Semi solid

91. Name the British chemist who presented his atomic theory in 1808, on conservation of mass and law of definite proportions, which was a turning point in the study of matter.
(a) Proust (b) Lavoisier
(c) Ernest Rutherford (d) John Dalton

92. Litmus solution is derived from_____
(a) Hydrangea (b) Cabbage leaves
(c) Lichen (d) Petunia

93. Which of the following terms best describes the biological study of animal behaviour?
(a) Etiology (b) Ethnology
(c) Entomology (d) Ethology

94. Parenchyma and collenchyma are the types of _____tissues.
(a) Vascular (b) Mechanical
(c) Simple permanent (d) Nervous

95. The system of scientific naming or nomenclature of organism which we used today was introduced by which of the following scientist?
(a) Carolus Linnaeus
(b) Marie Curie
(c) George Washington Carver
(d) Charles Darwin

96. Which of the following has maximum legs?
(a) Spider (b) Millipede
(c) Centipede (d) Hunting moth

97. Which of the following statements is correct with reference to aerobic respiration?
(a) The release of energy in aerobic respiration is lower than that in anaerobic respiration.
(b) In mitochondria, one molecule of pyruvate breaks down to give three molecules of carbon dioxide.
(c) Only carbon dioxide is released in the process of aerobic respiration.
(d) Aerobic respiration take places in the absence of oxygen.

98. Which of the following is the time taken by the CPU to access a location in memory?
(a) Memory formatting time
(b) Instruction cycle
(c) Memory access time
(d) CPU frequency

99. Computer memory is made up of a large number of cells, each cell is capable of storing ___of Information in the form of binary numbers?
(a) One byte (b) One bit
(c) Two bits (d) One nibble

100. Who has coined the term 'ecology'?
(a) Charles Darwin (b) Eugenius Warming
(c) Eugene Odum (d) Ernst Haeckel

SOLUTION : PRACTICE SET- 1

ANSWER KEY

1. (c)	11. (c)	21. (b)	31. (d)	41. (c)	51. (d)	61. (c)	71. (a)	81. (d)	91. (d)
2. (c)	12. (c)	22. (b)	32. (b)	42. (d)	52.(c)	62. (b)	72. (b)	82. (b)	92. (c)
3. (b)	13. (a)	23. (c)	33. (a)	43. (d)	53.(b)	63. (a)	73. (a)	83. (c)	93.(d)
4. (b)	14.(d)	24. (d)	34. (b)	44. (b)	54.(d)	64. (c)	74. (c)	84. (a)	94. (c)
5. (b)	15. (a)	25. (d)	35. (b)	45. (c)	55. (a)	65. (a)	75. (c)	85. (a)	95. (a)
6. (c)	16. (d)	26. (d)	36. (c)	46. (a)	56.(c)	66. (a)	76. (a)	86. (d)	96. (b)
7. (c)	17. (c)	27. (a)	37. (c)	47. (d)	57. (d)	67. (c)	77. (a)	87. (a)	97. (b)
8. (a)	18. (c)	28. (b)	38. (c)	48. (d)	58. (b)	68. (b)	78. (d)	88. (b)	98. (c)
9. (a)	19. (b)	29. (c)	39. (b)	49. (a)	59. (a)	69. (b)	79. (a)	89.(b)	99. (b)
10. (c)	20. (b)	30. (b)	40. (a)	50. (b)	60. (b)	70. (d)	80. (b)	90. (b)	100. (d)

SOLUTION

1. (c)

Divisibility rule of 8- If the last three digits of a number are divisible by 8, then the number is completely divisible by 8.

from the given options -

(a) 35 $\underline{792}$

$\frac{792}{8} = 99$ (Completely divisible)

(b) 35 $\underline{112}$

$\frac{112}{8} = 14$ (Completely divisible)

(c) 35 $\underline{412}$

$\frac{412}{8} = 51.5$ (Not completely divisible)

(d) 35 $\underline{552}$

$\frac{552}{8} = 69$ (Completely divisible)

Hence, option (c) is not divisible by 8.

2. (c)

Let the first number is x and the second number is y then,

According to the question,

$$\frac{x}{4} = \frac{3}{8}y$$

$$x = \frac{3}{2}y \quad \text{... (i)}$$

And $x + 30 = 6y$ ... (ii)

Substituting the value of x from equation (i) in equation (ii)-

$$\frac{3}{2}y + 30 = 6y$$

$$\frac{3}{2}y - 6y = -30$$

$$\frac{-9y}{2} = -30$$

$$y = \frac{20}{3}$$

From equation (i)-

$$x = \frac{3}{2} \times \frac{20}{3}$$

$$x = 10$$

3. (b)

$$\frac{7}{9} = 0.777$$

$$\frac{6}{7} = 0.857$$

$$\frac{22}{25} = 0.88$$

$$\frac{11}{13} = 0.846$$

Hence, fraction $\frac{22}{25} = 0.88$ is the largest.

4. (b)

$0.1\bar{6} + 0.1\bar{5} - 0.1\bar{3}$

$$= \frac{16-1}{90} + \frac{15-1}{90} - \frac{13-1}{90}$$

$$= \frac{15}{90} + \frac{14}{90} - \frac{12}{90}$$

$$= \frac{15+14-12}{90}$$

$$= \frac{17}{90}$$

5. (b)

Let the fraction be x and its inverse be $\frac{1}{x}$.

According to the question,

$$x + \frac{1}{x} = 2\frac{25}{66} \text{-----(I)}$$

From option (b),

Putting the value $x = 1\frac{5}{6} = \frac{11}{6}$ in equation (I),

$$\frac{11}{6} + \frac{6}{11} = 2\frac{25}{66}$$
$$\Rightarrow \frac{121+36}{66} = 2\frac{25}{66}$$
$$\Rightarrow \frac{157}{66} = 2\frac{25}{66}$$
$$\Rightarrow 2\frac{25}{66} = 2\frac{25}{66}$$

Hence greatest fraction $= 1\frac{5}{6}$

6. (c)

Given,

$$\frac{2334}{33.1} = 261 \text{.....(1)}$$
$$\because \frac{23.34}{3.31} = \frac{2334}{331}$$
$$= \frac{2334}{33.1 \times 10}$$
$$= \frac{2334}{33.1} \times \frac{1}{10}$$
$$= \frac{261}{10} \quad \{\text{from equation (1)}\}$$
$$= 26.1$$

7. (c)

The LCM of the numbers 36, 54, 72 and 96 is

$36 = 2 \times 2 \times 3 \times 3$
$54 = 2 \times 3 \times 3 \times 3$
$72 = 2 \times 2 \times 2 \times 3 \times 3$
$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$

Hence the LCM of 36, 54, 72, 96
$= 2\times2\times2\times 2 \times 2 \times 3 \times 3 \times 3$
$= 32 \times 27$
$= 864$

8. (a)

Let, three numbers = 4x, 5x, 7x
LCM = 140x
HCF = x
According to the question,
$140x = 5600$
$x = 40$
Hence, HCF of the number = 40

9. (a)

The LCM of given fractions,
LCM of 17, 34 and 48,

$17 = 1\times17$
$34 = 1\times2\times17$
$48 = 1\times2\times2\times2\times2\times3$
$LCM = 1\times2\times2\times2\times2\times3\times17 = 816$

HCF of 31, 62 and 93,

$31 = 1\times31$
$62 = 1\times2\times31$
$93 = 1\times3\times31$
$HCF = 1\times31 = 31$

So, the required LCM $= \frac{\text{The LCM of numerator}}{\text{The HCF of denominator}}$
$= \frac{816}{31}$

10. (c)

The number of factors of $a^x \times b^y \times c^z$
$\cdot (x+1)\times(y+1)\times(z+1)$ where a, b, c are prime numbers.
From options-
The number of factors of $100 = 2^2\times5^2 = (2+1)(2+1) = 9$
The number of factors of $36 = 2^2\times3^2 = (2+1)(2+1) = 9$
The number of factors of $64 = 2^6 = (6+1) = 7$
The number of factors of $16 = 2^4 = (4+1) = 5$
So, it is clear that the required smallest number with 7 factors exactly is 64.

11. (c)

Let, Number of boys = x
And, Number of girls = (x+16)
$\because$ x+x+16 = 64
2x = 48
x = 24

$\therefore$ Required Ratio $= \frac{24}{(24+40)} = \frac{3}{8}$
or 3 : 8

12. (c)

Let the sum of money Arun and Ahaan be ₹9x and ₹5x respectively.
According to the question,

$$\frac{9x-12}{5x+12} = \frac{4}{3}$$
$27x - 36 = 20x + 48$
$7x = 48 + 36$
$7x = 84$
$x = \frac{84}{7}$
$\boxed{x = 12}$

Hence the money with Arun = 9x
$= 9 \times 12$
$= ₹108$

13. (a)

Let the population of the city before the war be x.
According to the question,

$$x \times \frac{80}{100} \times \frac{95}{100} = 15200$$
$$x = \frac{15200\times100\times100}{80\times95}$$
$$x = \frac{15200000}{760}$$
$x = 20000$

14.(d)

Let the cost price of TV = ₹ 100

Then the cost price of washing machine = ₹ 60

Total cost price of 5 washing machine and 2TV

$= (5 \times 60 + 2 \times 100) = ₹\ 500$

Cost price of TV after conversion $= 100 \times \frac{90}{100} = ₹\ 90$

Cost price of washing machine after conversion

$= \frac{60 \times 118}{100} = ₹\ 70.8$

Total cost price of 5 washing machine and 2TV's after conversion = (5 × 70.8 + 90 × 2) = ₹ 534

Difference = 534 – 500 = ₹ 34

Hence, increasing in percentage $= \frac{34}{500} \times 100 = 6.8\%$

15. (a)

Given,

Length of the three sides of a triangle

a = 12 cm, b = 15 cm, c = 21 cm

$\because$ Semi-perimeter(s) $= \frac{a+b+c}{2}$

$= \frac{12+15+21}{2}$

$= 24$ cm

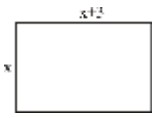
$\therefore$ Area of triangle $(\Delta) = \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{24(24-12)(24-15)(24-21)}$

$= \sqrt{24 \times 12 \times 9 \times 3}$

$= 36\sqrt{6}\ \text{cm}^2$

16. (d)



Let, Breadth = x m

Length = x+3 m

According to the question,

Perimeter of rectangle = Area of rectangle

$2(x+x+3) = x(x+3)$

$2(2x+3) = x^2+3x$

$4x+6 = x^2+3x$

$\Rightarrow \quad x^2-x-6 = 0$

$\Rightarrow \quad x^2-3x+2x-6 = 0$

$x(x-3)+2(x-3) = 0$

$(x-3)(x+2) = 0$

$x = 3, -2$

$\therefore$ Length = 3+ 3

= 6 m

Breadth = 3m

Diagonal $= \sqrt{\text{Length}^2 + \text{Breadth}^2}$

$= \sqrt{36+9}$

$= \sqrt{45} = 6.7 = 6$ (Integer part).

17. (c)

According to the question,

1 day's work of A $= \frac{1}{15}$ part

1 day's work of B $= \frac{1}{20}$ part

1 day's work of (A + B) $= \left(\frac{1}{20} + \frac{1}{15}\right)$

$= \frac{7}{60}$ part

Hence the time taken by A and B together to do the same work $= \frac{60}{7}$ days

$= 8\frac{4}{7}$ days

18. (c)

Time taken to complete the work by A = 24 days

Time taken to complete the work by B $= \frac{5}{2} \times 12$

= 30 days

According to the question,

Work done by A and B in 6 days

$\frac{6}{24} + \frac{6}{30}$

$= \frac{1}{4} + \frac{1}{5}$

$= \frac{5+4}{20}$

$= \frac{9}{20}$ part

So, remaining work $= 1 - \frac{9}{20}$

$= \frac{11}{20}$

19. (b)

Initial speed of student = 8 km/h

Time = $\frac{3}{2}$ hours

Distance = Speed × Time

$= 8 \times \frac{3}{2} = 12\,\text{km}$

According to the question-

Let, the speed has increased by x km/h.

$12 - 1 = (x+8) \times \left(\frac{3}{2} - \frac{1}{2}\right)$

$11 = (x+8) \times \frac{2}{2}$

x = 3 km/h

Percentage increase in speed $= \frac{3}{8} \times 100 = 37.5\%$

20. (b)

Let the normal speed of train = x km/hr.

According to the question,

$$\frac{300}{x}-\frac{300}{x+5}=2$$

$$\frac{300(x+5)-300x}{x(x+5)}=2$$

$300x + 1500 - 300x = 2x^2 + 10x$

$2x^2 + 10x - 1500 = 0$

$x^2 + 5x - 750 = 0$

$x^2 + 30x - 25x - 750 = 0$

$x(x+30) - 25(x+30) = 0$

$(x+30)(x-25) = 0$

$x - 25 = 0$

$x = 25$

Hence the normal speed of train is 25 km/hr.

21. (b)

Let amount = ₹P

Given,

r = 5% yearly

n = 3 years

$$\text{C.I.} = P\left[\left(1+\frac{r}{100}\right)^n-1\right]$$

$$6305 = P\left[\left(1+\frac{5}{100}\right)^3-1\right]$$

$$6305 = P\left[\frac{21}{20}\times\frac{21}{20}\times\frac{21}{20}-1\right]$$

$$6305 = P\left[\frac{9261-8000}{8000}\right]$$

$$6305 = P\left[\frac{1261}{8000}\right]$$

$P = 5 \times 8000$

P = ₹40,000

$$\text{S.I.} = \frac{P\times r\times t}{100}$$

$$=\frac{40000\times5\times3}{100}=₹6000$$

22. (b)

Let Amount = A

According to the question,

$A_2 - A_1 = 4544$

$$\Rightarrow P\left(1+\frac{R_2}{100}\right)^{t_2}-P\left(1+\frac{R_2}{100}\right)^{t_1}=4544$$

$$\Rightarrow P\left(1+\frac{20}{100}\right)^4-P\left(1+\frac{40}{100}\right)^2=4544$$

$$\Rightarrow P\left(\frac{6}{5}\right)^4-P\left(\frac{7}{5}\right)^2=4544$$

$$\Rightarrow \frac{1296P}{625}-\frac{49P}{25}=4544$$

$$\Rightarrow \frac{1296P-1225P}{625}=4544$$

$$\Rightarrow 71P = 4544\times625$$

$$\therefore \quad P=\frac{4544\times625}{71}$$

Hence, P = ₹ 40000

23. (c)

Given,

$32 \times SP = 38 \times CP$

$$\Rightarrow \frac{SP}{CP}=\frac{38}{32}$$

Hence, P = 38 – 32

= 6

$$\text{Profit \%} = \frac{P\times100}{CP}$$

$$=\frac{6\times100}{32}$$

$$\therefore \quad P=\frac{75}{4}\% \text{ or } 18.75\%$$

24. (d)

Let the cost price of the item is x and the selling price is y then,

$$12.5=\frac{(x-y)\times100}{x}$$

$$22.5=\frac{(y+56-x)\times100}{x}$$

$$\text{or,}\quad 22.5=\frac{(y+56-x)\times100\times12.5}{(x-y)\times100}$$

$$\Rightarrow 22.5(x-y)=(y-x+56)\times12.5$$

$$\Rightarrow 9(x-y)=(y-x+56)\times5$$

$$\Rightarrow 9x-9y=5y-5x+280$$

$$\Rightarrow 14x-14y=280$$

$$\Rightarrow x-y=20$$

Now, $12.5=\frac{20\times100}{x}$ or $x=\frac{2000}{12.5}$ = ₹160

So, the cost price of the item = ₹ 160

Then, the selling price of the item for 25% profit

$$=\frac{25\times160}{100}+160=5\times8+160=40+160=₹200$$

25. (d)

$\left(1-\frac{1}{n}\right)+\left(1-\frac{2}{n}\right)+\left(1-\frac{3}{n}\right)+$ .....up to n terms

$= (1+1+1....\text{n term})-\left(\frac{1}{n}+\frac{2}{n}+\frac{3}{n}.....\frac{n}{n}\right)$

$= n-\left(\frac{1}{n}+\frac{2}{n}+\frac{3}{n}.....\frac{n}{n}\right)$

Where $\left(\frac{1}{n}+\frac{2}{n}+\frac{3}{n}.....\frac{n}{n}\right)$ is A.P.

So, difference $= \frac{2}{n}-\frac{1}{n}=\frac{1}{n}$

We know that,

Sum of n terms in A.P. $(S_n) = \frac{n}{2}\left[2a+(n-1)d\right]$

$= n-\left[\frac{n}{2}\left\{2\times\left(\frac{1}{n}\right)+(n-1)\left(\frac{1}{n}\right)\right\}\right]$

$= n-\left[\frac{n}{2}\left\{\left(\frac{2}{n}\right)+\left(\frac{n-1}{n}\right)\right\}\right]$

$= n-\left\{1+\frac{n}{2}\left(\frac{n-1}{n}\right)\right\}$

$= n-\frac{n+1}{2}$

$= \frac{n-1}{2}$

26. (d)

Left remainder is 22 if divide x^2+ax+b to x-3

$\therefore \quad x^2 + ax + b = 22$ (putting x = 3)

$9 + 3a + b = 22$

$3a + b = 13$ ....(i)

Left remainder is 24 if divide x^2+ax+b to x – 3

$x^2 + bx + a = 24$ (Putting x = 3)

$9 + 3b + a = 24$

$3b + a = 15$ ....(ii)

From equation (i) + (ii)

$4 (a + b) = 28$

$a+b = \frac{28}{4}$

$\boxed{a+b=7}$

27. (a)

$(\sin\theta + \text{cosec}\,\theta)^2 + (\cos\theta + \sec\theta)^2$

$= (\sin^2\theta + \text{cosec}^2\theta + 2\sin\theta.\ \text{cosec}\theta) + (\cos^2\theta + \sec^2\theta + 2\cos\theta.\sec\theta)$

$= \sin^2\theta + \text{cosec}^2\theta + 2 + \cos^2\theta + \sec^2\theta + 2$

$= \sin^2\theta + \cos^2\theta + \text{cosec}^2\theta + \sec^2\theta + 4$

$= 1 + 1 + \cot^2\theta + 1 + \tan^2\theta + 4$

$= 7 + \cot^2\theta + \tan^2\theta$ $\left\{\because \text{cosec}^2\theta = 1+\tan^2\theta,\ \sec^2\theta = 1+\cot^2\theta\right\}$

28. (b)

According to the question,

Let A = 4x, B = 3x, C = 5x

In ΔABC $4x + 3x + 5x = 180°$

$12x = 180°$

$x = 15°$

$A = 4 \times 15° = 60°$, $B = 3 \times 15 = 45°$

$C = 5 \times 15 = 75°$

29. (c)

According to the question,

$67 = \frac{33+x+47+83+109}{5}$

$335 = x + 272$

$x = 63$

Now,

$\frac{50+64+100+126+63}{5}$

$= 80.6$

30. (b)

Given,

Mean of 750 participants = 184 kg

and Median = 178 kg

Mode = ?

We know that, Mode = 3 Median – 2 Mean

$= 3 \times 178 - 2 \times 184$

$= 534 - 368$

$= 166$

31. (d)

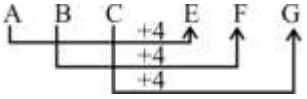
Just as, Newton discovered Gravity. Similarly, Telephone was invented by Graham Bell.

32. (b)

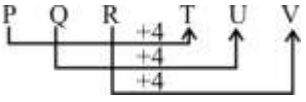
Just as, the heart is studied under cardiology, same as the kidney is studied under Nephrology.

33. (a)

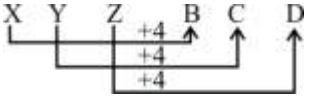
Just as,



and



Similarly, from option (a)-



Hence, XYZ is coded as BCD.

34. (b) Just as, Similarly,

35. (b)

The place value of each alphabet letter has been written in the sequence:

Just as,

T → 20
O → 15
U → 21
G → 7
H → 8

and,

P → 16
L → 12
E → 5
A → 1
D → 4

Same as,

C →	3
L →	12
O →	15
V →	22
E →	5

36. (c)

Just as,

S –6→ M
K –6→ E
I –6→ C
R –6→ L
T –6→ N

Same as,

B –6→ V
L –6→ F
O –6→ I
U –6→ O
S –6→ M
E –6→ Y

37. (c)

According to the question,

cip civ cim → life is good

cip cim er → love is life

∴ Love will be written as 'er'.

38. (c)

Just as,

Word →	F	I	S	H
	↓+1	↓+2	↓+3	↓+4
Code 4 ←	G	K	V	L

On writing ORANGE in the given code language,

O	R	A	N	G	E	
+1 ↓	+2 ↓	+3 ↓	+4 ↓	+5 ↓	+6 ↓	
P	T	D	R	L	K	

Hence, the word ORANGE has been written as PTDRLK via code 4.

39. (b)

Fear, Happiness and Anger are emotions whereas Intelligence is cognitive ability.

Hence option (b) is odd one.

40. (a)

Figure 'C' is different from other figures. So option (a) is correct.

41. (c)

The given series is as follows-

22 (+4) 23 (+4) 26 (+4) 27 (+4) 30 (+4) 31 (+4) 34

Hence (?) = 34

42. (d)

Just as,

From Column I,

$28 + 8 = 36 = (6)^2$

and, from Column II,

$63 + 18 = 81 = (9)^2$

Same as,

From Column III,

$94 + ? = (13)^2$
$94 + ? = 169$
$? = 169 - 94$
$? = 75$

43. (d)

According to the question,

□ + □ + □ = 3 Rectangle = 12

Value of one rectangle = $\frac{12}{3} = 4$

⬠ + ⬠ + ⬠ = 3 Pentagon = 15

Value of one pentagon = $\frac{15}{3} = 5$

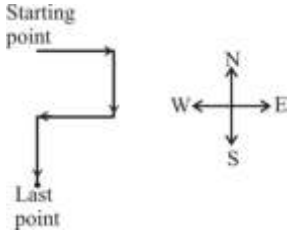
And ○ + ○ + ○ = 3 circle = 6

Value of one circle = $\frac{6}{3} = 2$

Thus, □ + ⬠ + ○ = 4 + 5 + 2 = 11

44. (b)

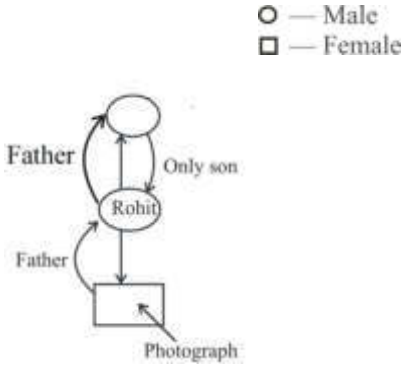
According to the question,



From the given figure, it is clear that Mahesh is in South direction after reaching at the school.

45. (c)

According to the question blood relation diagram is -



Hence, it is clear from the diagram that Rohit is the father of the girl in the photograph.

46. (a)

Given,

G = +

H = ×

J = –

K = ÷

125 J 110 K 5 G 7 H 2 = ?

On changing letters by mathematical symbol,

125 – 110 ÷ 5 + 7 × 2 = ?

= 125 – 22 + 7×2

= 125 – 22+14

= 139 – 22 = 117

47. (d)

On drawing the Venn diagram according to the question,

Option (d) shows best relationship between Computer, Desktop and Laptops.

48. (d)

Region 'Q' represents those students who are musicians but not players.

49. (a)

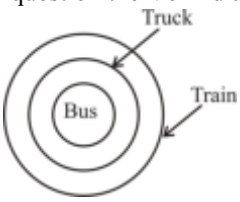
To be selected	not selected
P1, P6 or P4	P2
P2, P10, P11 or P13	P7
P2, P6, P12 or P11	P4
P8, P13,	P5

The relation of P_3 and P_9 is not mentioned but there is a total of 7 people to be selected. Then both of them will be in the team.

P1, P3, P4, P5, P8, P9, P13

50. (b)

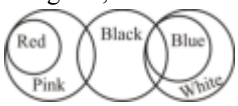
According to the question the Venn diagram is-



Hence, only conclusion II follows.

51. (d)

On making Venn diagram,



It is clear that only conclusion I and III are appropriate

52.(c)

According to statement only conclusion I follows.

53.(b)

At least 36 persons in the party.

= 12 (couple) + 12 (children)

= 24 + 12 = 36

54.(d)

According to the statement, both assumption I and II implicit. Hence, option (d) is correct.

55. (a)

Let ₹100 be the money lent at simple interest, then

According to statement 1,

$$\text{Simple interest} = \frac{100\times16\times6}{100}$$

Simple interest = ₹96

Amount = 100 + 96 = ₹196

According to the statement 2,

$$\text{Simple interest} = \frac{100\times18\times5}{100}$$

Simple interest = ₹90

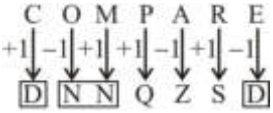
Amount = 100 + 90 = ₹190

Hence, it is clear that statement (1) and statement (2) both are wrong.

56.(c)

Given, COMPARE

According to the question,



[Vowels = –1, Consonants = +1]

Hence, it is clear from above letter D and N appear twice in the group.

57. (d)

Just as,

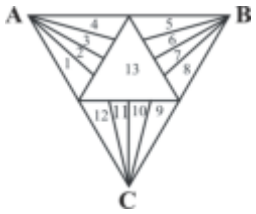
32 × 34 ≡ (3 × 3) & (2 + 4) ≡ 96

25 × 14 ≡ (2 × 1) & (5 + 4) ≡ 29

Same as,

18 × 51 ≡ (1 × 5) & (8 + 1) ≡ 59

58. (b)



Triangles made by 1 digits = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13

Triangles made by two-digits = (1, 2) (2, 3) (3, 4) (5, 6) (6, 7) (7, 8) (9, 10) (10, 11) (11, 12)

Triangles made by 3 digits = (1, 2, 3) (2, 3, 4) (5, 6, 7) (6, 7, 8) (9, 10, 11) (10, 11, 12)

Triangles made by 4 digits = (1, 2, 3, 4) (5, 6, 7, 8) (9, 10, 11, 12)

Triangles made by every number = ΔABC

Total number of triangles = 13 + 9 + 6 + 3 + 1 = 32

59. (a)

Given that,

Today is Thursday

Now by converting 560 days into weeks and days

$\frac{560}{7} = 0$ odd days

$\therefore$ the number of odd days = 0

$\therefore$ The day after 560 days from today will be Thursday.

60. (b)

Total expenditure on decoration and D J

= 19 + 6 = 25%

$\because$ 100% = 32700

$$25\% = \frac{32700}{100} \times 25$$

= ₹ 8175

61. (c)

The Harappans procured materials for craft production in various ways:

They established settlements such as Nageshwar (Gujrat) and Balakot where shells were available.

A blue stone that was apparently very highly valued, and Lothal which was near sources of carnelian from Bharuch in Gujrat.

62. (b)

Prakrit was the Language used for the majority of Ashokan inscriptions, while these in the northeast of the subcontinent were in the Aramaic and Greek.

63. (a)

	Book	Author	Language
1.	Tirukkural	Thiruvalluvar	Tamil
2.	Ratnavali	Harsha	Sanskrit
3.	Rajatarangini	Kalhan	Sanskrit
4.	Meghdoot	Kalidasa	Sanskrit

64. (c)

Goa was Portugal's first territorial possession in Asia, captured by Alfonso de Albuquerque with the help of Thimmayya. Goa became a Portuguese colony in 1510, when Admiral Afonso de Albuquerque defeated the Sultan of Bijapur, Yusuf Adil Shah. After defeating Adil Shah, it served as the main Portuguese base in the East for four and a half centuries. On 19 December, 1961 Goa was liberated and made a composite union territory with Daman and Diu. On 30 May, 1987, Goa was conferred statehood and Daman and Diu was made a separate union territory.

65. (a)

George Lemaitre is associated with discovery of the Big Bang Theory. Georges Edward Lemaitre was a Belgian astronomer and cosmologist. He was the first to propose the modern Big Bang Theory in 1927. According to the Big Bang Theory the expansion of the observable universe began with the explosion of a single particle at a definite point in time.

66. (a)

The term hermit kingdom is used to refer to any country, organization or society which fully walls itself off, either metaphorically or physically, from the rest of the world. The East Asian country of North Korea is commonly regarded as a prime example of a hermit kingdom, and the term is contemporarily used to describe that country.

67. (c)

Cape Comorin is known as Kanya Kumari. It is a Rocky headland on the Indian Ocean in Tamil Nadu state, forming the southernmost point of the subcontinent. It is the southern tip of the Cardamom Hills, an extension of the Western Ghats range along the west coast of India.

68. (b)

Sardar Swaran Singh Committee recommended inclusion of the Fundamental Duties in the Indian constitution in the year 1976. By 42nd constitutional amendment 10 fundamental duties were added to article 51a. Currently there are 11 fundamental duties.

69. (b)

In Constitution of India, Article 53 states that-

1. The executive power of the union shall be vested in the President and shall be exercised by him either directly or through officers sub ordinate to him in accordance with this constitution 53(1).

2. The Supreme command of the Defence forces of the Union shall be vested in the President and the exercise there of shall be regulated by law 53(2).

70. (d)

In July 1944, the Bretton Woods Conference was organized in Bretton Woods, New Hampshire United States under the guidance of Harry Dexter of the USA and John Maynard Keynes of England in which 44 countries participated. The purpose of this conference was to regulate the International monetary system financial disorder. After conference, global institutions such as International Monetary Fund (IMF), World Bank, World Trade Organization (WTO) were established.

71. (a)
Helio Swarm mission is a constellation or swarm at nine spacecraft. It will be launched to capture 1st multi scale in space measurements of fluctuations in magnetic field as well as motions of solar wind called as Solar wind turbulence. That will improve the understanding of the dynamics of Sun.

72. (b)
India is not a member of the Association of Southeast Asian Nations(ASEAN). ASEAN consists of 10 member countries viz. Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam.

- Headquarters: Jakarta, Indonesia
- Founded: 8 August 1967, Bangkok, Thailand

73. (a)
The inputs used in the production of goods and services to make an economic profit are known as factors of production. Factors of production are inputs used in the production of goods or services to make an economic profit. These include any resource needed for the production or creation of a goods or service. The factors of production are land, labour, capital and entrepreneurship.

74. (c)
The SIDBI (Small Industries Development Bank of India) is a wholly-owned subsidiary of IDBI (Industrial Development Bank of India). It is established under the Special Act of the Parliament 1988 which became operative from April 2, 1990. SIDBI is the Principal financial Institution engaged in promotion, financing and development of the Micro, Small and Medium Enterprises (MSMEs) sector and coordination of the functions of the various institutions engaged in similar activities. Its headquarters is situated in Lucknow, Uttar Pradesh.

75. (c)
Bismillah Khan played the Shehnai on 15th August 1947 at the Red fort to celebrate the occasion of India's independence.

76. (a)
The National Library of India is located in Belvedere Estate, Alipore, Kolkata, India. It is India's largest library by volume and public record. It was established in 1836 as Culcutta Public library.

77. (a)
In India, 6 language universities exist as of June 2022.

(i) Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeeth, New Delhi
(ii) Rashtriya Sanskrit Vidyapeeth, Tirupati
(iii) English and Foreign Languages University, Hyderabad
(iv) Mahatma Gandhi Antarshtiya Hindi Vishwavidyalaya, Wardha
(v) Maulana Azad National Urdu University, Hyderabad
(vi) Rashtriya Sanskrit Santhan, New Delhi

78. (d)
Dree Festival is famous crop harvest festival celebrated in Arunachal Pradesh by Apatani tribe.
The Apatani is a tribal group living in the zero valley in lower Subansiri district of Arunachal Pradesh.

79. (a)
Rabindranath Tagore was the first Indian citizen to be awarded Nobel Prize in the field of Literature, and also first Asian to be awarded in 1913.
Here is the list of the nine Indian Nobel Prize winners till date:

1. Abhijit Banerjee for Economics, 2019
2. Kailash Satyarthi for Peace, 2014
3. Venkatraman Ramakrishnan for Chemistry, 2009
4. Amartya Sen for Economics, 1998
5. Subrahmanyan Chandrasekhar for Physics, 1983
6. Mother Teresa for Peace, 1979
7. Hargobind Khorana for Medicine, 1968
8. CV Raman for Physics, 1930

Note: The Nobel Prize is awarded in six categories each year -- Physics, Chemistry, Medicine, Literature, Economics, and Peace.

80. (b)
The book 'Lady Doctors: The Untold Stories of India's First Women in Medicine' is authored by Kavitha Rao.

81. (d)
Every year, Parakram Divas is celebrated on the birth anniversary of Netaji Subhash Chandra Bose. The Government of India decided to celebrate the birth anniversary of Netaji as Parakram Divas. Subhash Chandra Bose was born in Cuttak (Odisha) on January 23, 1897. Indian National Army (Azad Hind Fauj) was founded by him to overthrow British Empire from India.

82. (b)
Dada Saheb Phalke award is India's highest award in cinema. Presented first in 1969, the award was introduced by the government of India to commemorate Dada Saheb Phalke's contribution to Indian Cinema. Phalke is known as 'the father of Indian cinema' The first recipient of the award was actress Devika Rani. The prestigious Dada Saheb Phalke Award is honoured to Wahida Rahman for 2021 in September 2023.

83. (c)
The prototype of world's first 6G device has been presented by Japan. It works 20 times faster in comparison of 5G. This device is capable of covering an area of more than 300 feet at a speed of 100 Gps.

84. (a)
Economist Lawrence Wong took the oath of Singapore's fourth Prime Minister in May 2024. Lawrence Wong will take the place of former Prime Minister Lee Sun Lung. President Therman Shaumugaratnam administered the oath to Lawrence Wong.

85. (a)

Yellowstone National Park is an American national park located in the western United States, Yellowstone was the first national park in the U.S.A. and is also widely held to be the first national park in the world.

86. (d)

The S.I. unit of resistivity is ohm meter. Electrical resistivity is that property of material, that measures how strongly it resists electric current.

87. (a)

The energy contained in the static state is called potential energy. So, option (a) is incorrect. The kinetic energy is the additional energy of a body due to its linear velocity or angular velocity, or both. The kinetic energy is a scalar quantity, it has no direction. The kinetic energy of the body is expressed by K.E.

$$KE = \frac{1}{2}mv^2$$

88. (b)

The minimum velocity with which a body must be projected in vertically upward direction again gravitational pull and the body never come back to earth and go away in to the space, is called escape velocity.

Escape velocity of Earth (V_e) = 11.2 km/s

89.(b)

Boiling point of water is 100^oC or 212^0 Fahrenheit, freezing point of water is 0^0C or 32^0 Fahrenheit.

90. (b)

Camphor is found in solid state. It is a white coloured wax-like substance. It has a pungent smell. Ammonia is a colourless gas with a strong odor. It is lighter than air. This is most soluble in water.

91. (d)

John Dalton's presented his Atomic Theory in 1808, on conservation which was a turning point in the study of matter. John Dalton proposed that all matter was composed of atoms, indivisible and indestructible building blocks. While all atoms of an element were identical different elements had atoms of different size and mass.

92. (c)

Litmus is used as an indicator to distinguish between acid and base. Litmus solution is obtained from lichen. It is a water soluble mixture of different dyes. Light blue litmus paper turns red under acidic solution and red litmus paper turns into blue under basic or alkaline solution. It is measured in pH range, the neutral litmus paper is purple.

93.(d)

Ethology is the study of animal behavior. Entomology is the scientific study of insects. Etiology is the scientific study of causes of disease. Ethnology is the comparative study of two or more cultures.

94. (c)

Simple permanent tissues are composed of cells which are structurally and functionally similar. These tissues are made up of one type of cells. A few layers of cells beneath the epidermis are generally simple permanent tissue. Simple tissues are of three types, namely parenchyma, collenchyma and sclerenchyma.

Parenchyma – They are living cells, soft in nature due to the presence of thin-walled cells.

Collenchyma – These are characterized by uneven thick-walled living cells.

Sclerenchyma – They have cells with thickened lignified walls, providing them strength and making them waterproof.

95. (a)

Nomenclature, in biological classification, is the system of naming organisms. The species to which the organism belongs is indicated by two words, the genus and species names, which are latinized words derived from various sources. This system, which is called the Linnaean system of binomial nomenclature, was established in the 1750s by Carolus Linnaeus.

96. (b)

Millipedes are arthropod with thousand-legged invertebrates with an exoskeleton, a segmented body and joint appendages. Arthropods also have a hemocoel, an open body cavity in which blood flows and bathes the tissues and organs. Spider belongs to phylum Arthopoda.

97. (b)

Respiration involves chemical reactions that breakdown nutrient molecule in dividing cells to release energy. Respiration is basically of two types:

(1) Aerobic respiration, and

(2) Anaerobic respiration.

Aerobic respiration takes place in the presence of oxygen. Most of the reaction in aerobic respiration happen inside Mitochondria where one molecule of pyruvate breaks down to give three molecules of carbon dioxide. The amount of released energy in aerobic respiration is more than that in anaerobic respiration.

98. (c)

The amount of time it takes to move a character from the CPU or to the CPU from RAM is known as the memory access time.

99. (b)

Computer memory is made up of a large number of cells, each cell is capable of storing 1 bit of information in the form of binary numbers.

1 byte = 8 bit

100. (d)

The term Ecology was first used by Ernst Haeckel in 1866 in his book 'General morphology and their organisms'. He applied the term ecology to the 'relation of the animal both to its organic as well as its inorganic environment.

PRACTICE SET - 2

1. If pq is a two-digit number, then pq – qp will be completely divisible by:
   (a) 9 (b) 7
   (c) 6 (d) 5
2. When 40 is subtracted from a number, it reduces to its 60%. What is the number?
   (a) 130 (b) 160
   (c) 200 (d) 100
3. Find the greatest fraction out of $-\frac{3}{2},\frac{3}{2},\frac{11}{4},\frac{5}{2}$:
   (a) $\frac{3}{2}$ (b) $\frac{11}{4}$
   (c) $\frac{5}{2}$ (d) $-\frac{3}{2}$
4. 2.666 … + 2.77 … in fraction form is:
   (a) $\frac{47}{9}$ (b) $\frac{29}{9}$
   (c) $\frac{31}{9}$ (d) $\frac{49}{9}$
5. The difference of a fraction and its inverse is $\frac{9}{11}$. Then the difference of cubes of the fraction and its inverse will be:
   (a) $-\frac{1331}{2538}$ (b) $-\frac{2538}{1331}$
   (c) $\frac{3996}{1331}$ (d) $\frac{729}{1331}$
6. Which of the following is correct?
   (a) $\frac{9}{16}\le\frac{13}{24}$ (b) $\frac{9}{16}>\frac{13}{24}$
   (c) $\frac{9}{16}=\frac{13}{24}$ (d) $\frac{9}{16}<\frac{13}{24}$
7. The LCM of the numbers 70, 28 and 42 is :
   (a) 116 (b) 420
   (c) 280 (d) 700
8. Three containers contain 72 litres, 90 litres and 144 litres of milk respectively. What should be the biggest 'measuring -can', which can measure all the different quantities exactly (Without a remainder)?
   (a) 17 litres (b) 18 litres
   (c) 11 litres (d) 13 litres
9. If the product of two numbers, not necessarily distinct from each other, is 25 and their HCF is 5, then their LCM is :
   (a) 7 (b) 4
   (c) 5 (d) 6
10. If P is the largest number which, when divides 60, 150 and 285, gives the same remainder in each case, then find the sum of digits of p.
    (a) 7 (b) 5
    (c) 4 (d) 9
11. If 10% of x = 15% of y, then what will be the value of x : y ?
    (a) 2 : 3 (b) 2 : 1
    (c) 3 : 2 (d) 1 : 2
12. The ratio of two number are 5 : 9. If 6 is added in both numbers then their ratio become 2 : 3. The original number are.
    (a) 25, 45 (b) 10, 18
    (c) 15, 27 (d) 5, 9
13. The population of a town is 10,000. If the male population increases by 5% and the female population by 10%, the population will become 10,800. How much of the town's present population is female?
    (a) 7000 (b) 6000
    (c) 8000 (d) 5000
14. A man's income at first increased by 20% and later on increased again by 30%. Find the total percent increase.
    (a) 58 (b) 54
    (c) 60 (d) 56
15. The base of a right-angled triangle is 12 cm and the difference between the other two sides is 6 cm. What will be the perimeter of the triangle?
    (a) 30 cm (b) 54 cm
    (c) 36 cm (d) 18 cm
16. The difference between the length and breadth of a rectangle is 6 m. If its perimeter is 64 m, then its area is:
    (a) 256 sq. m. (b) 247 sq. m.
    (c) 264 sq. m. (d) 238 sq. m.
17. A man and a boy, working together, can finish a task in 24 days. If, for the last 6 days, the man works alone, then the task can be finished in 26 days. In how many days can the boy alone finish the task?
    (a) 72 (b) 54
    (c) 48 (d) 36.
18. Brij alone can paint a wall in 7.2 days while Madhu takes 10.8 days to do the same work. Working together how many days will they take to paint 5/6 part of the wall?
    (a) 4.2 (b) 3.6
    (c) 3.9 (d) 4.8
19. Two buses from a house run at a speed of 25 km/h at an interval of 15 minutes. How much more speed (km/h) does a woman coming from the opposite side of the house have to walk so that the buses meet at an interval of 10 minutes.
    (a) 12 (b) 12.25
    (c) 12.5 (d) 12.75

20. **At a speed of 60 km/h a train crosses a pole in 33 s. Find the length of the train.**
(a) 550 m (b) 490 m
(c) 400 m (d) 495 m

21. **After 10 years the simple interest on a sum of money will be ₹600. If the principal is increased thrice after 5 years, what will be the total interest after 10 years?**
(a) ₹300 (b) ₹900
(c) ₹1200 (d) ₹600

22. **A person borrowed a sum of money at 9% simple interest and invested it at 10% compound interest for 3 years. After 3 years he received profit of ₹1952. How much money did he borrow?**
(a) ₹ 30000 (b) ₹ 32000
(c) ₹ 33000 (d) ₹ 32543

23. **Atulit buys an old bicycle for Rs. 4,000 and spends Rs. 400 for its repairs. If he sells the bicycle for Rs. 5,000, his percentage gain is:**
(a) $7\frac{13}{12}\%$ (b) $7\frac{13}{11}\%$
(c) $13\frac{1}{11}\%$ (d) $13\frac{7}{11}\%$

24. **A toy was bought for ₹1125 and sold at a loss of 16%. The selling price of the toy was.**
(a) ₹ 960 (b) ₹ 945
(c) ₹ 955 (d) ₹ 975

25. **Find the numbers if the arithmetic mean and the geometric mean of the two numbers are 7 and $2\sqrt{10}$ respectively.**
(a) 5, 4 (b) 2, 20
(c) 4,10 (d) 8,5

26. **If (2x-1) is a factor of $2x^4 - 7x^3 + x + k = 0$, then find the value of 'k'.**
(a) $\frac{1}{4}$ (b) $-\frac{5}{12}$
(c) 0 (d) $-\frac{1}{4}$

27. **Which of the following represents the right hand side (RHS) of the given equation ?**
$\sqrt{\frac{1+\sin A}{1-\sin A}} = ?$
(a) $\frac{1}{\text{cosec } A}$ (b) sec A + cot A
(c) sin A + cos A (d) sec A + tan A

28. **Angles A, B and C of a triangle are in arithmetic progression. M is a point on BC such that AM is perpendicular to BC. What is $\frac{BM}{AB}$?**
(a) $\frac{1}{2}$ (b) $\frac{3}{4}$
(c) $\frac{1}{3}$ (d) $\frac{1}{4}$

29. **If the mean of the following data is 15, then find the value of k.**

x	5	10	15	20	25
f	6	k	6	10	5

(a) 6 (b) 10
(c) 8 (d) 7

30. **Given below is the marks obtained by 20 students in mathmatics out of 30 marks.**
7, 9, 12, 12, 13, 12, 14, 14, 14, 14, 15, 16, 17, 18, 18, 19, 20, 18, 20, 13.Then (2 × median – mode) of the data is equal to:
(a) 14 (b) 18
(c) 12 (d) 0

31. **Select the option that is related to the third word in the same way as the second word is related to the first word.**
Shirt : Apparel :: Necklace :?
(a) Chain (b) Gold
(c) Jewellery (d) Neck

32. **'Hand' is related to 'Finger' in the same way as 'Pen' is related .....**
(a) Nib (b) Pencil
(c) Ink (d) Holder

33. **Select the option that is related to the fifth letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster and the fourth letter-cluster is to the third letter-cluster.**
HUDK : KWGM :: RBNF : UDQH :: LPQV: ?
(a) OSTY (b) NRSX
(c) NSSY (d) ORTX

34. **Select the option that is related to the third number in the same way as the second number is related to the first number.**
9 : 729 = 11 : ?
(a) 1024 (b) 112
(c) 1331 (d) 991

35. **In a certain code language, if 'CELL' is coded as '32' and 'PHONE' is coded as '58', how will 'BOLD' be coded in that language?**
(a) 43 (b) 54
(c) 32 (d) 33

36. **In a certain code language, 'BUREAK' is written as 'PZVIFY'. What is the code for 'CASPTL' in that code language?**
(a) PHKGYX (b) OHKGZX
(c) PGKHYX (d) OGKHZX

37. **In a certain code language, 'she is beautiful' is written as 'mat mug bit', and 'beautiful and water' is written as 'bit cap lan'. How will 'beautiful' be written in that language?**
(a) bit (b) mug
(c) cap (d) mat

38. **If 67 = 1764 and 93 =729, then which of the given options will be the value of 74 = ?**
(a) 847 (b) 784
(c) 567 (d) 972

39. **Three of the given four terms share a certain relationship whereas one is different. Select the one that is different.**
Mike, Loudspeaker, Projector, Amplifier
(a) Loudspeaker (b) Amplifier
(c) Mike (d) Projector

40. **Four figures have been given, out of which three are alike and one is different. Select the odd one.**
(a)  (b) 
(c)  (d) 

41. **Select the number from among the given options that will come next in the following series.**
4, 16, 40, ?
(a) 68 (b) 98
(c) 48 (d) 88

42. **To get the given result in the following equation what alternative set of mathematical symbols should be replaced by__?**
(15?12) ?6?8 = 26
(a) –, ×, + (b) +, –, ÷
(c) +, – (d) +, –, ±

43. **Select the correct set of symbols**
63 7 5 4 = 49
(a) ×, –, ÷ (b) +, ÷, –
(c) +, –, ÷ (d) ÷, × , +

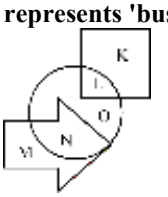
44. **Dropu walked 4 m from points A towards the south-west and reached point B. Then she turned south-east and walked same distance to reach point C, and then she turned towards the north-east and walked 4m to reach Point D. Which direction does she need to turn to move towards Point B?**
(a) North-west (b) East
(c) West (d) South-east

45. **Rahul is the brother of Raj. Radha is the sister of Raman. Raj is the son of Radha. Then how is Rahul related to Radha?**
(a) Nephew (b) Son
(c) Uncle (d) Brother

46. **If P means ÷, Q means ×, R means + and S means – then the value of 14Q16P4R7S10 ?**
(a) 52 (b) 48
(c) 53 (d) 50

47. **Select the option that correctly represents the following Venn diagram.**

(a) Engineers, Graduates, Freelancers
(b) Engineer, Doctors, Graduates
(c) Doctor, Surgeon, Nurse
(d) Doctor, Freelancers, Engineers

48. **In the given diagram, circle represents 'boxers' , square represents 'philosophers' and arrow represents 'business women'.**


Which of the following letters represents boxers who are not men?
(a) N (b) L
(c) M (d) O

49. **Given below is a paragraph. While S1 and S6 are the first and last sentences of this paragraph, the parts that are labelled 1, 2, 3 and 4 are jumbled up. Rearrange them to form a meaningful and coherent paragraph.**
S1 : Several metro lines have been planned in the NCR.
1. Red line is the first among them.
2. They are expected to alleviate the problem of transportation.
3. It starts from Shahdara and terminates at Tis-Hazari in the initial phase.
4. It caters to over 1 lakh commuters at present.
S6: Hopefully, the public transportation problem will not be as acute after all the metro lines are completed.
(a) 1,2,3,4 (b) 2,3,4,1
(c) 1,3,4,2 (d) 2,1,3,4

50. **Statements :**
A. All humans are mechanic.
B. All mechanics are engineer.
Conclusions :
I. Some mechanics are humans.
II. Some engineers are mechanics.
(a) Neither conclusion I and Nor II follows
(b) Both conclusion I and II follow
(c) Only conclusion I follows
(d) Only conclusion II follows

51. **Statement :**
Some editors are writers. All actors are writers.
Conclusion :
I. Some editors are writers
II. No actor is an editor.

(a) Neither conclusion I nor II are true
(b) Only conclusion II is true
(c) Only conclusion I is true
(d) Either conclusion I or II are true

52. Read the given statement and conclusions carefully and decide which of the conclusions logically follow(s) from the statement.

Statement:

Company ABC has the highest number of customers as compared to its competitors.

Conclusions:

1. Company ABC has 58% of the total customers.

2. Company ABC's products are the cheapest in the market.

(a) Only conclusion 1 follows.
(b) Only conclusion 2 follows.
(c) Both conclusions 1 and 2 follow.
(d) Neither conclusion 1 nor 2 follows.

Direction : Read the given statement and conclusions carefully and decide which of the conclusions logically follow(s) from the statement.

53. Statement: P > Q ≤ C ≤ B = M > D

Conclusion:

I : M > Q

II : D ≤ Q

III : M = Q

IV : C < D

(a) Only I or III is correct
(b) Only I is correct
(c) None of the conclusion is correct
(d) Either only II or only IV is correct

54. Consider the given statement and decide which of the given assumptions is/ are implicit in the statement.

Statement:

The electricity board has started going from home to home to collect bills.

Assumptions:

A. Electricity board considers going home to home an effective way to collect bills.

B. The electricity board has increased its focus on collecting bills.

(a) Only assumption A is implicit
(b) Neither A nor B is implicit
(c) Only assumption B is implicit
(d) Both A and B are implicit

55. Read the given statement and decide which of the following statements is sufficient to answer the question.

<u>Question:</u> I, O, L and H are standing in a circular shape. Who stands to the left of H?

<u>Statements:</u>

(1) I stands on the left of O and L stands on the left of I.

(2) L is wearing a green T-shirt.

(a) Only statement 2 is sufficient.
(b) Both statements 1 and 2 are insufficient.
(c) Both statements 1 and 2 are sufficient
(d) Only statement 1 is sufficient.

56. If each of the letter of the letter cluster 'DEHRAZUN' is arranged in alphabetical order, how many vowels will be immediately preceded by a consonant in the newly formed letter cluster?

(a) 0 (b) 3
(c) 1 (d) 2

57. A question is given followed by two arguments. Decide which of the arguments is/are strong with respect to the question.

Question

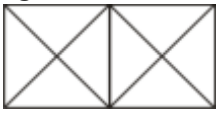
Should vegetarian food be banned in India?

I. No, it is cheap source of protein and other minerals and a lot of people can afford it

II. No, it will violate people's freedom.

(a) Both are strong
(b) Only I is strong
(c) Only argument II is strong
(d) None is strong

58. How many triangles are there in the following figures?

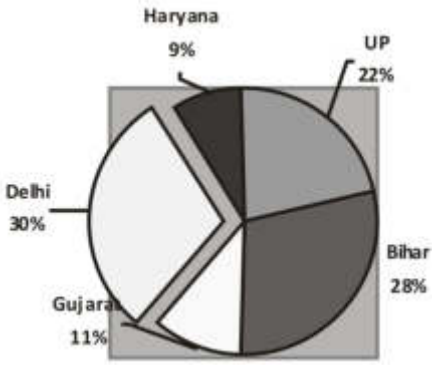


(a) 18 (b) 22
(c) 20 (d) 16

59. It was Thursday of February 1, 2007. What was the day of the week on February 2, 2006?

(a) Wednesday (b) Thursday
(c) Saturday (d) Friday

60. The given pie-chart shows the percentage distribution of the number of people from different provinces migrating to USA upon getting their green card. Study the pie-chart and answer the question.



What is the central angle of the sector corresponding to the number of people migrating from Delhi?

(a) 100.8° (b) 40°
(c) 108° (d) 32.4°

61. Which city from the Harappan Civilization was almost exclusively devoted to craft production including bead making, shell cutting, metal working, seal making and weight making?
(a) Mohenjo Daro (b) Nageshwar
(c) Harappa (d) Chanhudaro

62. With reference to the distribution of Ashokan inscriptions, which among the following sites is in the modern state of Gujarat?
(a) Sannati (b) Shishupalgarh
(c) Girnar (d) Kalsi

63. Who built the Lingraj Temple?
(a) Mughal Emperor Shah Jahan
(b) Rulers of the Rajput Chandela Dynasty
(c) King Yayati Keshri of Somavanshi
(d) King Anantawarman Chodaganga Deva

64. Who was the ruler of India at the inception of East India Company?
(a) Aurangzeb (b) Akbar
(c) Jahangir (d) Shahjahan

65. When three quarter of Moon is visible what is it called?
(a) Half Moon (b) Gibbous Moon
(c) New Moon (d) Full Moon

66. Which one is the capital city of France?
(a) Paris (b) Kathmandu
(c) Berlin (d) Londan

67. Which strip of water separates India and Sri Lanka?
(a) Strait of Lombok (b) Durand line
(c) Strait of Malacca (d) Palk Strait

68. The Constitution of India is republican, because-
(a) It provided provision for elected parliament.
(b) A Rights Bill has been incorporated in it.
(c) Provision of adult suffrage is provided in it.
(d) It has no hereditary component.

69. How long does the President's ordinance effect last for?
(a) One Year
(b) Two months
(c) Until the President cancel it
(d) Six months

70. The foundation day of the UN Charter was on:
(a) 29th October 1946 (b) 20th October 1932
(c) 21th October 1950 (d) 24th October 1945

71. Which of the following satellites is India's first dedicated multi-wavelength space observatory?
(a) AstroSat (b) IRS
(c) JUGNU (d) INSAT

72. Which institution is the country's premier organisation for literary discourse, publication and promotion, and the only one that does so in 24 Indian language, including English?
(a) Hindi Granth Academy
(b) English and Foreign Languages University
(c) Sahitya Akademi
(d) Indira Gandhi National Open University

73. Which economist has written the book "The General Theory of Employment, Interest and Money (1936)"?
(a) Vincent Crawford
(b) Adam Smith
(c) John Maynard Keynes
(d) Milton Friedman

74. Which of following is NOT a part of the nine pillars of 'Digital India', a campaign launched by the Government of India?
(a) Jan-Dhan Yojna
(b) Universal Access to Mobile Connectivity
(c) Broadband Highways
(d) Electronics Manufacturing

75. Which of the following films is directed by Satyajit Ray?
(a) Pyaasa (b) Mahal
(c) Pather Panchali (d) Kora Kagaz

76. Where is Tawang Monastery located?
(a) Assam (b) Nagaland
(c) Arunachal Pradesh (d) Mizoram

77. Identify the name of the fellowship that is launched by the Department of Science and Technology (DST), Government of India, to recognise, encourage and support translational research by Indian nationals.
(a) CV Raman Technology Innovation National Fellowship
(b) Dr. Homi Jahangir Bhabha Technology Innovation National Fellowship
(c) Vikram Sarabhai Technology Innovation National Fellowship
(d) Abdul Kalam Technology Innovation National Fellowship

78. During which of the following festivals is the Puli Kali (Tiger dance) event the main attraction?
(a) Onam (b) Baisakhi
(c) Bihu (d) Pongal

79. Which Indian won the Nobel Prize for peace in 2014?
(a) Kailash Satyarthi (b) Malala Yousafzai
(c) Sanjeev Chaturvedi (d) Anshu Gupta

80. Who is the writer of the Hindi play Adhe Adhure?
(a) Nirala (b) Pant
(c) Mohan Rakesh (d) Premchand

81. When is United Nations World Environment Day celebrated?
(a) On 10 December every year.
(b) On 5 June every year.
(c) On 5 September every year.
(d) On 10 June every year.

82. Which of the following books won the Man Booker International Prize in the year 2019?
(a) Two Virgins
(b) The Golden Gate
(c) Celestial Bodies
(d) Midnight's Children

83. Which Indian state has started the 'Bahan-Beti Swavlamban Protsahan Yojana' in June, 2024?
(a) Madhya Pradesh (b) Gujarat
(c) Jharkhand (d) Bihar

84. Who became the brand ambassador of Green Day's 'Better Nutrition' brand in June, 2024 ?
(a) Saina Nehwal
(b) PV Sindhu
(c) Aakarshi Kashyap
(d) Anupama Upadhyay

85. Which of the following National Park is not in India?
(a) Anshi National Park
(b) Shandur National Park
(c) Dachigam National Park
(d) Balpakram National Park

86. The SI unit of sound wave frequency was named in honour of which physicist?
(a) Werner Karl Heisenberg
(b) Heinrich Rudolf Hertz
(c) Albert Einstein
(d) J C Maxwell

87. An object of 1kg is dropped to the ground from a height of 30m. What is the work done by the force of gravity ? (g = 10 m/s^2)
(a) 10J (b) 300J (c) 0.33J (d) 30J

88. The force of attraction applied between molecules of the same substance is called:
(a) cohesive force (b) adhesive force
(c) capillarity (d) surface tension

89. Which of the following are electromagnetic waves ?
(a) Alpha rays (b) Audible waves
(c) X-rays (d) β-rays

90. Which law in science does not follow the properties of a mixture.
(a) The components of the mixture retain their properties.
(b) Mixture can be of different substances
(c) It is separated by physical method.
(d) Its structure is fixed

91. The nucleus of a hydrogen atom is made up of?
(a) Only 1 proton
(b) Protons, neutrons and electrons
(c) 2 electrons and 1 proton
(d) There is nothing in it

92. Which one of the following has a similarity between acids and bases?
(a) They are used as preservatives
(b) They have pH less than 7
(c) Process of mixing acid or base with water is exothermic
(d) They are bitter

93. The study of fertilization, development, division and variation is known as:
(a) Embryology (b) Physiology
(c) Genetics (d) Evolution

94. Which of the following statements about plant tissue is INCORRECT?
(a) Xylem transports water and minerals.
(b) Xylem and phloem are complex tissues.
(c) Phloem transports food from leaves to other parts of the plant.
(d) Materials can move in both directions in xylem.

95. In which Kingdom would you place all organisms, which are multicellular eukaryotic nucleus with cell walls?
(a) Protista (b) Plantae
(c) Monera (d) Animalia

96. Youngones of crocodile is called:
(a) Codling (b) Gosling
(c) Fingerlings (d) Hatchling

97. Some features of a respiratory surface in animals are mentioned below. Select the INCORRECT option.
(a) Presence of a mechanism for moving air in and out of this area
(b) Is very thick
(c) Has a large surface area
(d) Usually placed inside the body

98. Which of the following chemical element, Tetravalent Metalloids, is used to make an integrated circuit (IC) chip used in computers?
(a) Gold (b) Silver
(c) Silicon (d) Copper

99. Which of the following is NOT an internal part of the computer?
(a) RAM (b) Motherboard
(c) Video card (d) Flash drive

100. Which of the following is in the third trophic level of the food chain?
(a) Producers
(b) Top consumers
(c) Secondary consumers
(d) Primary consumers

SOLUTION : PRACTICE SET- 2

ANSWER KEY

1. (a)	11. (c)	21. (c)	31. (c)	41. (d)	51. (c)	61. (d)	71. (a)	81. (b)	91. (a)
2. (d)	12. (b)	22. (b)	32. (a)	42. (a)	52. (d)	62. (c)	72. (c)	82. (c)	92. (c)
3. (b)	13. (b)	23. (d)	33. (d)	43. (d)	53. (a)	63. (c)	73. (c)	83. (c)	93. (a)
4.(d)	14. (d)	24. (b)	34. (c)	44. (c)	54. (d)	64. (b)	74. (a)	84. (b)	94. (d)
5. (c)	15. (c)	25. (c)	35. (d)	45. (b)	55. (d)	65. (b)	75. (c)	85. (b)	95. (b)
6. (b)	16. (b)	26. (a)	36. (d)	46. (c)	56.(d)	66. (a)	76. (c)	86. (b)	96. (d)
7. (b)	17. (a)	27. (d)	37. (a)	47. (a)	57. (a)	67. (d)	77.(d)	87. (b)	97. (b)
8. (b)	18. (b)	28. (a)	38. (b)	48. (a)	58. (a)	68. (d)	78. (a)	88. (a)	98.(c)
9. (c)	19.(c)	29. (c)	39. (d)	49. (d)	59. (b)	69. (d)	79.(a)	89. (c)	99. (d)
10. (d)	20. (a)	30. (a)	40. (b)	50. (b)	60. (c)	70. (d)	80. (c)	90. (d)	100. (c)

SOLUTION

1. (a)

Let the two digit number $(pq) = 10x + y$

Then, $qp = 10y + x$

According to the question,

$$pq - qp$$
$$= 10x + y - (10y + x)$$
$$= 10x + y - 10y - x$$
$$= 9x - 9y$$
$$= 9(x - y)$$

Hence pq – qp will be completely divisible by 9.

2. (d)

Let the number is x

According to the question,

$$x - 40 = x \times \frac{60}{100}$$
$$x - \frac{60x}{100} = 40$$
$$\frac{40x}{100} = 40$$
$$x = 100$$

3. (b) Given

$$-\frac{3}{2} = -1.5$$
$$\frac{3}{2} = 1.5$$
$$\frac{11}{4} = 2.75$$
$$\frac{5}{2} = 2.5$$

Hence, It is clear that greatest fraction is $\frac{11}{4}$

4.(d)

$2.666\ldots\ldots + 2.77\ldots\ldots$

$$= 2.\bar{6} + 2.\bar{7}$$
$$= 2 + \frac{6}{9} + 2 + \frac{7}{9}$$
$$= 4 + \frac{6+7}{9}$$
$$= 4 + \frac{13}{9}$$
$$= \frac{36+13}{9} = \frac{49}{9}$$

5. (c)

Let the fraction be $\frac{x}{1}$, then its inverse will be $\frac{1}{x}$,

According to the question,

$$\frac{x}{1} - \frac{1}{x} = \frac{9}{11}$$
$$\Rightarrow x - \frac{1}{x} = \frac{9}{11}$$

On cubing both side,

$$x^3 - \frac{1}{x^3} = \left(\frac{9}{11}\right)^3 + 3 \times \frac{9}{11} \quad \left[a^3 - b^3 = (a-b)^3 + 3ab(a-b)\right]$$
$$= \frac{729}{1331} + \frac{27}{11}$$
$$= \frac{729 + (27 \times 121)}{1331} = \frac{729 + 3267}{1331}$$

$$\therefore x^3 - \frac{1}{x^3} = \frac{3996}{1331}$$

6. (b)

From options,

(a) $\frac{9}{16} \le \frac{13}{24} = 0.56 \le 0.54$ (wrong)

(b) $\frac{9}{16} > \frac{13}{24} = 0.56 > 0.54$ (right)

(c) $\frac{9}{16} = \frac{13}{24} = 0.56 = 0.54$ (wrong)

(d) $\frac{9}{16} < \frac{13}{24} = 0.56 < 0.54$ (wrong)

Composed by – **PS-2/**

7. (b)

LCM of (70, 28, 42)

2	70,	28,	42
2	35,	14,	21
3	35,	7,	21
5	35,	7,	7
7	7,	7,	7
	1,	1,	1

Hence LCM of 70, 28 and 42 = 2 × 2 × 3 × 5 × 7
= 420

8. (b)

Capacity of the largest 'Measuring Can' = HCF of 72, 90 and 144 litres.

72 = 2×2×2×3×3

90 = 2×3×3×5

144 = 2×2×2×2×3×3

HCF = 18

Hence, the capacity of the largest 'Measuring Can' is 18 litres.

9. (c)

Let the numbers 5x and 5y

$5x \times 5y = 25$

$xy = \frac{25}{25} = 1$

Therefore, the value of x and y each will be 1 then LCM of the numbers 5x and 5y = 5x and 5y = 5 × 1 = 5

10. (d)

The required number = The HCF of (150 – 60), (285 – 150) and (285 – 60)

∴ HCF of 90, 135 and 225 =

90 = 2 × 3 × 3 × 5

135 = 3 × 3 × 3 × 5

225 = 3 × 3 × 5 × 5

HCF = 3 × 3 × 5 = 45

So, the required sum = 4 + 5 = 9

11. (c)

$x \times \frac{10}{100} = y \times \frac{15}{100}$

$10x = 15y$

$\frac{x}{y} = \frac{15}{10}$

$\frac{x}{y} = \frac{3}{2}$

x : y = 3 : 2

12. (b)

Let the numbers are 5x and 9x respectively.

According to the question,

$\frac{5x+6}{9x+6} = \frac{2}{3}$

$15x + 18 = 18x + 12$

$6 = 3x$

$x = 2$

Original numbers = 5 × 2 and 9 × 2
= 10 and 18

13. (b)

Let, the number of males = x

And the number of females = (10, 000 – x)

According to the question-

105% of x + 110% of (10, 000 – x) = 10800

$x \times \frac{105}{100} + (10,000 - x) \times \frac{110}{100} = 10800$

$\frac{21}{20}x + (10,000 - x) \times \frac{22}{20} = 10800$

$21x + 220000 - 22x = 10800 \times 20$

$22x - 21x = 220000 - 216000$

$x = 4000$

Hence, the present number of females
= (10,000 – 4000)
= 6000

14. (d)

According to the question,

Percentage increased = $(x \pm y \pm \frac{x \times y}{100})\%$

$20 + 30 + \frac{20 \times 30}{100} = 56\%$

15. (c)

According to the question,

b = 12 cm

c – a = 6 cm

c = a + 6

∵ $a^2 + b^2 = c^2$

$b^2 = c^2 - a^2 = (c + a)(c - a)$

$144 = (c + a) \times 6$

$144 = 6c + 6a$

$144 = 6(6 + a) + 6a$

$144 = 36 + 12a$

a = 9 cm

c – a = 6

c – 9 = 6

c = 15 cm

Hence the perimeter of the triangle = a + b + c
= 9 + 12 + 15
= 36 cm

16. (b)

Let the length of rectangle = x m

Breadth = (x –6) m

∵ Perimeter = 64 m

2(x + x – 6) = 64

2x – 6 = 32

2x = 38

x = 19

∴ Area of rectangle = x × (x – 6)
= 19 × (19 – 6)
= 19 ×13 = 247 square meter

17. (a)

Let, boy completed work in x days and man completed in y days.

According to the question,

$$\frac{1}{x}+\frac{1}{y}=\frac{1}{24} \quad -----(1)$$

$$\frac{20}{x}+\frac{26}{y}=1-----(2)$$

On subtracting equation (2) from equation (1) × 26

$$\frac{26}{x}+\frac{26}{y}=\frac{26}{24}$$

$$\frac{20}{x}+\frac{26}{y}=1$$

$$\frac{-\quad -\quad -}{\frac{6}{x}=\frac{2}{24}}$$

$$x=72$$

Hence, the boy alone can finish the task in 72 days.

18. (b)

Let they take t days to paint the 5/6 part of the wall.

According to the question,

$$\Rightarrow \frac{t}{7.2}+\frac{t}{10.8}=\frac{5}{6}$$

$$\Rightarrow \frac{10t}{72}+\frac{10t}{108}=\frac{5}{6}$$

$$\Rightarrow \frac{30t+20t}{216}=\frac{5}{6}$$

$$\Rightarrow \frac{50t}{216}=\frac{5}{6}$$

$$\Rightarrow t=\frac{5\times 216}{6\times 50}$$

$$\Rightarrow t=\frac{36}{10}$$

$$\boxed{t=3.6\,\text{days}}$$

19.(c)

Speed of bus = 25 km./hr.

Let the speed of woman = x km/h

Distance = D, Time = 15 minutes $=\frac{15}{60}=\frac{1}{4}$ hours

then new time interval = 10 minutes $=\frac{10}{60}=\frac{1}{6}$ hours

Then relative speed $(S)=\frac{D}{T}$

$\Rightarrow \quad D=S\times T$

$$D=25\times\frac{1}{4}$$

$\because \quad D=\frac{25}{4}$ .....(i)

$$D=\frac{25+x}{6} \quad .....(ii)$$

From equation (i) and equation (ii)

$$\frac{25+x}{6}=\frac{25}{4}$$

$$25+x=\frac{150}{4}$$

$$x=\frac{150}{4}-25$$

$$x=\frac{150-100}{4}$$

$$x=\frac{50}{4}$$

Speed of woman (x) = 12.5 Km./hr.

20. (a)

Speed of Train = 60 km/h

$$=\frac{60\times 5}{18}=\frac{50}{3}\text{m/s}$$

$\because$ Distance covered by train in 1 second $=\frac{50}{3}$ m.

$\because$ Distance covered by train in 33 seconds

$$=\frac{50}{3}\times 33=550\,\text{m}.$$

Hence, length of train = 550 m.

21. (c)

Simple interest of 10 years $=\frac{P\times R\times T}{100}$

$$\therefore 600=\frac{P\times R\times 10}{100}\Rightarrow PR=6000$$

According to the question,

Total simple interest = SI_1 for Five years + SI_2 for next five years

$$=\frac{5\times P\times R}{100}+\frac{5\times 3P\times R}{100}=PR\frac{20}{100}$$

$$=6000\times\frac{20}{100}=1200$$

Total Simple interest = ₹1200

22. (b)

Suppose borrowed amount = ₹ x

Compound interest = Total Amount − Principal

Profit = Compound interest − Simple interest

As per the question,

$$x\left[\left(1+\frac{10}{100}\right)^3-1\right]-\left[\frac{x\times 9\times 3}{100}\right]=1952$$

$$\Rightarrow x\left[\left(\frac{11}{10}\right)^3-1\right]-\left[\frac{x\times 9\times 3}{100}\right]=1952$$

$$\Rightarrow x\left[\frac{1331}{1000}-1\right]-\left[\frac{x\times9\times3}{100}\right]=1952$$

$$\Rightarrow x\left[\frac{1331-1000}{1000}\right]-\left[\frac{x\times9\times3}{100}\right]=1952$$

$$\Rightarrow x\left[\frac{331}{1000}\right]-\frac{27x}{100}=1952$$

$$\Rightarrow \frac{x(331-270)}{1000}=1952$$

$$\Rightarrow \frac{x\times61}{1000}=1952$$

$$\Rightarrow x=32\times1000=₹32000$$

23. (d)

Cost price of the bicycle for Atulit = 4000 + 400 = ₹4400

Selling price of the bicycle = ₹5000

Profit = 5000 – 4400

= ₹600

$$\text{Profit \%}=\frac{600}{4400}\times100$$

$$=\frac{600}{44}$$

$$=\frac{150}{11}$$

$$=13\frac{7}{11}\%$$

24. (b)

Given-

The cost price (CP) of the toy = ₹ 1125

Loss = 16%

Selling price (SP) = ?

Formula, $\left[\text{C.P.}=\frac{\text{S.P.}}{(100-\text{Loss})}\times100\right]$

$$\Rightarrow \quad 1125=\frac{SP}{84}\times100$$

$$\Rightarrow \quad SP=\frac{1125\times84}{100}$$

$$SP=\frac{94500}{100}=₹945$$

25. (c)

Let two numbers be a and b.

Arithmetic mean of both numbers $=\frac{a+b}{2}$

Geometric mean $=\sqrt{ab}$

According to the question,

$$\frac{a+b}{2}=7$$

$$a+b=14 \quad ....(i)$$

and $\sqrt{ab}=2\sqrt{10}$

$$ab=40 \quad ...(ii)$$

On solving equation (i) and (ii),

$$a+\frac{40}{a}=14$$

$$\frac{a^2+40}{a}=14$$

$$a^2+40=14a$$

$$a^2-14a+40=0$$

$$a^2-10a-4a+40=0$$

$$a(a-10)-4(a-10)=0$$

$$(a-10)(a-4)=0$$

$$a=10 \text{ or } 4$$

$$a=10$$

$$b=4$$

Hence the numbers are 4 and 10.

26. (a)

According to the question-

$$2x^4-7x^3+x+k=0 \quad \text{... (1)}$$

$\because$ Equation (1) is divisible by (2x – 1)

Hence, $2x-1=0 \Rightarrow x=\frac{1}{2}$

On putting the value of x in equation .....(i)

$$2\times\left(\frac{1}{2}\right)^4-7\times\left(\frac{1}{2}\right)^3+\frac{1}{2}+k=0$$

$$\frac{1}{8}-\frac{7}{8}+\frac{1}{2}+k=0$$

$$-\frac{2}{8}=-k$$

$$\boxed{k=\frac{1}{4}}$$

27. (d)

Given

$$=\sqrt{\frac{1+\sin A}{1-\sin A}}$$

$$=\sqrt{\frac{1+\sin A}{1-\sin A}\times\frac{1+\sin A}{1+\sin A}}$$

$$=,\sqrt{\frac{(1+\sin A)^2}{(1-\sin^2 A)}}$$

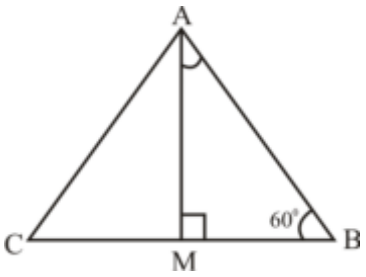
$$=\sqrt{\frac{(1+\sin A)^2}{\cos^2 A}}$$

$$=\frac{1+\sin A}{\cos A}$$

$$=\frac{1}{\cos A}+\frac{\sin A}{\cos A}$$

$$=\sec A+\tan A$$

28. (a)



According to the question,

Because angle A, B and C are in arithmetic progression

$A + C = 2B$ – – – – (1)

$A + B + C = 180°$ – – (2)

(On Substituting the value of A + C from equation (1))

$2B + B = 180°$

$3B = 180°$

$B = 60°$

$\cos 60° = \frac{BM}{AB}$ $\left(\frac{\text{Base}}{\text{Hypotenuse}}\right)$

$\frac{1}{2} = \frac{BM}{AB}$

29. (c)

x	f	f ×x
5	6	30
10	k	10k
15	6	90
20	10	200
25	5	125
$\Sigma f = 27 + k$		$\Sigma f.x. = 445 + 10k$

$$\text{Mean} = \frac{445+10k}{27+k} = 15$$

$405 + 15k = 445 + 10k$

$k = 8$

30. (a)

On arranging the given number in ascending order

7, 9, 12, 12, 12, 13, 13, 14, 14, 14, 14, 15, 16, 17, 18, 18, 18, 19, 20, 20

$n = 20(\text{even})$

$$\text{Median} = \frac{\left(\frac{n}{2}\right)^{th}\text{term} + \left(\frac{n+2}{2}\right)^{th}\text{term}}{2}$$

$$= \frac{\left(\frac{20}{2}\right)^{th}\text{term} + \left(\frac{20+2}{2}\right)^{th}\text{term}}{2}$$

$$= \frac{10^{th}\text{ term} + 11^{th}\text{ term}}{2}$$

$$= \frac{14+14}{2} = 14$$

Mode = 14

$\therefore$ 2×Median – Mode = 2× 14 – 14 = 14

31. (c)

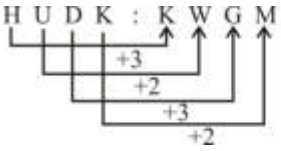
Just as, a Shirt is an Apparel. Similarly, Necklace is a 'Jewellery'. Hence option (c) is correct.

32. (a)

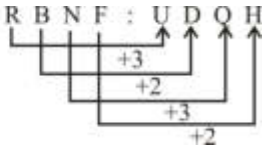
Just as, the work of the fingers in the hand is to hold the objects, in the same way the work of the nib in the pen is to write.

33. (d)

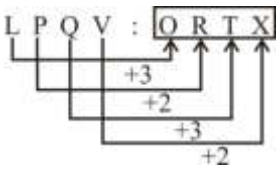
Just as,



And,



Same as,



34. (c)

Just as,

$(9)^3 \rightarrow 729$

Same as,

$(11)^3 \rightarrow 1331$

35. (d)

Just as,

C E L L

↓ ↓ ↓ ↓

3 5 12 12 $\Rightarrow$ 3 + 5 + 12 + 12 = 32

And,

P H O N E

↓ ↓ ↓ ↓ ↓

16 8 15 14 5 $\Rightarrow$ 16 +8 + 15 + 14 + 5= 58

Same as,

B O L D

↓ ↓ ↓ ↓

2 15 12 4 $\Rightarrow$ 2 + 15 + 12 + 4 = 33

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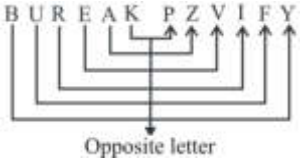
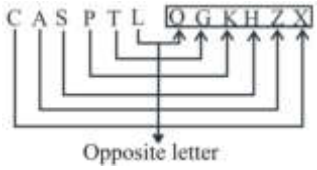
36. (d)

Just as,



Same as,



37. (a)

According to the question,

she is beautiful → mat mug bit

beautiful and water → bit cap lan

Hence, it is clear from above code that 'beautiful' will be written as 'bit'.

38. (b)

Just as,

$$67 = (6\times7)^2 = 1764$$

And,

$$93 = (9\times3)^2 = 729$$

Same as,

$$74 = (7\times4)^2 = 784$$

39. (d)

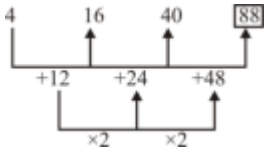
Mike, Loudspeaker and Amplifier used for recording sounds or for making voice louder, while Projector is a piece of equipment for projecting photographs, movies or computer slides onto a screen. Hence, option (d) is different one.

40. (b)

In the given diagrams, three figures are same except figure option (b). Hence, it is clear that option (b) is odd one.

41. (d)

The given series is as follows -



Hence, ? = 88

42.(a)

Given,

$$(15\ ?\ 12)\ ?\ 6\ ?\ 8 = 26$$

On putting the signs from option (a),

$$(15 - 12) \times 6 + 8 = 26$$

$$3 \times 6 + 8 = 26$$

$$18 + 8 = 26$$

$$26 = 26$$

43. (d)

Given,

$$63\ 7\ 5\ 4 = 49$$

From option (a),

$$63 \times 7 - 5 \div 4 = 49$$

$$\Rightarrow 441 - \frac{5}{4} = 49$$

$$\Rightarrow \frac{1764-5}{4} = 49 \quad = \frac{1759}{4} \neq 49$$

From option (b),

$$63 + 7 \div 5 - 4 = 49$$

$$\Rightarrow 63 + \frac{7}{5} - 4 = 49$$

$$\Rightarrow \frac{315+7-20}{5} = 49$$

$$\Rightarrow \frac{302}{5} \neq 49$$

From option (c),

$$63 + 7 - 5 \div 4 = 49$$

$$\Rightarrow 70 - \frac{5}{4} = 49$$

$$\Rightarrow \frac{280-5}{4} = 49$$

$$\Rightarrow \frac{275}{4} \neq 49$$

From option (d),

$$63 \div 7 \times 5 + 4 = 49$$

$$\Rightarrow 9 \times 5 + 4 = 49$$

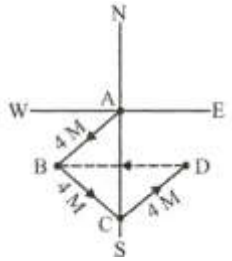
$$\Rightarrow 45 + 4 = 49$$

$$\Rightarrow 49 = 49$$

Hence option (d) is correct.

44. (c)

The sequence of Dropu's path is as follows:



So, it is clear by the figure that last place of Dropu is D and she will have to go west to reach B from D.

45. (b)

According to the question, blood relation diagram is as follows.

From the given blood relation diagram it is clear that Rahul is the son of Radha.

46. (c)

Given,

14 Q 16P4 R 7 S 10 = ?

P → ÷

Q → ×

R → +

S → –

On putting the mathematical sign,

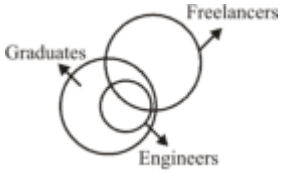
= 14 × 16 ÷ 4 + 7 – 10

= 14 × 4 + 7 – 10

= 56 + 7 – 10

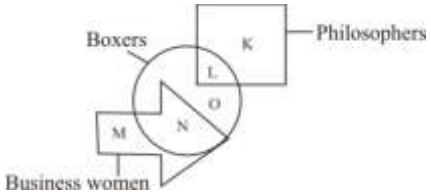
= 63 – 10 = 53

47. (a) According to the question,



Thus the given Venn diagram shows the relationship between Engineer, Graduate and Freelancer.

48. (a) According to the question,



Hence, Letter N represents boxers who are not men.

49. (d)

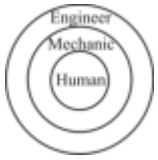
According to the question the sequence of sentence will be 2, 1, 3, 4 for meaningful and relevant paragraph.

Hence, the meaningful paragraph will be : –

Several metro lines have been planned in NCR. There are expected to reduce the problem of transportation. The Red line is the first among them. It starts from Shahdara in its initial phase and goes upto Tis - Hazari. It caters over 1 lakh commuters at present. Hopefully, the public transportation problem will not be as acute after all the metro lines are completed.

50. (b)

On drawing the Venn diagram as per statement.



Conclusion :

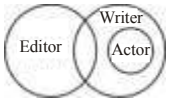
I. (✓)

II. (✓)

Hence, conclusion I and II both follows.

51. (c)

On drawing the Venn diagram as per statement.



Conclusion :

I. (✓)

II. (×)

From the above Venn-diagram only conclusion I is correct.

52. (d)

According to the above statement, neither conclusion 1 nor 2 follows.

53. (a) According to the question :-

I. (M > Q or M = Q) Correct.

II. D ≤ Q Incorrect.

III. (M = Q or M > Q) Correct.

IV. C < D Incorrect.

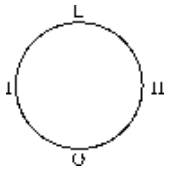
Hence, only I or III is correct.

54. (d)

According to the question it is clear from the statement that both assumption A and B are implicit.

55. (d)

From the statement 1.



To the left of H will be O. Hence only statement 1 is sufficient.

56.(d)

According to the question,

D E H R A Z U N

After arranging in alphabetical order,

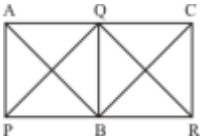
D E H R A Z U N → A D E H N R U Z

Hence, it is clear from above that there is only two vowel in the newly formed arrangement which is immediately preceded by a consonant.

57. (a)

Banning vegetarian food in India would violate the freedom of the people and it is a cheap source of protein and other minerals and many people can buy it. So, both the arguments are strong.

58. (a)



Total number of triangles in the first square = 8

Total number of triangles in the second square = 8

Other triangles in squares = (ΔABC, ΔPQR)

So, total number of triangles = (8 + 8 + 2) = 18

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59. (b)

$\because$ 2006 and 2007 both are not leap year

Hence February will be 28.

$\therefore$ 1 February 2007 $\rightarrow$ Thursday

$\downarrow -1$

1 February 2006 $\rightarrow$ Wednesday

Then, 2 February 2006 $\rightarrow$ Thursday

60. (c)

According to the question,

The central angle of the sector corresponding to the number of people migrating from Delhi

$$= \frac{30}{100} \times 360^{\circ} = 3 \times 36 = 108^{\circ}$$

61. (d)

Chanhudaro is an archaeological site belonging to the Indus Valley Civilization. This site is located 130 km south of Mohenjodaro in Sindh, Pakistan. It was first excavated by N.G. Majumdar in March 1931. It was a settlement exclusively devoted to craft production including bead making, shell cutting, metal working etc. It is the only site of Indus valley Civilisation from where curved bricks have been found.

62. (c)

With reference to the distribution of Ashokan inscriptions, Girnar site is located near Junagarh in Modern state of Gujarat. It is one of the 14 edicts of emperor Ashoka, inscribed on large boulders. These edicts convey the message of peace, communal harmony and tolerance.

63. (c)

Lingraj Temple was built in 11^{th} century AD by the Somvanshi king Yayati Keshari. It is dedicated to Lord Shiva and is considered as the largest temple of the city Bhubaneshwar (Odisha). It is built of red stone and is a classic example of Kalinga style of architecture.

64. (b)

In 1600, a group of London merchants led by Sir Thomas Smythe petitioned Queen Elizabeth I to grant them a royal charter to trade with the countries of the east, and so, the Governor and company of Merchants of London trading into the East Indies or East India Company came into existence. At the same time, as Queen Elizabeth I was signing the royal charter for East India Company, the Mughal emperor Akbar (1556 to 1605) was the ruler of India.

65. (b)

3/4 portion of the moon visible from earth is called gibbous moon. Full portion of the moon visible from earth is called full moon.

66. (a)

Paris is the largest city and the capital city of France. It is situated at the banks of Seine river and one of the most beautiful cities in the world. It is also considered to be the capital of the world's fashion and glamour.

67. (d)

Palk Strait, inlet of Bay of Bengal between southeastern India and nothern Sri Lanka. It is bounded on the south by Pamban Island (India), Adam's (Rama's) Bridge (a chain of shoals), the Gulf of Mannar and Mannar Island (Sri Lanka). It separates India and Sri Lanka.

68. (d)

The Constitution of India is republican, as it has no hereditary component. The heads of state of India are elected. "The people and their elected representatives hold Supreme power, rather than a Monarch." Since India became a free nation on August 15, 1947, it declared itself a Sovereign, Democratic and Republic state with the adoption of the Constitution on January 26, 1950. The Constitution gave the citizens of India the power to choose their own government and paved the way for democracy.

69. (d)

Under Article 123 of the Constitution, the President is empowered to issue ordinances during the prorogation period of the Parliament. The President can issue ordinance when one of the houses of the parliament is not in session. The maximum validity of an ordinance is 6 month and 6 weeks. An ordinance will expire after 6 weeks once both houses of the parliament are in session.

70. (d)

The Charter of the United Nations is the founding document of the United Nations. It was signed by 51 nations on 26 June 1945 in San Francisco, at the conclusion of the United Nations Conference on International Organization, and came into force on 24 October 1945. Recently, United Nations member states are the 193 sovereign states.

71. (a)

AstroSat is India's first multi-wavelength space observatory. This scientific satellite mission seek to understand the universe in more detail. It was launched by ISRO on 28 September, 2015 from Satish Dhawan Space Center Shri Harikota by PSLV C-30. It is India's first dedicated astronomy mission which aims to-

- Estimate the magnetic field of neutron stars, detecting new short-lived bright X-ray sources in the sky.
- Surveying a limited region of the universe in the ultraviolet region.

72. (c)

Sahitya Akademi, India's National Academy of letters, is the central institution for literary discourse, publication and promotion in the country and the only institution that undertakes literary activities in 24 Indian language, including English. Its office is New Delhi.

73. (c)
The book 'The General Theory of Employment, Interest and Money' is written by English Economist John Maynard Keynes published in February 1936.

74. (a)
Digital India is a campaign launched by the Government of India in order to ensure the electronically improved online infrastructure and by increasing Internet connectivity or making the country digitally empowered in the field of technology.It was launched on 1st July 2015. Its nine pillars includes- Broadband Highways, Universal Access to Mobile Connectivity, Public Internet Access Programme, e-Governance: Reforming Government through Technology, e-Kranti - Electronic Delivery of Services, Information for All, Electronics Manufacturing, IT for Jobs and Early Harvest Programmes.

75. (c)
Satyajit Ray was an Indian Bengali filmmaker, He directed many films, including Pather Panchali, a 1955 Bengali language epic drama film. It is an adaptation of Bibhutibhushan Bandyopadhyay's 1919 Bengali novel of the same name, and marked Ray's directorial debut. This film won eleven international prizes, including the inaugural Best Human Document award at the 1956 Cannes Film Festival.

76. (c)
Tawang Monastery is located in Tawang district of Arunachal Pradesh. It is the largest monastery in India and second largest in the world after the Potala Place in Lhasa, Tibet. It is an important pilgrim center for the followers of Buddhism. It was founded by Mera Lama Lodre Gyatso in 1680.

77.(d)
Abdul Kalam Technology Innovation National Fellowship is launched by the Department of Science and Technology (DST), Government of India, to recognize, encourage and support translational research by Indian nationals.

78. (a)
Puli Kali is a form of folk art, dance, music and drama that depicts the theme of tiger hunting. Performers are pointed like tigers and hunters in yellow, red and black, and they enact their roles to the beats of instruments like Udukku and Thakil. This peculiar event is a major attraction in one of the popular festivals in Kerala, Onam.

79.(a)
Nobel Prize for peace in 2014 was awarded jointly to Kailash Satyarthi (India) and Malala Yousafzai (Pakistan) for their struggle against the suppression of children and young people and for the right of all children to education. Mr. Satyarthi started the "Bachpan Bachao Andolan" campaign in 1980.

80. (c)
Mohan Rakesh was one of the pioneers of the Nai Kahani literary movement of the Hindi literature in the 1950. He wrote many plays, novels, stories such as 'Adhe Adure', 'Lahron ke Rajhans', 'Na Aanewala Kal', Ashadh Ka Ek Din. The play (Ashadh Ka Ek Din) recieved a Sangeet Natak Akademi Award for best play 1959.

81. (b)
Every year, the Environment Day is celebrated on 5th June. Its main objective is to create awareness among people about environment protection. The theme of 2024 was "Land Restoration, desertification and drought resilience.". The day was first started to celebrate in 1973 as remembrance of Stockholm conference 1972. Saudi Arabia was the global host of the day (5 June 2024).

82. (c)
The Man Booker International Prize in the year 2019 has been given to Oman author Jokha Alharthi for her book 'Celestial Bodies'. This award was first received by Ismail Kadare of Albania in 2005. The Man Booker International Prize 2024 was awarded to Jenny Erpenbeck of Germany for his book 'Kairos'.

83. (c)
'Mukhyamantri Behan-Beti Swavalamban Protsahan Yojana' has been started by Jharkhand state, under which such women as the age of 21 to 50 years belonging to below poverty line calegary. who are not able to take benefit of any operated pension scheme in the Jharkhand state can apply for this scheme. Under this scheme, a financial help of Rs. 1000/- will be provided to women of various communities in order to enhance and accelerate their important role in taking vital decision in the field of education, health, nutrition, empowerment and family related decisions.

84. (b)
Indian badminton star P.V. Sindhu has been appointed as the brand ambassador of Green Day's Better Nutrition brand in June, 2024. She has also invested in this company.

85. (b)

National Park	Location
Shandur National Park	Gilgit-Baltistan province, Pakistan
Anshi National Park	Karnataka
Dachigam National Park	Jammu & Kashmir
Balpakram National Park	Meghalaya

86. (b)
The term 'Hertz' was proposed in the early 1920s by German scientists to honour the 19th century German physicist Heinrich Hertz. Hertz is the SI unit of Frequency.

87. (b)
m = 1 kg
g = 10 m/s^2
h = 30 m
P.E. = mgh
Or work done by the force of gravity
= 1 × 10 × 30 = 300 Joule

88. (a)
The force of attraction between the molecules of the same substance is called cohesive force. But if there is a force of attraction between the molecules of different substances then it is called adhesive force.

89. (c)
X-rays are a form of electromagnetic radiation, similar to visible light. Unlike light, however, X-rays have higher energy and can pass through most objects, including the body. X-rays radiation is referred to as Rontgen radiation, after the German scientist Wilhelm Conrad Rontgen, who discovered it on November 8, 1895. X-rays have a wavelength in the range of 0.01–10 nm.

90. (d)
In chemistry, the substance which obtained by mixing two or more elements / compounds / substances in any proportion is called a mixture. The mixture can be separated into its initial ingredients by simple mechanical methods. The constituents present in the mixture always retain their properties. For example, a mixture of salt and sand Mixtures do not have fixed structure.

91. (a)
The hydrogen atom has one proton and one electron. The proton resides in the nucleus of the atom and the electron revolves around the nucleus. Neutron is absent in hydrogen atom.

92. (c)
If an acid or a base is mixed with water then reaction is an exothermic reaction, because it is due to hydration of constituent ions of acids and bases. Greater the extent of hydration more in exothermic nature.

93. (a)
Embryology is the branch of biology that deals with prenatal development of gametes (sex cells), fertilization, and development of embryos and fetuses. Physiology is a biological science that deals with the functions and activities of life or of living matter (such as organs, tissues, or cells) and of the physical and chemical phenomena involved. Genetics is the branch of biology concerned with the study of genes, genetic variations and heredity in organisms.

94. (d)
Xylem (plant vascular tissue) conveys water and dissolved minerals from the roots to the rest of the plant and also provides physical support. The phloem carries food downward from the leaves to the root. Xylem and phloem are complex tissues.

95. (b)
Organisms which are multicellular well-defined nucleus with cell walls are placed in Kingdom Plantae. Kingdom Plantae includes algae, bryophytes, pteridophytes, gymnosperms and angiosperms. These plants make their food through photosynthesis.

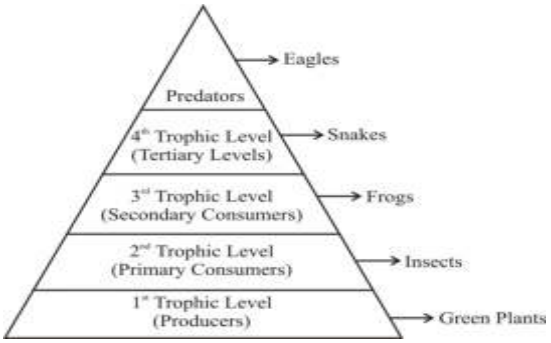
96. (d)
A crocodile baby is called a hatchling. A codfish baby is called codling, a goose baby is called gosling while a fish baby is called fingerling.

97. (b)
All respiratory organs have large and thin surface area to get enough oxygen or help with the exchange of gases. They are thin – walled for easy diffusion of gases and substances. They have rich supply of blood or the conducting fluid present in the body for transporting respiratory gases to the tissues of the body. Hence, option (b) is the right answer.

98.(c)
An integrated circuit, commonly referred to as an IC, is a microscopic array of electronic circuits and components that has been diffused or implanted onto the surface of a single crystal, or chip, of semiconducting material such as silicon. It is called an integrated circuit because the components, circuits, and base material are all made together, or integrated, out of a single piece of silicon, as opposed to a discrete circuit in which the components are made separately from different materials and assembled later. ICs range in complexity from simple logic modules and amplifiers to complete microcomputers containing millions of elements.

99. (d)
In given option RAM, Motherboard and Video card are the internal parts of the computer whereas flash drive is the external part of the computer.
Other internal parts are–
Central Processing Unit (CPU), Read Only Memory (ROM), Disk Drive, Battery, Processor, Cables, Heat sink, Hard Drive, USB port, Ethernet port, Serial Port etc. Other external parts of computer are-Microphone, Monitor, Screen, Keyboard, Speakers etc.

100. (c)
Food chain is defined as the phenomenon of transfer of energy through series of organism by successive trophic levels.
In food chain there are four chains of trophic levels. It includes producers, herbivores (primary consumers), carnivores (secondary consumers), predators (tertiary consumers).



PRACTICE SET - 3

1. $3^{71}+3^{72}+3^{73}+3^{74}+3^{75}$ is divisible by:
   (a) 8 (b) 5
   (c) 11 (d) 7

2. The sum of the digits of a two digit number is 9. Also nine times of this number is twice the number obtained by reversing the order of the digits. Find the number.
   (a) 19 (b) 18
   (c) 28 (d) 30

3. Find the difference between the greatest and the least fraction among 2/3, 3/4, 4/5, 5/6.
   (a) 3/5 (b) 1/7 (c) 1/6 (d) 2/5

4. The correct expression of $8.\overline{46}$ in the fractional form is
   (a) $\frac{84}{99}$ (b) $\frac{846}{99}$
   (c) $\frac{83}{99}$ (d) $\frac{838}{99}$

5. Which of the following fractions should be added to $\frac{5}{9}$ to obtain $\frac{11}{6}$ as the sum?
   (a) $1\frac{5}{18}$ (b) $1\frac{1}{3}$
   (c) $1\frac{5}{15}$ (d) $1\frac{7}{18}$

6. If we add 1 to the numerator and subtract 1 from the denominator of a given fraction, it becomes 1. It becomes $\frac{2}{3}$ if 1 is added to the denominator of the given fraction while the numerator is left unchanged. The fraction originally given is:
   (a) $\frac{5}{8}$ (b) $\frac{3}{8}$ (c) $\frac{1}{8}$ (d) $\frac{6}{8}$

7. The LCM of 6, 9 and x is 72. Which of the given options can be a possible value of x?
   (a) 18 (b) 12
   (c) 36 (d) 24

8. The sum of two numbers is 288 and their HCF is 16. How many pairs of such numbers can be formed?
   (a) 2 (b) 5
   (c) 4 (d) 3

9. If the ratio of two numbers is 5 : 7, and their HCF is 8, then their LCM is :
   (a) 480 (b) 580
   (c) 380 (d) 280

10. A rectangular courtyard is 18 m 72 cm long and 13 m 20 cm broad. It is to be paved with square tiles all of the same size. Find the least possible number of such tiles required.
    (a) 4292 (b) 4290
    (c) 4294 (d) 4295

11. If (m + n) : (m – n) = 7 : 3, then $(m^3 + n^3) : (m^3 – n^3)$ = ?
    (a) 133 : 117 (b) 117 : 13
    (c) 117 : 133 (d) 17 : 133

12. A number is divided in the ratio of 9 : 5 when 8 is added to each number, the ratio becomes 5 : 3 which will be the largest number among the two?
    (a) 80 (b) 72
    (c) 69 (d) 81

13. The population of a town increased by 10% and 20% in two successive years, but decreased by 25% in the third year. Find the ratio of the population in the third year to that of 3 year ago.
    (a) 100 : 99 (b) 99 : 100
    (c) 2 : 1 (d) 1 : 1

14. If the cost price of tomatoes increases by 25% per kg and Sudha wants to spend only 15% more on the tomatoes. Calculate the percentage reduction in the quantity of tomatoes get by Sudha.
    (a) 10% (b) 12%
    (c) 8% (d) 12.5%

15. If the perimeter of a triangle is 28 cm. Its internal radius is 3.5 cm. Find the area of triangle.
    (a) 49 cm^2 (b) 28 cm^2
    (c) 35 cm^2 (d) 42 cm^2

16. The area of a rectangular carpet is 120 m^2 and its perimeter is 46 m. Find the length of its diagonal.
    (a) 15 m (b) 16 m
    (c) 20 m (d) 17 m

17. P takes 50% more time than Q. If they work together, the work will be done in 18 days. In how many days will Q alone complete the work?
    (a) 30 days (b) 22 days
    (c) 24 days (d) 25 days

18. A alone can finish a work in 3 days. B alone can finish this work in 7 days. If A and B work together for 2 days, then what part of work will be left?
    (a) $\frac{1}{7}$ (b) $\frac{4}{21}$
    (c) $\frac{2}{21}$ (d) $\frac{1}{21}$

19. Two vehicles from a house moved at a speed of 25 km/h. At an interval of 20 minutes. How much more speed a woman coming from the opposite direction of the house will have to walk so that she gets a vehicle at an interval of 18 minutes.
    (a) 2 (b) $2\frac{5}{9}$
    (c) $2\frac{7}{9}$ (d) $2\frac{8}{9}$

20. A 210 m long train crosses a man walking at a speed of 4.5 km/h in the opposite direction in 12 seconds. What is the speed (in km/h) of the train?
(a) 58.5 (b) 59.5
(c) 61.5 (d) 60.5

21. A certain sum amounts to ₹16500 in 2 years at 5% p.a. simple interest. Find the sum.
(a) ₹ 14000 (b) ₹14500
(c) ₹ 15000 (d) ₹15500

22. A man deposits ₹ 500 at the beginning of each year for 2 years at 10% per annum compound annually. Find the maturity amount at the end of the 2nd year.
(a) ₹1,050 (b) ₹1,150
(c) ₹1,155 (d) ₹1,200

23. When a bicycle manufacturer reduced the selling price by 50%, the number of bicycles sold radically increased by 700%. Initially, the manufacturer was getting a profit of 140%. What is the new profit percentage?
(a) 30% (b) 10%
(c) 20% (d) 40%

24. Arvind bought 120 m cloth for ₹ 15000. He sold 45% of it at a gain of 40%, 25% of it at a loss of 10% and the remaining cloth at the cost price. His profit (in ₹) in the entire transaction is–
(a) ₹ 4075 (b) ₹ 2325
(c) ₹ 4180 (d) ₹ 2035

25. The sum of the arithmetic mean and the geometric mean of two positive numbers is equal to the difference of those numbers. Find the ratio of those numbers.
(a) 9 : 1 (b) 2 : 3
(c) 1 : 4 (d) 1 : 12

26. If the factor of $3x^4 - (a + 2)x^3 - x^2 - 4$ is (x-2), then find the value of 'a'
(a) 5 (b) -1
(c) 3 (d) 4

27. Simplify:
$\sin\theta/(1 - \cos\theta)$
(a) $\tan\theta - \sec\theta$ (b) $\operatorname{cosec}\theta + \cot\theta$
(c) $\operatorname{cosec}\theta - \cot\theta$ (d) $\tan\theta + \sec\theta$

28. In ΔPQR, QR is extended up to S so that RS = RP. If $\angle PRQ = 70^\circ$ and $\angle QPS = 110^\circ$ then find the measure of $\angle PQS$.
(a) 55° (b) 50°
(c) 65° (d) 35°

29. If mean of the following distribution is 26, then what is the value of k ?

Class	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
Frequency	8	10	k	6	12

(a) 10 (b) 1
(c) 4 (d) 8

30. Find the sum of mean, median and mode of the given data.
9, 35, 20, 25, 25, 15, 25
(a) 75 (b) 72
(c) 47 (d) 50

31. Select the option that is related to the third term in the same way as the second term is related to the first term.
Patient : Doctor :: Student: ?
(a) Monitor (b) School
(c) Teacher (d) Lecture

32. Select a word from the following four options that is related to the word 'South Africa' in the same way as the word 'Persian' is related to the word 'Iran'.
(a) Country (b) Portuguese
(c) Africa (d) English

33. Select the option that is related to the sixth letter-cluster in the same way as the first letter-cluster is related to the second letter-cluster and the third letter-cluster is related to the fourth letter-cluster.
GCN : LHS :: OQU : TVZ :: ? : KRY
(a) GNT (b) ENS
(c) DMQ (d) FMT

34. Select the number from among the options given that is related to the third number in the same way as the second number is related to the first number.
3 : 28 :: 9 : ?
(a) 81 (b) 80
(c) 729 (d) 730

35. In a certain code language, TOTAL is written as 68 and PEN is written as 35. In the same language, what will OIL be written as?
(a) 36 (b) 46
(c) 56 (d) 66

36. In a certain code language CRUDE is written as BSTED. How is MOIST written that language?
(a) LPHTS (b) NNJRU
(c) NPJTU (d) LNHRS

37. In a certain code, 'go home' is written as 'ta na' and 'nice little home' is written as 'na ja pa'. How is 'go' written in that code?
(a) ta (b) na or pa
(c) ja (d) na

38. If Charger = 60 , then Topper = ?
(a) 40 (b) 90
(c) 26 (d) 52

39. Out of the four words listed below, three are alike and one is different. Select the different one.
Jio, Vodafone, Airtel, Amazon
(a) Airtel (b) Amazon
(c) Jio (d) Vodafone

40. **Choose the figure that is different from the others.**

(a) 
(b) 
(c) 
(d) 

41. **Select the number from among the given options that can replace the question mark (?) in the following series –**
126, 217, 344, ?
(a) 470 (b) 614
(c) 513 (d) 688

42. **Select the number from among the given options that can replace the question mark (?) in the following table**

21	18	9
42	?	18
84	72	36

(a) 24 (b) 35
(c) 36 (d) 26

43. **What will be come in the place of question mark from following options?**

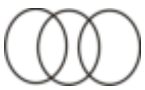
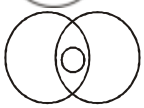
A_7	D_9	G_{11}
J_9	?	P_{13}
S_{11}	V_{13}	Y_{15}

(a) M_{11} (b) L_{12}
(c) M_{13} (d) N_{14}

44. **After coming out of her house Anita crossed a road. On reaching the other side, she turned to the right and went straight. If she is now facing South, then before crossing the road, which direction was she facing?**
(a) South (b) North
(c) West (d) East

45. **Introducing to Geeta, Bhano Said, "She is the daughter of the only one daughter of my grandmother" How is Bhanu related to Geeta choose from the following options?**
(a) Son (b) Brother
(c) Father (d) Maternal Uncle

46. **If E means '+', F means '×' G means '÷' and H means '–' then the value of 81 H 1 G 17 F 102 G 6 F 34 H 6?**
(a) 40 (b) 26
(c) 41 (d) 29

47. **Select the Venn diagram that best represents the relationship between the given set of classes.**
Hawk, Predator, Bird
(a) 
(b) 
(c) 
(d) 

48. **Which shape represents the dwarf boys who do not play badminton and who are not writers?**
(a) Shape C (b) Shape D
(c) Shape E (d) Shape G

49. **Study the given information and answer the question that follows.**
(i) Six students P, Q, R, S, T and U are in a class.
(ii) Q and R are lighter than U but taller than P.
(iii) S is taller than Q and heavier than R.
(iv) T is lighter than S but heavier than U
(v) U is taller than S.
(vi) P is lighter than T but heavier than U.
(vii) P is taller than T.
Who among the students is the shortest.
(a) P (b) R
(c) T (d) Q

50. **Statements:**
A. All bicycles are car.
B. All cars are bus.
Conclusions:
I. No bus is bicycle.
II. Some cars are bicycles.
(a) Only conclusion I follows
(b) Only conclusion II follows
(c) Either conclusion I or II follows
(d) Neither conclusion I and nor II follows

51. **Statements.**
Some crows are peacocks. All peacocks are ducks. Some ducks are pigeon
Conclusions
1. Some ducks are crows.
2. Some pigeons are peacocks.
(a) One conclusion 1 follows
(b) Either conclusion 1 or 2 follows
(c) Only conclusion 2 follows
(d) Both conclusions 1 and 2 follows

52. **Two statements are given followed by two conclusions. Considering the two statements to be true irrespective of the commonly known facts, decide which of the two conclusions follow logically from these two statements.**
Statements:
1. All hill stations have an echo-point.
2. P is a hill station.
Conclusions:
1. P has an echo-point.
2. Places other than hill stations do not have echo-points.
(a) Only conclusion 2 follows
(b) Both conclusion 1 and conclusion 2 follow
(c) Neither conclusion 1 nor conclusion 2 follows
(d) Only conclusion 1 follows

53. **Statement:**
$J \geq E > K=T, D \leq E$
Conclusion :
I, J > D
II. J ≥ D
III. E > T

(a) Only conclusion II and III are appropriate
(b) Only conclusion I and III are appropriate
(c) Only conclusion I and II are appropriate
(d) Only conclusion is appropriate

54. Consider the given statement and decide which of the given assumptions is/are implicit in the statement.

Statement :

"The Indian cricket team is expected to win the World Cup in 2019" –Mahendra Singh Dhoni.

Assumptions :

1. **Indian cricket team is good.**
2. **Indians want the Indian cricket team to win the World Cup 2019.**

(a) Neither assumption 1 nor 2 is implicit
(b) Only assumption 1 is implicit
(c) Only assumption 2 is implicit
(d) Both assumptions 1 and 2 are implicit

55. Sunita has chosen four items. How many bags will she has to buy from the counter to carry the things at home.

Statement:-

1. **Each bag can carry 2 kg of luggage.**
2. **Sunita has bought 2 kg rice.**
3. **Sunita has also bought 500g Arhar dal, 500g Moong dal and 750g Urad dal.**

(a) Statements 1, 2 and 3 all together are sufficient
(b) All statement are insufficient
(c) Both statements 2 and 3 together are sufficient
(d) Only statement 2 is sufficient

56. The position of how many letters will remain unchanged if each of the letters in the word ABDUCT is arranged in alphabetical order?

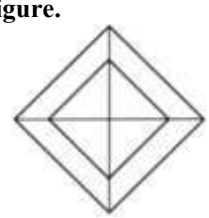
(a) 3 (b) 1
(c) 2 (d) 4

57. Select the number that can replace the question mark (?) in the following equation.

3125 of 120% – ? of 90% = 150

(a) 4000 (b) 40
(c) 400 (d) 3600

58. Find the total number of triangles in the following figure.

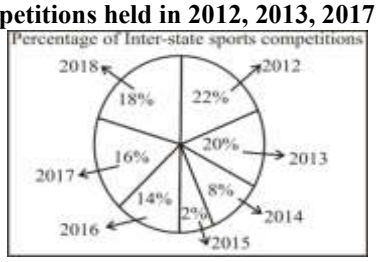


(a) 20 (b) 12
(c) 16 (d) 8

59. Assuming that it is Wednesday on 5th August 1994 then which day of the week will be on 2nd September 1995?

(a) Tuesday (b) Thursday
(c) Wednesday (d) Monday

60. The pie-chart shows the percentage of inter-Stage sports competitions in different years from 2012 to 2018. Considering the total number of inter-Stage sports competitions to be 200, find the total number of inter-Stage sports competitions held in 2012, 2013, 2017 and 2018.



(a) 154 (b) 168
(c) 152 (d) 148

61. Indus Valley civilization?

(a) Copper age civilization
(b) Iron age civilization
(c) Axis era civilization
(d) Bronze age civilization

62. Ashoka, arguably the most famous ruler of early India, conquered Kalinga. He was the grandson of _____.

(a) Samudragupta
(b) Chandragupta Maurya
(c) Prabhavati Gupta
(d) Chandragupta II

63. To which group of temple does Kandariya Mahadev Temple belong?

(a) Mahabalipuram Temple
(b) Konark Temple
(c) Ellora Cave Temple
(d) Khajuraho Temple

64. Several wars were fought between British and India to increase their control in India but which of the following war was not included in them.

(a) Anglo-Maratha (b) Anglo-Sikh
(c) Anglo - Mysore (d) Anglo-Bangla

65. What is the upper part of the earth's mantle called ?

(a) Asthenosphere (b) Lithosphere
(c) Stratosphere (d) Troposphere

66. Baguio city is also known as "Pines City". It is situated in which country?

(a) India (b) Philippines
(c) Brazil (d) Belgium

67. Name the strait which separates Tamil Nadu of India and Mannar of Sri Lanka.

(a) Sunda strait (b) Bass strait
(c) Palk strait (d) Hudson strait

68. Who was the first President of constituent Assembly of Independent India?

(a) Dr B. R. Ambedkar
(b) Pandit Jawaharlal Nehru
(c) Dr Sachchidananda Sinha
(d) Dr. Rajendra Prasad

69. Why are such remarks made in the context of the President's Pocket veto power that the Indian President's Pocket is larger than that of the American President?
(a) Power of the Indian President not to take any action either positive or negative on the Bill for an indefinite period.
(b) The President of the United States has to send the Bill back for reconsideration within 10 days whereas the Indian President has 30 days.
(c) The President of the United States has to send the Bill back for reconsideration within 10 days whereas the Indian President has 20 days.
(d) The President of the United States, after having a bill for more than 10 days, cannot send it back for reconsideration, which is not the case with the Indian President.

70. The UN system is based on six principal organs. Which of the following organs does NOT come under it?
(a) Food and Agriculture Organization of the United Nations
(b) The International Court of Justice
(c) The Economic and Social Council
(d) The UN Secretariat

71. Name the centre in India which is used for launching satellites.
(a) North Eastern Space Applications Centre (NESAC)
(b) Barren Island
(c) ISTRAC ground station
(d) Wheeler Island

72. Which is the first and the oldest intergovernmental organization?
(a) International Labour Organization
(b) United Nations
(c) Council of Europe
(d) Central Commission for Navigation on the Rhine

73. A cost incurred in the past and that cannot be recovered in the future is called _____
(a) economic cost (b) floating cost
(c) sunk cost (d) prime cost

74. The Reserve Bank of India was established on 1 April ____ with a share capital of Rs. 5 crore.
(a) 1940 (b) 1935
(c) 1945 (d) 1930

75. Who led India's first expedition to the Antarctic in 1982?
(a) Dr. APJ Abdul Kalam (b) Dr. Paramjit Singh
(c) Dr. Sankar Chatterjee (d) Dr. S.Z. Qasim

76. Kurukshetra, the famous battle field mentioned in epic Mahabharata is located near ____.
(a) Rawalpindi (b) Meerut
(c) New Delhi (d) Ambala City

77. Where is the Central Potato Research Institute of India located?
(a) Shimla (b) Delhi
(c) Lucknow (d) Ranchi

78. Which cultural festival of India is a ten-day festival of classical dance, folk art and light music, and is held every year between February and March at Shilpgram?
(a) Taj Mahotsav
(b) Hampi Dance Utsav
(c) Natyanjali Utsav
(d) Nishagandhi Festival

79. Rabindranath Tagore won the Nobel Prize for Literature for which book?
(a) Gora (b) Gitanjali
(c) Gitabitan (d) Sanchayita

80. 'Durgeshnandini' was written by:
(a) Premchand
(b) Chandu Menon
(c) Rabindranath Tagore
(d) Bankim Chandra Chattopadhyay

81. On which date is International Yoga day celebrated ?
(a) 21 May (b) 21 June
(c) 5 June (d) 1 May

82. For excellence in the field of medical services, which of the following awards is given ?
(a) Daly Memorial Award
(b) Dhanvantari Award
(c) Shanti Swarup Bhatnagar Award
(d) Borlaug Award

83. What is the ranking of India in the 'Global Energy Transition Index 2024' released by the World Economic Forum on 19 June 2024 ?
(a) 60^{th}
(b) 62^{th}
(c) 63^{th}
(d) 64^{th}

84. Where has a new species of blue ants been discovered recently ?
(a) Assam
(b) Meghalaya
(c) Arunachal Pradesh
(d) Gujarat

85 Chail Wildlife Sanctuary is situated in –
(a) Delhi (b) Uttarakhand
(c) Punjab (d) Himachal Pradesh

86. Match the following –
(1) Magnetic flux density - (a) Tesla
(2) Self inductance - (b) Weber
(3) Magnetic flux - (c) Henry
Match –
(a) 1-b, 2-c, 3-a (b) 1-c, 2-a, 3-b
(c) 1-a, 2-b, 3-c (d) 1-a, 2-c,3-b

87. The rate of change of momentum of an object is proportional to the applied unbalanced force in the direction of the force. This rule is known as :

(a) Newton's First Law of Motion
(b) Newton's Fourth Law of Motion
(c) Newton's Second Law of Motion
(d) Newton's Third Law of Motion

88. A tank, filled partially with a liquid, is subjected to a uniform horizontal acceleration. Which of the following is true for the surface of liquid in the tank?
(a) The surface of the fluid falls in the direction of motion and rises towards the back of the tank
(b) The surface of the fluid falls only at the center of the tank
(c) The surface of the fluid is fixed horizontally
(d) The surface of the fluid rises in the direction of motion and falls towards the back of the tank

89. If the frequency of a wave increases, what will be the effect on its wave length?
(a) It increases
(b) It stays the same
(c) It decreases
(d) There is no connection between the two

90. What is the name of the process in which gas is directly converted into a solid?
(a) Sublimation (b) Deposition
(c) Condensation (d) Evaporation

91. How many neutrons are present in Protium?
(a) 7 (b) 2
(c) 4 (d) 0

92. The effect of the acid caused by ant bites can be neutralised by rubbing moist baking soda or ____ solution, which contains Zinc carbonate.
(a) Behenyl Alcohol
(b) Calamine
(c) Caprylyl Glycol
(d) Benzethonium chloride

93. What is a branch of science that deals with life or the possibilities of life beyond the earth?
(a) Entomology (b) Exobiology
(c) Mycology (d) Paleontology

94. Which of the following elements is a versatile element that forms the basis for all living organisms and many of the things we use?
(a) Carbon (b) Antimony
(c) Barium (d) Curium

95. Which of the following is the basic unit of classification of living organisms?
(a) Genus (b) Order
(c) Species (d) Family

96. What is specific feature about Sword-billed hummingbird?
(a) It is the smallest bird in the world.
(b) Its beak is longer than rest of its body.
(c) It lives only in Antarctica.
(d) It can not fly.

97. Trachea is a part of the _____ system of the human body.
(a) Cardiac (b) Respiratory
(c) Excretory (d) Digestive

98. Which of the following is not true about backup?
(a) Exact copy of computer files
(b) It is part of the business continuity plan
(c) PC does not require regular backup
(d) Backups are more beneficial on off sight and on sight

99. Arrange in increasing order - Megabyte, Terabyte, Kilobyte, Gigabyte.
(a) Megabyte, Terabyte, Gigabyte, Kilobyte
(b) Kilobyte, Gigabyte, Megabyte, Terabyte
(c) Kilobyte, Megabyte, Gigabyte, Terabyte
(d) Kilobyte, Megabyte, Terabyte, Gigabyte

100. Aquarium is a pot in which live fish and aquatic plants are kept. Which of the following is correct about Aquarium?
(a) It is a man made ecosystem.
(b) It is a natural ecosystem.
(c) It is not an ecosystem.
(d) It can be called only a species.

SOLUTION : PRACTICE SET- 3

ANSWER KEY

1. (c)	11. (a)	21. (c)	31. (c)	41. (c)	51. (a)	61. (d)	71. (d)	81. (b)	91. (d)
2. (b)	12. (b)	22. (c)	32. (d)	42. (c)	52. (d)	62. (b)	72. (d)	82.(b)	92. (b)
3. (c)	13. (b)	23. (c)	33. (d)	43. (a)	53. (a)	63. (d)	73. (c)	83. (c)	93. (b)
4. (d)	14. (c)	24. (b)	34. (d)	44. (d)	54. (b)	64. (d)	74. (b)	84. (c)	94. (a)
5. (a)	15. (a)	25. (a)	35. (a)	45. (b)	55. (a)	65. (a)	75. (d)	85. (d)	95. (c)
6. (d)	16. (d)	26. (c)	36. (a)	46. (c)	56.(c)	66. (b)	76. (d)	86. (d)	96. (b)
7. (d)	17. (a)	27. (b)	37. (a)	47. (d)	57. (a)	67. (c)	77. (a)	87. (c)	97. (b)
8. (d)	18. (d)	28. (d)	38. (b)	48.(b)	58. (c)	68. (d)	78. (a)	88. (a)	98.(b)
9. (d)	19. (c)	29. (c)	39. (b)	49. (c)	59. (b)	69. (a)	79. (b)	89. (c)	99. (c)
10. (b)	20. (a)	30. (b)	40. (c)	50. (b)	60. (c)	70. (a)	80. (d)	90. (b)	100. (a)

SOLUTION

1. (c)

$3^{71}+3^{72}+3^{73}+3^{74}+3^{75}$

$= 3^{71}\left(3^0+3^1+3^2+3^3+3^4\right)$

$= 3^{71}(1+3+9+27+81)$

$= 3^{71}\times 121$

$= 3^{71}\times 11^2$

Hence, given series will be divisible by 11.

2. (b)

Let the tens digit is x and the unit digit is y.

$\therefore$ The number = 10x + y

According to the first condition,

$x + y = 9$ .....(i)

According to the second condition,

$(10x + y) \times 9 = (10y + x) \times 2$

$90x + 9y = 20y + 2x$

$88x = 11y$

$y = 8x$

Putting the value of y in equation (i),

$x + 8x = 9$

$x = 1$

Putting the value of x in equation (i),

$1 + y = 9$

$y = 8$

Hence, the number = 10x + y

$= 10 \times 1 + 8 = 18$

3. (c)

From question,

$\frac{2}{3} = 0.66$ (Least fraction)

$\frac{3}{4} = 0.75$

$\frac{4}{5} = 0.8$

$\frac{5}{6} = 0.83$ (Greatest fraction)

Hence, the required difference $= \frac{5}{6}-\frac{2}{3} = \frac{5-4}{6} = \frac{1}{6}$

4. (d)

$8.\overline{46}$

$= 8+\frac{46}{99} = \frac{838}{99}$

5. (a)

Let the fraction to be added is $= \frac{x}{y}$

According to the question,

$\frac{5}{9}+\frac{x}{y} = \frac{11}{6}$

$\frac{x}{y} = \frac{11}{6}-\frac{5}{9}$

$= \frac{33-10}{18}$

$\frac{x}{y} = \frac{23}{18}$

or $\frac{x}{y} = 1\frac{5}{18}$

6. (d)

Let the fraction be $\frac{x}{y}$

According to first condition,

$\frac{x+1}{y-1} = 1$

$x + 1 = y - 1$

$x - y = -2$ ..... (i)

According to second condition,

$\frac{x}{y+1} = \frac{2}{3}$

$3x = 2y + 2$

$3x - 2y = 2$ ..... (ii)

On multiplying by 3 in eq. (i) and substracting eq. (ii) -

$-y = -8$

$\therefore y = 8$

$x = -2 + 8$ [$\therefore$ From eq. (i)]

$x = 6$

Hence the original fraction $= \frac{x}{y} = \frac{6}{8}$

7. (d)

LCM = 72

$= 2 \times 2 \times 2 \times 3 \times 3$

Number = 6, 9, x

$6 = 2 \times 3$

$9 = 3 \times 3$

HCF = 3

Number $x = \frac{72}{3}$

Hence, it is clear that x = 24

8. (d)

Let number is 16x and 16y

According to the question,

$16(x + y) = 288$

$x + y = 18$

$1 + 17 = 18$

$5 + 13 = 18$

$7 + 11 = 18$

Hence 3 pairs can be formed.

9. (d)

Let the two numbers are 5x and 7x respectively.

Given-

HCF = 8

Ist Number = 5 × 8 = 40

IInd Number = 7 × 8 = 56

By formula - Ist Number × IInd Number = HCF × LCM

40 × 56 = 8 × LCM

LCM = 40 × 7

= 280

10. (b)

Given that,

Length (l) = 18 m 72 cm = 1872 cm

Broad (b) = 13 m 20 cm = 1320 cm

For minimum number of tiles, we have to calculate HCF of 1872 and 1320.

$1872 = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 13$

$1320 = 2 \times 2 \times 2 \times 3 \times 5 \times 11$

$\therefore$ HCF = 2 × 2 × 2 × 3 = 24 cm

Therefore, the maximum size of the tile should be square tile of side 24 cm.

So, required of minimum tiles

$$= \frac{1872 \times 1320}{24 \times 24} = 78 \times 55$$

$$= 4290$$

11. (a)

Given,

$$\frac{m+n}{m-n} = \frac{7}{3}$$

On putting,

m + n = 7 and m – n = 3

m = 5 and n = 2

then, $\frac{m^3+n^3}{m^3-n^3} = \frac{(5)^3+(2)^3}{(5)^3-(2)^3}$

$= \frac{125+8}{125-8}$

$\frac{m^3+n^3}{m^3-n^3} = \frac{133}{117}$

Hence, $(m^3 + n^3) : (m^3 – n^3) = 133 : 117$

12. (b)

Let the number is 9x and 5x respectively.

According to the question,

$$\frac{9x+8}{5x+8} = \frac{5}{3}$$

27x + 24 = 25x + 40

2x = 40 – 24

2x = 16

x = 8

So, the largest number = 9 × 8 = 72

13. (b)

Let the population of the town is x.

Population after three years,

$$x \times \frac{(100+10)}{100} \times \frac{(100+20)}{100} \times \frac{(100-25)}{100}$$

$$x \times \frac{110}{100} \times \frac{120}{100} \times \frac{75}{100} = \frac{99x}{100}$$

$$\frac{\text{Population in third year}}{\text{Population before three years}} = \frac{\frac{99x}{100}}{x}$$

$$= \frac{99x}{100} \times \frac{1}{x} = \frac{99}{100} = 99:100$$

14. (c)

Let the initial price of tomatoes = x ₹/ kg

Price after 25% increase $= x \times \frac{125}{100} = \frac{5x}{4}$ ₹/ kg

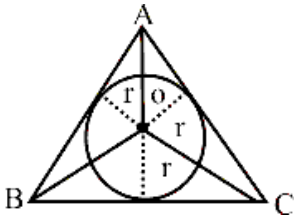
Expenditure on tomatoes by Sudha $= x \times \frac{115}{100} = \frac{23x}{20}$

So, the quantity of tomatoes $= \frac{\frac{23x}{20}}{\frac{5x}{4}} = \frac{23x \times 4}{20 \times 5x} = \frac{23}{25}$ kg

So, the decrease quantity of the tomatoes $= 1 - \frac{23}{25} = \frac{2}{25}$ kg

$\therefore$ Required decrease % $= \frac{\frac{2}{25}}{1} \times 100 = 8\%$

15. (a)



Area of ΔABC = Area of ΔOBC + Area of ΔOAC + Area of ΔOAB

$$= \frac{1}{2} \times r \times BC + \frac{1}{2} \times r \times AC + \frac{1}{2} \times r \times AB$$

$$= \frac{1}{2} \times r \times (BC + AC + AB)$$

$$= \frac{1}{2} \times 3.5 \times 28 = 49 \text{ cm}^2$$

16. (d)

Area of rectangle = $\ell \times b$

$\ell \times b = 120$ ..... (i)

Perimeter of rectangle = 2 (ℓ + b)

$(\ell + b) = 23$ ..... (ii)

Diagonal of rectangle $= \sqrt{l^2 + b^2}$

From equation (i) and (ii)–

$(\ell + b)^2 = \ell^2 + b^2 + 2\ell \times b$

$(23)^2 = \ell^2 + b^2 + 2 \times 120$

$529 - 240 = \ell^2 + b^2$

$289 = \ell^2 + b^2$

$\ell^2 + b^2 = 289$

Diagonal = 17 m

17. (a)

Let the time taken by Q = x days

Then time taken by P = 1.5x days

One day work of (P + Q)

$$\frac{1}{x}+\frac{1}{1.5x}=\frac{1}{18}$$

$$\frac{1.5+1}{1.5x}=\frac{1}{18}$$

$$\frac{2.5}{1.5x}=\frac{1}{18}$$

$$x=\frac{18\times 2.5}{1.5}=30$$

So Q alone will complete that work in 30 days.

18. (d)

One day work of A $= \frac{1}{3}$ part

One day work of B $= \frac{1}{7}$ part

One day work of both (A + B) $= \left(\frac{1}{3}+\frac{1}{7}\right)$

$$=\frac{7+3}{21}=\frac{10}{21}\text{ part}$$

Two days work of (A + B) $= \frac{10\times 2}{21}=\frac{20}{21}$ part

So, remaining part of the work $= 1-\frac{20}{21}$

$$=\frac{1}{21}\text{ part}$$

19. (c)

Distance covered by vehicle in 20 minutes

Distance = Speed × Time

$$=25\times\frac{20}{60}\text{ km.}$$

$$=25\times\frac{1}{3}=\frac{25}{3}\text{ km.}$$

Let the speed of woman = x Km./hr.

∴ From question,

$$\frac{\frac{25}{3}}{25+x}=\frac{18}{60}$$

$$\Rightarrow \quad \frac{25}{3(25+x)}=\frac{18}{60}$$

$$\Rightarrow \quad \frac{25}{75+3x}=\frac{18}{60}$$

$$\Rightarrow \quad \frac{25}{75+3x}=\frac{3}{10}$$

$$\Rightarrow \quad 250-225=9x$$

$$\Rightarrow \quad 25=9x$$

$$\Rightarrow \quad x=\frac{25}{9}$$

Hence speed of woman $= 2\frac{7}{9}$ Km./hr.

20. (a)

Let the speed of train is x km/h

According to the question,

$$\text{Speed}=\frac{\text{Distance}}{\text{Time}}$$

$$\frac{12}{3600}=\frac{\frac{210}{1000}}{4.5+x}$$

$$\Rightarrow \frac{4.5+x}{300}=\frac{210}{1000}$$

$$\Rightarrow x=\frac{210\times 300}{1000}-4.5$$

$\Rightarrow 63 - 4.5$

$\Rightarrow 58.5$ km/h

21. (c)

Given that,

Total amount = ₹16500

Rate = 5% annual

Time = 2 years

Principal = ?

Let the Principal be ₹ P

Then, $P+\frac{P\times R\times T}{100}=16500$

$$P+\frac{P\times 5\times 2}{100}=16500$$

$$\frac{11P}{10}=16500$$

P = ₹ 15000

22. (c)

Amount at end of first year $= 500\times\left(1+\frac{10}{100}\right)^1$

$$=500\times\frac{11}{10}=₹550$$

Principal for second year $= 500+550 = ₹1050$

Amount at end of second year $= 1050\times\left(1+\frac{10}{100}\right)^1$

$$=1050\times\frac{11}{10}=₹1155$$

So maturity amount at end of second year = ₹1155

23. (c)

Let the cost price of 1 bicycle = Rs. 100

Initial profit = 140% of 100

$= \frac{140}{100} \times 100$

= Rs. 140

$\therefore$ Selling price = CP + Profit

= 100 + 140

= Rs. 240

New, selling price = 50% of 240

$= 240 \times \frac{50}{100}$

= Rs. 120

Number of bicycle sold in SP = 1 + 700%

$= 1 + \frac{700}{100}$

= 8 units

$\therefore$ Net SP = 120 × 8 = 960

Net CP = 100 × 8 = 800

New profit% = $\frac{960-800}{800} \times 100 = 20\%$

24. (b)

Cost price of cloth = ₹15000

Selling price of 45% part of cloth = $15000 \times \frac{45}{100} \times \frac{140}{100}$

= ₹9450

Selling price of 25% part = $15000 \times \frac{25}{100} \times \frac{90}{100}$

= ₹3375

Selling price of remaining 30% part of cloth

$= 15000 \times \frac{30}{100} \times \frac{100}{100}$

= ₹4500

Profit = Selling price – Cost price

= (9450 + 3375 + 4500) – 15000

= 17325 – 15000

= ₹ 2325

25. (a)

Let the number be a and b

Arithmetic mean of two positive number = $\frac{a+b}{2}$

Geometric mean = $\sqrt{ab}$

$\frac{a+b}{2} + \sqrt{ab} = b - a$

$a + b + 2\sqrt{ab} = 2(b - a)$

$\left(\sqrt{a}\right)^2 + \left(\sqrt{b}\right)^2 + 2\sqrt{a.b} = 2\left[\left(\sqrt{b}\right)^2 - \left(\sqrt{a}\right)^2\right]$

$\left(\sqrt{a} + \sqrt{b}\right)^2 = 2\left(\sqrt{b} - \sqrt{a}\right)\left(\sqrt{b} + \sqrt{a}\right)$

$\sqrt{a} + \sqrt{b} = 2\sqrt{b} - 2\sqrt{a}$

$3\sqrt{a} = \sqrt{b}$

$\frac{\sqrt{a}}{\sqrt{b}} = \frac{1}{3}$

Squaring on both sides,

$\frac{a}{b} = \frac{1}{9}$

So, ratio of number = 9 : 1

26. (c)

Given -

Factor of $3x^4 - (a + 2)x^3 - x^2 - 4 = (x - 2)$

$\because$ x -2, is a factor then it will satify the eq^n.

$\therefore \quad x - 2 = 0 \Rightarrow x = 2$

$\Rightarrow 3 \times (2)^4 - (a + 2) \times (2)^3 - (2)^2 - 4 = 0$

$\Rightarrow 3 \times 16 - (a + 2) \times 8 - 4 - 4 = 0$

$\Rightarrow 48 - 8a - 16 - 8 = 0$

$\Rightarrow 24 - 8a = 0$

$\Rightarrow 8a = 24$

$\Rightarrow a = \frac{24}{8}$

$\Rightarrow \boxed{a = 3}$

27. (b)

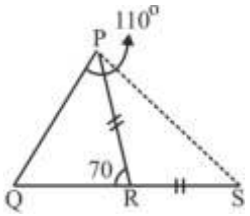
$\frac{\sin\theta}{1-\cos\theta} = \frac{\sin\theta(1+\cos\theta)}{(1-\cos\theta)(1+\cos\theta)}$

(Rationalising the numerator and the denominator)

$= \frac{\sin\theta\,(1+\cos\theta)}{1-\cos^2\theta} = \frac{\sin\theta(1+\cos\theta)}{\sin^2\theta}$

$= \frac{1+\cos\theta}{\sin\theta} = \frac{1}{\sin\theta} + \frac{\cos\theta}{\sin\theta} = \text{cosec}\,\theta + \cot\theta$

28. (d)



$\because \angle PRQ + \angle PRS = 180°$ ..... (Linear pair)

$\therefore \angle PRS = 180° - 70° = 110°$

And in ΔPRS,

$\because$ PR = RS ..... (Given)

$\therefore \angle RSP = \angle RPS$ ..... (i)

(The angle opposite to equal side will be equal)

and $\angle PRS + \angle RSP + \angle RPS = 180°$ ..... (The sum of the three interior angles of a triangle is 180^0.)

$\because \angle RSP = \angle RPS$

So, $2\angle RSP = 180° - 110° = 70°$ ($\because \angle PRS = 110°$)

$\angle RSP = \frac{70°}{2} = 35° = \angle RPS$

Again in ΔPQS

$\angle PQS = 180° - (110°+35°)$

$= 180° - 145° = 35°$

Hence, $\angle PQS = 35°$

29. (c)

According to the question,

Class	Midpoint (x)	Frequency (f)	fx
0-10	5	8	40
10-20	15	10	150
20-30	25	k	25k
30-40	35	6	210
40-50	45	12	540

$$\text{Mean} = \frac{\sum fx}{\sum f} = \frac{40+150+25k+210+540}{8+10+k+6+12}$$

$$26 = \frac{940+25k}{36+k}$$

$936 + 26k = 940 + 25k$

$k = 4$

30. (b)

$$\text{Mean} = \frac{9+35+20+25+25+15+25}{7}$$

$$= \frac{154}{7} = 22$$

On writing the data in ascending order

9, 15, 20, 25, 25, 25, 35

N = 7 terms (odd)

$$\text{Median} = \left(\frac{N+1}{2}\right)^{th} \text{term}$$

$$= \left(\frac{7+1}{2}\right) \text{term} = 4 \text{ term}$$

Median = 25

Mode = The number that occurs the highest number of times

= 25

Sum of mean, median and mode = 22 + 25 + 25

= 72

31. (c)

Just as,, a sick person goes to the doctor for diagnosis. Similarly a student goes to the teacher to acquire knowledge.

32. (d)

Just as, Persian language is spoken in Iran. Similarly, English is spoken in South Africa.

33. (d)

Just as,

$G \xrightarrow{+5} L$

$C \xrightarrow{+5} H$

$N \xrightarrow{+5} S$

and,

$O \xrightarrow{+5} T$

$Q \xrightarrow{+5} V$

$U \xrightarrow{+5} Z$

Same as,

$F \xrightarrow{+5} K$

$M \xrightarrow{+5} R$

$T \xrightarrow{+5} Y$

34. (d)

Just as,,

$3 : 28$

$\downarrow$

$(3)^3 + 1 = 28$

Similarly,

$9 : ?$

$\downarrow$

$(9)^3 + 1 = 729 + 1$

$= 730$

Therefore, $\boxed{? = 730}$

35. (a)

Just as,

T O T A L = 68

20+15+20+1+12 = 68

And,

P E N = 35

16+05+14 = 35

Same as,

O I L = 36

15+09+12 = 36

Hence, $\boxed{OIL = 36}$

36. (a)

Just as,

C R U D E

−1 +1 −1 +1 −1

B S T E D

Similarly,

M O I S T

−1 +1 −1 +1 −1

L P H T S

37. (a)

According to the question,

go home → ta na

nice little home → na ja pa

Hence, It is clear from above code that code of 'go' is written as 'ta'.

38. (b)

Just as,

Charger → 3 + 8 + 1 + 18 + 7 + 5 + 18 = 60

Similarly,

Topper → 20 + 15 + 16 + 16 + 5 + 18 = 90

39. (b)

Amazon is an online shopping portal while Airtel, Jio and Vodafone are telecom companies. Hence, option (b) is odd.

40. (c)

In option figure (c), on the place of multiply signs, addition sign is given whereas in the other figures all four sign are same.

41. (c)

Given series is –

$$\underset{\downarrow}{126},\ \underset{\downarrow}{217},\ \underset{\downarrow}{344},\ \underset{\downarrow}{513}$$
$$(5^3+1),\ (6^3+1),\ (7^3+1),\ (8^3+1)$$

$\Rightarrow\ ? = 513$

42. (c)

Just as, And,

21 × 2 = 42 9 × 2 = 18

42 × 2 = 84 18 × 2 = 36

Similarly,

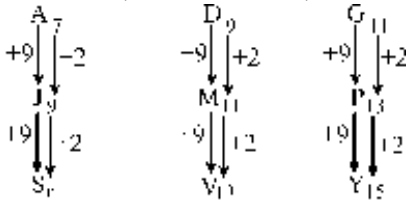
18 × 2 = 36

36 × 2 = 72

Hence ? = 36

43. (a)

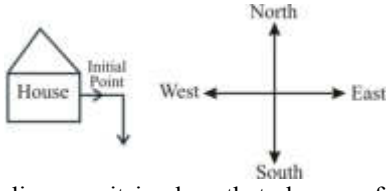
Just as, And, Same as,



Hence, $? = M_{11}$

44. (d)

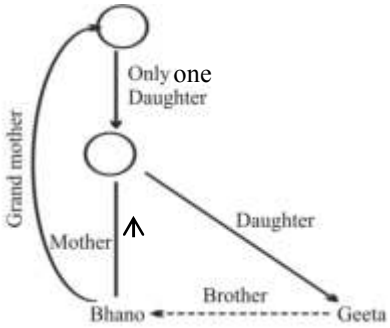
The path of Anita is as follows:



From the diagram, it is clear that she was facing East direction before crossing the road.

45. (b)

According to the question blood relation diagram is as follows –



It is clear from the above diagram that Bhanu is a brother of Geeta.

46. (c)

Given,

E → + F → ×

G → ÷ H → –

81 H1G 17F 102G 6F 34 H 6 (original term)

= 81 – 1÷ 17×102÷6×34-6 (The position after the symbol changed)

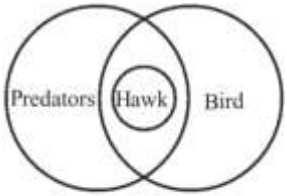
$$= 81 - \frac{1}{17} \times 102 \div 6 \times 34 - 6$$

$$= 81 - \frac{6}{6} \times 34 - 6$$

$$= 81 - 34 - 6 = 41$$

47. (d)

The best relationship among Hawk, Predator and Bird is as follows -



Hence, option (d) will be correct.

48.(b)

It is clear from the above diagram that letter D represents the dwarf boys who do not play badminton and who are not writers also.

49. (c)

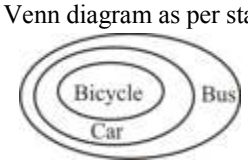
The order of length of students is as follows–

U > S > Q/R > R/Q > P > T

It is clear from above sequence that T is shortest.

50. (b)

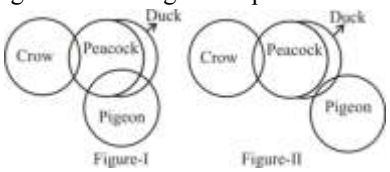
On drawing the Venn diagram as per statement.



Hence, only conclusion II follows.

51. (a)

On drawing the Venn diagram as per statement.



From the above Venn-diagram only conclusion I follows.

52. (d)

It is clear from the statement that all hill stations have an echo-point. If P is a hill station then there must be a echo-point.

Hence, conclusion 1 logically follows from the statement whereas there is not mention about other places in the statement. Hence, conclusion 2 does not follow.

53. (a)

From, $J \geq E > K=T,\ D \leq E$

Conclusion:

I. $J > D$ (×)

II. $J \geq D$ (✔)

III. $E > T$ (✔)

It is clear that only conclusion II and III follows.

54. (b)

According to the question it is clear from the statement that only assumption 1 is implicit.

55. (a)

∵ Capacity of each bag = 2 kg

∵ Total quantity of Arhar dal, Moong dal and Urad dal = 500g + 500g + 750g = 1750g

Hence, total number of required bags = 1 + 1 = 2

Number of required bag for 2 kg rice = 1

Hence, the statement, 1, 2 and 3 all are together sufficient to answer question.

56.(c)

On arranging the given letters in alphabetical order,

A	B	D	U	C	T
↓	↓	↓	↓	↓	↓
A	B	C	D	T	U

Hence, it is clear from above that only two letter will remain unchanged.

57. (a)

3125 of 120% – ? of 90% = 150

$$3125 \times \frac{120}{100} = 150 + ? \times \frac{90}{100}$$

$3125 \times 120 = 15000 + ? \times 90$

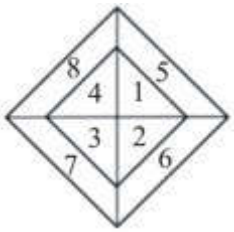
$? \times 90 = 375000 - 15000$

$? \times 90 = 360000$

$$? = \frac{360000}{90} = 4000$$

Hence, ? = 4000

58. (c)



No. of triangles.

= 1, 2, 3, 4, (1,2),(2,3),(3,4),(4,1), (1,5), (2,6), (3,7), (4,8), (1,2,5,6), (3,4,7,8), (2,3,6,7), (1,4,5,8)

= 16

Hence, total no. of triangles = 16

59. (b)

Given,

5 August 1994 → Wednesday

2 September 1995 → ?

Neither 1994 nor 1995 is a leap year

∴ From 5 Aug 1994 to 5 Aug 1995 = Wednesday + 1 day = Thursday

Number of odd days from 5 August to 2 September, 1995.

$$\Rightarrow \quad \frac{26+2}{7} = 0 \text{ (odd days)}$$

Hence, Thursday will be on 2nd September 1995.

60. (c)

Number of inter-Stage sports competition in 2012 = $200 \times \frac{22}{100} = 44$

Number of inter-Stage sports competition in 2013 = $200 \times \frac{20}{100} = 40$

Number of inter-Stage sports competition in 2017 = $200 \times \frac{16}{100} = 32$

Number of inter-Stage sports competition in 2018 = $200 \times \frac{18}{100} = 36$

∴ Total number of inter-Stage sports held in 2012, 2013, 2017 & 2018 = 44 + 40 + 32 + 36 = 152

61. (d)

The Indus Valley Civilization is also called the Bronze age civilization. The first metal used in the this civilization was a mixture of copper and tin. 1400 centers of Indus Valley Civilization have been discovered, out of which 925 centers are in India. This Civilization was widespread around Indus River and its tributaries.

62. (b)
The famous war of Kalinga was fought between Ashoka and Kalinga King (Orissa) in 261 BCE. Emperor Ashoka was the son of the Mauryan ruler Bindusara and the grandson of Chandragupta Maurya. This war is described in the 13th inscription of Emperor Ashoka and this war was fought after 8 year of Emperor Ashoka coronation.

63. (d)
The Kandariya Mahadev Temple is located at Khajuraho. It was built by Dhangadev. It is basically a Shiva temple, whose construction period is 999 AD. The Khajuraho Group of monuments is a group of Hindu and Jain temple architecture in Central India. The Khajuraho Group of Monuments has been listed as a UNESCO World Heritage Site since 1986.

64. (d)
Anglo-Maratha, Anglo-Sikh and Anglo-Mysore wars were fought between British and India to increase their control in India but Anglo Bangla war was not included between them. The Battle of Plassey was a major battle between Britisher's & Nawab of Bengal Siraj-Ud-Daulah took place on 23 June 1757 at Plassey, Bengal in which Britishers had defeated the Nawab.

65. (a)
Asthenosphere is the part of upper mantle located below the crust of the Earth. The asthenosphere is a mechanically weak layer beneath the lithosphere characterized by low seismic wave velocities and high attenuation. Convention currents generated within the asthenosphere push magma upward through volcanic events and spreading centres to create new crust.

66. (b)
Baguio city is also knwon as 'Pines City' because of pines tree forests are found abundantly here. Baguio city is located on the island of Luzon in the Philippines. The city of Baguio is known as the summer capital of Philippines. This city is famous for its beauty and well-planned development.

67. (c)

Strait	**Geographical Location**
Palk Strait	India & Sri Lanka
Sunda Strait	Sumatra & Java Islands
Bass Strait	Tasman Sea & South Sea
Hudson Strait	Bay of Hudson & Atlantic Ocean

68. (d)
The Constitution was framed by the Constituent Assembly of India, established by the members of the provincial assemblies elected by the people of India. Dr Sachchidananda Sinha was the first president (Temporary) of the Constituent Assembly. Later, Dr Rajendra Prasad was elected its president. Dr BR Ambedkar, the chairman of its Drafting Committee, is considered the chief architect of the Indian Constitution. Union Constitution Committee was led by Jawaharlal Nehru.

69. (a)
The power of the President not to act upon the bill is termed as pocket veto. The pocket veto of the Indian President is larger than that of the American President. This is said to be because the President of India has the power not to take any action either positively or negatively on a bill for an indefinite period other than the money bill. The first use of pocket veto power was made in 1986 on the Indian Post Office Bill passed by Parliament, on which no decision was taken by the then President Giani Zail Singh.

70. (a)
Food and Agriculture Organization of the United Nations is not a part of the United Nations six principal organs. It is a specialized agency of the United Nations that leads international efforts to defeat hunger. Its headquarters is in Rome, Italy. Other than this, the United Nations (UN) is an international organization founded in 1945. It is currently made up of 193 Member states. Its mission and work guided by the purposes and principles contained in its founding charter and implemented by its various organs and specialized agencies
The main organs of the UN are:
(1) The General Assembly
(2) The Economic and Social Council
(3) The Trusteeship Council
(4) The International Court of Justice
(5) The UN Secretariat.
(6) Security Council

71. (d)
The Integrated Test Range missile testing facility is located on Dr Abdul Kalam Island, formerly known as wheeler Island, an island off the coast of Odisha. Missiles like Agni, Prithvi, Brahmos, Astra, Nirbhay etc are tested here.

72. (d)
Central Commission for Navigation on the Rhine (CCNR) is the first and the oldest intergovernmental organization of the world. It has five members country viz. Belgium, France, Germany, Netherlands and Switzerland. The CCNR is composed of the delegations of its member states, which are responsible for drawing up Rhine regulations, and a standing "Secretariat" responsible for preparing its work.

73. (c)
A cost, that was incurred in past and which cannot be recovered in the future is known as sunk cost. Sunk cost sometimes also called as retrospective cost, refers to an investment already incurred that can't be recovered. Examples of sunk cost in business include costs incurred on marketing, research, new software installation etc.
In business, the axiom that "one has to spend money to make money" is reflected in the phenomenon of the Sunk Cost. A sunk cost differs from future costs that a business may face such as decisions about inventory purchase costs or product pricing.

74. (b)
In 1926, the Hilton Young Commission recommended the setting up of the Reserve Bank of India. At that time, the authorized capital of the Reserve Bank of India was Rs. 5 crores. Reserve Bank of India was established on 1 April 1935 in accordance with the provisions of the RBI Act, 1934. The central office of the RBI was initially established in Calcutta but was permanently moved to Mumbai in 1937. It regulates the credit and currency system in India.

75. (d)
Indian Antarctica expedition commenced in 1981 that reached Antarctica on 08 January 1982. It was led by Dr. S.Z. Qasim with a selected team of 21 members. The first permanent research station "Dakshin Gangotri" was established in 1983 at 70.08ºS, 12.00º E over the Ice shelf in Central Dronning Maud Land region. Currently, there are three permanent research base stations in Antarctica, named Dakshin Gangotri (1983), Maitri (1988) and Bharati (2012).

76. (d)
The battle-field of the Mahabharata, Kurukshetra is located in Haryana, 50 km to the east of the Ambala city in Haryana. It is known for the battle between the Kauravas and Pandavas in the Mahabharata. It is believed that this is the place where Krishna recited Bhagavad Gita to Arjuna. According to legend, it was named after the king Kuru, who was from the Bharat Dynasty and was the ancestor of Pandavas and Kauravas in Mahabharata.

77. (a)
Central Potato Research Institute → Shimla
Indian Agricultural Research Institute → New Delhi
Indian Sugarcane Research Institute → Lucknow
Central Rice Research Institute → Cuttack
Central Tobacco Research Institute → Rajahmundry
Indian Iron Research Institute → Ranchi

78. (a)
The Taj Mahotsav is an annual 10 day (from 18 to 27 February) event at Shilpgram in Agra.
Hampi Dance Utsav- Organised during the month of October and November in Hampi village near Vijaynagar in the state of Karnatka.
Natyanjali is an annual dance festival commemorating Hindu deity Shiva. It is currently organised by collaborative efforts of the Department of Tourism, Tamil Nadu and Natyanjali Trust.
Nishagandhi dance festival organised by Kerala Tourism Department, is a one week festival of classical dance. It usually happens in the last week of January every year.

79. (b)
Renowned poet Rabindranath Tagore won the Nobel Prize for Literature in 1913 for his collection 'Gitanjali' published in London in 1912. The prize gained even more significance by being given to an Indian for the first time. The original version of the Gitanjali was published on 14 August 1910 in Bengali language by Indian Publishing House Calcutta. The English version of Gitanjali was first published in November 1912 by the Indian Society of London. In 1915 Tagore was awarded a knighthood for services to literature, which he returned in protest against the 1919 Jalliyanwala bagh massacre.

80. (d)
Durgeshnandini is a Bengali historical romantic novel written by Indian writer Bankim Chandra Chattopadhyay in 1865.

81. (b)
On 27 September, 2014 during his speech at the UN General Assembly, Prime Minister Narendra Modi put forth his suggestion for the occasion of a 'Yoga Day'. The draft resolution proposed by India was then endorsed by a record 177 member states. The first International Day of Yoga was observed around the world on June 21, 2015.

82.(b)

Award	**Related field**
Daly Manorial Award –	Research in Psychology
Dhanvantari Award –	In the field of Medical Services
Shanti Swarup Bhatanagar Award –	Work in science & Technology
Borlaug Award –	International agriculture and food production

83. (c)
As per the Global Energy Transition Index, 2024 released by world economic forum, out of the 120 nations surveyed under the aforesaid Index, India has been placed at the 63th spot.

84. (c)
In Siyong Valley Arunachal Pradesh a new species of blue ants has been discovered. This species is related to rare breed (Linage)– Paraparatrachina. Therefore it's name has been christened as 'Paraparatrachina. It is a tiny ant whose length is less than 2 mm.

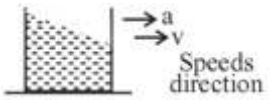
85. (d)

Wildlife Sanctuary	**Location**
Chail Wildlife Sanctuary	Himachal Pradesh
Asola Bhatti Wildlife Sanctuary	Delhi
Kedarnath Wild Life Sanctuary	Uttarakhand
Abohar Wildlife Sanctuary	Punjab

86. (d)
SI unit of magnetic flux density (B) is Tesla (T).
CGS unit of magnetic flux density (B) is Gauss (G).
SI unit of self inductance is Henry (H).
S.I unit of magnetic flux is weber (Wb), magnetic flux is commonly denoted by (ϕ_s). The CGS unit is Maxwell.

87. (c)
Newton's second law is a quantitative description of the changes that a force can produce on the motion of a body. It states that the rate of change of the momentum of a body is equal to both magnitude and direction of the force imposed on it. The momentum of a body is equal to the product of its mass and its velocity. Momentum, like velocity, is a vector quantity, having both magnitude and direction. Example: Pulling the hands gradually in the direction of the ball while catching helps in reducing the impact of force applied by the ball on the hands of the cricketer as the relative velocity of the ball with respect to hands of the player is decreased and hence reduces the momentum of the ball gradually.

88. (a)



Hence, the surface of the fluid falls in the direction of motion and arises from the back side of the tank. This is due to the pseudo force acting in the fluid.

89. (c)
If the frequency of a wave increases, then its wave-length will decreases. Wavelength and frequency of a wave are inversely proportional to each other, wavelength is directly proportional to the velocity of wave.

$$\boxed{f = \frac{v}{\lambda}}$$

where, λ = wavelength
f = frequency
v = velocity of wave

90. (b)
Deposition - The process by which a substance changes from the gaseous state to a solid state. **Condensation -** The process by which a substance changes from vapor (steam) to a liquid state. For example, the conversion of vapor into water.
Sublimation - The process by which a substance changes from a solid state to a gas state. For example- burning of camphor.
Evaporation - The process in which a substance changes from a liquid state to a vapor (gas) state.

91. (d)
Protium has no neutrons in its nucleus. It is considered the most stable isotope of Hydrogen. Protium's atomic weight is 1 and its nucleus consist of only one proton.

92. (b)
When an ant stings it releases a chemical called formic acid, which causes irritation on skin, since formic acid is an acid hence it requires alkaline solution to undergo neutralization e.g. Rubbing Baking Soda Calamine solution etc.

93. (b)
Exobiology is the branch of science that deals with the possibilities of life that exist beyond earth. Insects are studied under the Entomology. Under Mycology, fungi are studied and under Paleontology, the fossils of animals and plants are studied.

94. (a)
Carbon is a versatile element that forms the basis for all living organism and many of living organism and many of living thing we use.

95. (c)
Species is the basic unit of classification. A group of organisms with similar characteristics are categorized into species. Species are distinguished based on morphological characters.

- A species is a basic unit of classification and a taxonomic rank, as well as a unit of biodiversity.
- The term taxonomy was originally coined by Augustin Pyramus de Candolle in 1813.

96. (b)
The sword-billed hummingbird is a neotropical species of hummingbird from the Andean regions of South America (Bolivia, Colombia, Ecuador, Peru, Venezuela). Its most prominent feature is that its beak is longer than rest of its body.

97. (b)
Trachea is a part of the respiratory system of the human body. Trachea, commonly known as the windpipe, is a tube about 4 inches long and less than an inch in diameter in most people. The trachea begins just under the larynx (voice box) and runs down behind the breastbone (sternum). The trachea then divides into two smaller tubes called bronchi: one bronchus for each lung. The trachea is composed of about 20 rings of tough cartilage. The back part of each ring is made of muscle and connective tissue. Moist, smooth tissue called mucosa lines the inside of the trachea. The trachea widens and lengthens slightly with each breath in, returning to its resting size with each breath out.

98.(b)
A backup is a copy of important data that is stored on an alternative location, so it can be recovered if deleted or it becomes corrupted.
It is designed to protect all of your important files and pictures even the ones you save to an external hard drive.

99. (c)
On arranging in increasing order-
1024 Bytes = 1 Kilobyte (KB)
1024 Kilobytes =1 Megabyte (MB)
1024 Megabyte =1 Gigabyte (GB)
1024 Gigabyte =1 Terabyte (TB)

100. (a)
Aquarium is a man made ecosystem. An aquarium (plural aquariums or aquaria) is a place where fish and other animals that live in water are kept by humans. There are two type of ecosystem such as Natural Ecosystem and Artificial or Man-made Ecosystem. The artificial ecosystems do not possess a self-regulation mechanism and rely on the human efforts to sustain themselves.

PRACTICE SET - 4

1. **A student divided a number by 12 instead of 21 and received 35. Find the correct answer.**
   (a) 20 (b) 15 (c) 26 (d) 25

2. $\frac{\left(3\sqrt{5}+\sqrt{125}\right)}{\left(\sqrt{80}+6\sqrt{5}\right)}$ .....is
   (a) A rational number (b) A natural number
   (c) An integer (d) An irrational number

3. **Find the least among these fractions.**
   $\frac{1}{10},\frac{1}{100},\frac{9}{1000},\frac{500}{10000}$
   (a) $\frac{500}{10000}$ (b) $\frac{1}{100}$
   (c) $\frac{1}{10}$ (d) $\frac{9}{1000}$

4. **Express** $4.5\overline{67}$ **in the form of** $\frac{p}{q}$ **where p and q are integeas and** $q \neq 0$
   (a) $4\frac{281}{495}$ (b) $4\frac{63}{110}$
   (c) $4\frac{94}{165}$ (d) $4\frac{283}{495}$

5. **What is the difference between the biggest and the smallest fraction among** $\frac{2}{3},\frac{3}{4},\frac{4}{5}$ **and** $\frac{5}{6}$**?**
   (a) $\frac{1}{30}$ (b) $\frac{1}{6}$
   (c) $\frac{1}{12}$ (d) $\frac{1}{20}$

6. **What smallest fraction should be added to** $3\frac{2}{3}+6\frac{7}{12}+4\frac{9}{36}+5+7\frac{1}{12}$ **to make the sum a whole number?**
   (a) $\frac{7}{12}$ (b) $\frac{11}{12}$
   (c) $\frac{5}{12}$ (d) $\frac{13}{12}$

7. **What is the LCM of** $\sqrt[2]{169},\sqrt[3]{27},\sqrt[3]{64}$ **and** $\sqrt[2]{144}$
   (a) 156 (b) 312
   (c) 182 (d) 468

8. **If the HCF of 51 and 85 is expressed in the form of 51 m – 85, then the value of m will be:**
   (a) 3 (b) 1
   (c) 5 (d) 2

9. **The product of the LCM and HCF of two positive numbers is 28 and their difference is 3. The numbers are**
   (a) 3 and 5 (b) 7 and 5
   (c) 4 and 7 (d) 5 and 6

10. **Five bells commence tolling together and toll at intervals of 3, 6, 12, 15 and 18 seconds respectively. They tolled at 9:58:45 hours then at which time they will again toll together?**
    (a) 10:02:45 (b) 10:01:45
    (c) 10:01:15 (d) 10:00:15

11. **The ratio of two weights, 27kg and 108 g, is:**
    (a) 250 : 1 (b) 300 : 1
    (c) 270 : 1 (d) 240 : 1

12. **Any amount is divided between Shivani and Parineeta in the ratio of 5 : 7, if Parineeta gives ₹ 5 to Shivani, then the ratio will be changed to 3 : 4 what is divided amount?**
    (a) ₹ 432 (b) ₹ 420
    (c) ₹ 396 (d) ₹ 408

13. **Vimal secured 46% marks in the exam and failed to qualify in the exam by 10 marks. If he secured 52% marks, he would have secured 8 marks more than what was the minimum qualifying marks. What were the minimum marks one had to score to qualify in the exam?**
    (a) 148 (b) 146
    (c) 156 (d) 138

14. **Due to 25% reduction in the price of wheat per kg, John is able to buy 5 kg more for ₹600 What is the original price of wheat per kg?**
    (a) ₹50 (b) ₹45
    (c) ₹40 (d) ₹60

15. **The numerical value of the area of an equilateral triangle is two times the numerical value of its perimeter. Find the area of the above triangle.**
    (a) $48\ cm^2$ (b) $24\sqrt{3}\ cm^2$
    (c) $48\sqrt{3}\ cm^2$ (d) $36\sqrt{3}\ cm^2$

16. **The perimeter of a rectangle is 28 cm. If the length is** $\frac{5}{2}$ **times of the breadth, then find the length and breadth of the rectangle.**
    (a) 90 and 5 (b) 10 and 4
    (c) 6 and 7 (d) 11 and 3

17. **A and B together can do piece of work in 10 days. If A alone can do the same work in 15 days and C alone can do the same work in 20 days, then in how many days can B and C together do the same work?**
    (a) 12 (b) 11
    (c) $12\frac{1}{5}$ (d) $11\frac{3}{4}$

18. Aditya can complete a piece of work alone in 8 days and Bhagawan can complete the same piece of work alone in 12 days. They started the work together, but Aditya had to leave 3 days before the completion of the work. In how many days will the work complete?

(a) $6\frac{3}{5}$ days (b) $6\frac{4}{5}$ days

(c) $6\frac{1}{5}$ days (d) $6\frac{2}{5}$ days

19. Devesh leaves his home every day at 7 am and reaches office at 8:30 am. One day he left his home at 7 am but travelled a fifth of the distance at 5/6 of the usual speed and the rest of the distance at 6/5 of the usual speed. Approximately at what time did Devesh reach office on that day?

(a) 8 : 40 am (b) 8 : 25 am

(c) 8 : 21 am (d) 9 : 36 am

20. Train A running at a speed of 63 km/h takes 21 seconds to completely cross train B running at 45 km/h in the opposite direction. The length of train B is 2.5 times the length of train A. Train B crosses a bridge completely in 76 seconds. The length of the bridge (in m) is :

(a) 480 (b) 880

(c) 660 (d) 500

21. Ravi took a loan from a bank at the rate of 8% p.a. simple interest. After 5 years, he had to pay an interest of ₹6,400 for the period. Find the Principal amount borrowed by Ravi.

(a) ₹ 10,000 (b) ₹ 16,000

(c) ₹ 15,000 (d) ₹ 18,000

22. Khan lends an amount of ₹10,000 to Irfan at 10% per annum compound for 5 year, compounded annually. What is the compound interest accrued for the 4^{th} year?

(a) ₹ 1,762 (b) ₹ 1,540

(c) ₹ 1,331 (d) ₹ 1,745

23. The cost price of an article is 75% of the marked price. If a discount of 15% is allowed, then the profit or loss percentage is:

(a) 15% profit (b) 13.33% profit

(c) 15.55% loss (d) 12.44% loss

24. The cost price of a car was ₹1,50,000. It was sold by X at a profit of 5% to Y. It was later sold back to X by Y at a 1% loss. Find X's profit in the entire transaction.

(a) ₹4000 (b) ₹3,150

(c) ₹4500 (d) ₹1,575

25. Find the HCF of $(x^4 - y^4)$, $(x^8 - y^8)$ and $(x^2 - y^2)$

(a) $(x - y)(x + y)$

(b) $(x - y)(x + y)(x + y)$

(c) $(x - y)(x + y)(x - y)(x + y)$

(d) $(x + y)(x + y)$

26. If roots of quadratic equation $x^2 - kx + 169 = 0$ are equal, then find the value of k.

(a) ±14 (b) ±26

(c) ±13 (d) ±17

27. Simplify the following.

$\sqrt{2+\sqrt{2+2\cos 4\theta}}$

(a) $\sin\theta$ (b) $\cos\theta$

(c) $2\cos\theta$ (d) $\cos 2\theta$

28. In ΔABC, AB = 8 cm. The bisector of ∠A is internally meets on BC at D. and BD = 6 cm and DC = 7.5 cm. What will be the value of CA?

(a) 10.5 cm (b) 12.5 cm

(c) 12 cm (d) 10 cm

29. The mean of the observations $x, x + 3, x + 5, x + 8, x + 9$ is 9. What will be the mean of the last three observations.

(a) $\frac{32}{3}$ (b) $\frac{31}{3}$

(c) $\frac{35}{3}$ (d) $\frac{34}{3}$

30. Find the difference between the median and the mean of the following data:

12, 20, 3, 14, 5, 8 and 15

(a) 4 (b) 1

(c) 3 (d) 2

31. Select the option that is related to the third term in the same way as the second term is related to the first term.

Nepal : Cow :: India : ?

(a) Tiger (b) Lion

(c) Peacock (d) Rhinoceros

32. 'Income' is related to which of the following options in the same way as 'Expenditure' is related to 'EMI' ?

(a) Salary (b) Revenue

(c) Profit (d) Tax

33. Select the option that is related to the fifth letter-cluster in the same way as the fourth letter-cluster related to the third letter-cluster and second letter-cluster is related to the first letter-cluster.

FTPY : JVTA :: NVZG: RXDI :: MPRE: ?

(a) QSVH (b) QRVG

(c) PSUH (d) PRUG

34. Select the number from among the options given that is related to the fifth number in the same way as the second and fourth numbers are related to the first and third numbers respectively

11 : 143 :: 13 : 221 :: 7 : ?

(a) 35 (b) 56

(c) 57 (d) 77

35. **FM 25 is related to IJ 125 in a certain way. In the same way, NO 36 is related to QL 216. To which of the following is MP 16 related following the same logic?**
(a) ON 64 (b) PN 64
(c) PM 64 (d) PM 32

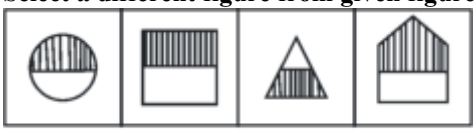
36. **In a certain code language, LOTUS is written as KPSVR. How will WATER be written in that code?**
(a) UQSGB (b) VBFSQ
(c) UBFSQ (d) VBSFQ

37. **In a code language, 'you are my world' is written as 'kai po che lu', 'my home world' is written as 'Je po kai', and 'she was my girl' is written as 'da mu kai va'. What is the code for the word 'world' in that language ?**
(a) kai (b) mu
(c) po (d) lu

38. **The word RESERVATION has been coded using 4 different codes:**
Code 1: SGVIWBHBRYY
Code 2: SCVAWPHLREY
Code 3: TGUGTXCVKQP
Code 4: PCQCPTYRGML
Which of the following codes is used to write the word ENQUIRY as FLTQNLF?
(a) Code 2 (b) Code 3
(c) Code 1 (d) Code 4

39. **Among the four words listed, three are alike in some manner and one is different. Select the odd one.**
Black Pepper, Cardamom, Onion, Clove
(a) Black Pepper (b) Clove
(c) Cardamom (d) Onion

40. **Select a different figure from given figure.**



(a) B (b) C
(c) D (d) A

41. **Identify the number that does not belong to the following series.**
7, 14, 56, 448, 2688, 26880
(a) 26880 (b) 2688
(c) 56 (d) 448

42. **Study the given pattern carefully and select the number that can replace the question mark (?) in the third figure.**

(a) 16 (b) 2
(c) 21 (d) 3

43. **Study the given pattern carefully and select the letter that can replace the question mark (?) in it**

N	R	V
Q	M	?
P	T	X
O	K	G

(a) Z (b) H
(c) I (d) W

44. **Sunder walks 4 km towards east. Then he turns right and walks 3 km. Again he turns right and continues walking. Which direction is he going now?**
(a) North (b) West
(c) South (d) East

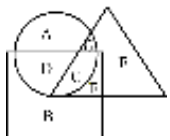
45. **Rohan is Sumit's brother. Sumit wants to mary Sujata. Sujata is the daughter of Hari Chand. Rohan wants to divorce Sunita. Sujata and Sunita are sisters. How is Harish Chandra related to Rohan?**
(a) Wife's paternal uncle
(b) Father
(c) Brother's father-in-law
(d) Father-in-law

46. **If the mathematical operation –, +, × and ÷ replaced by G, P, U and S respectively given then the value of 48 S 8 P 7 U 2 G 21?**
(a) 0 (b) –1
(c) 20 (d) –21

47. **Select the Venn diagram that best represents the relationship between the following classes.**
Real Numbers, Rational Numbers, Integers, Whole Numbers, Natural Numbers

(a) 
(b) 
(c) 
(d) 

48. **In the given figure, the circle denotes the writers, the triangle represents the engineers and the square represents the dancers. Which letter represents writers and dancers but not engineers?**



(a) E (b) G
(c) D (d) C

49. **A, B, C, D, E are five events which are to be performed on stage from Monday to Saturday, one event every day, not necessarily in the same order, with one day's rest in between. C will be performed on the immediately next day after D. The rest day is between A and E. There is a gap of 2 days between E and C. B is not on the last day and the rest day was not on Tuesday or Thursday. Ignoring the rest day, what was the order in which the events were performed?**

(a) BDCAE (b) BDCEA
(c) AEDCB (d) AEBDC

50. **Statements:**
All carpenters are workers.
All workers are hardworking.
Conclusions:
1. All the hardworking people are workers.
2. All the carpenters are hardworking.
(a) Neither conclusion 1 nor 2 follows.
(b) Only conclusion 1 follows.
(c) Only conclusion 2 follows.
(d) Both conclusions 1 and 2 follow.

51. **Statement :**
All pens are pencils. Some pencils are rubbers. Some rubbers are ropes. All ropes are tents.
Conclusions:
I. Some tents are pencil
II. Some ropes are pens.
III. Some rubbers are pens.
IV. Some pencils are pens.
(a) Only I and II follows
(b) Only I, II and III follows
(c) Only I and II follows
(d) Only IV follow

52. **Select the conclusion, from among the following options, which logically follows from the given statement.**
Statement:
One must work hard to be successful in life.
(a) A hardworking person is satisfied in life.
(b) Without hard work one cannot be successful in life.
(c) Only those who work hard will be able to pass.
(d) Life is related with hard work.

53. **Statement:**
$F \leq H < J \geq V > E$
Conclusion :
I. $H < V$
II. $J > E$
III. $F < E$
(a) Only conclusion I is correct.
(b) Only conclusion II is correct.
(c) Only conclusion III is correct.
(d) Only conclusion I and III are correct.

54. **Consider the given question and decide which of the given assumptions is/are implicit in the question.**
Question :
Could India become a terror free country in future?
Assumptions:
1. India has declared a zero-tolerance policy
2. India's security establishment is working hard on all the fronts
(a) Both assumptions 1 and 2 are implicit
(b) Either assumption 1 or 2 is implicit
(c) Only assumption 1 is implicit
(d) Only assumption 2 is implicit

55. **Question:**
What is Asha's total monthly income?
Statement:
I. Asha's basic income is ₹100 more than her colleague Mala's income.
II. Basic income of Mala is ₹1550 per month.
III. Mala made extra allowance out of his income ₹2000 per month which is ₹50 less than Asha's income.
(a) Only statement II is sufficient
(b) Only statement I is sufficient
(c) Only statement I and II are sufficient
(d) All statements I, II and III are sufficient

56. **How many such pairs of letters are there in the word MASTER (in the forward direction) which have as many letters between them in the word as there are in the English alphabetical order?**

(a) 3 (b) 2
(c) 1 (d) 4

57. **What would be the highest value of X in the given equation.**
5X1 + 6Y7 + 3Z3 = 1471

(a) 5 (b) 6
(c) 7 (d) 3

58. **How many triangles are there in the following figure?**

(a) 7 (b) 5
(c) 8 (d) 6

59. **If 10 March 2011 is a Thursday, then what will be the day of the week on 8 April 2022?**

(a) Monday (b) Tuesday
(c) Friday (d) Thursday

60. **If a student devotes 4 h to other activities instead of 2 h and reduces 1 h each from school and sports activities, then what will be the approximate percentage decrease in school hours ?**
(a) 18% (b) 13%
(c) 14% (d) 15%

61. **Which Vedic God falls under the category of 'Prithvisthana' (Terrestrial God)?**
(a) Vishnu (b) Brihaspati
(c) Varuna (d) Indra

62. **The lethal war with Kalinga transformed the vengeful Emperor Ashoka to a stable and peaceful emperor and he became of a follower of–**
(a) Buddhism (b) Vedanta
(c) Hinduism (d) Jainism

63. **Al-Biruni wrote his book 'Kitab-ul-Hind' in which language ?**
(a) Sanskrit (b) Arabic
(c) Persian (d) Syrian

64. **In the Battle of Plassey, who led the troops of the British East India Company?**
(a) Neville chamberlain (b) Robert Clive
(c) Allan Cunningham (d) James Alexander

65. **Which option can best describe equinox?**
(a) Earth is going around the sun.
(b) North pole is tilted towards sun.
(c) Neither of the poles is tilted towards sun.
(d) South pole is tilted towards sun.

66. **The crops that increase the natural fertility of soils through nitrogen fixation are known as**
(a) Cash crops (b) Legume crops
(c) Horticulture crops (d) Fibre crops

67. **Which of the following latitudes is the most distant from India?**
(a) North Pole (90°N)
(b) Arctic Circle (66°30'N)
(c) Tropic of Capricorn (23°30'S)
(d) South Pole (90°S)

68. **Which part of the Indian Constitution is inspired by the constitution of Germany ?**
(a) Amendment of the Constitution
(b) Federal System
(c) Suspension of fundamental rights during Emergency
(d) single citizenship

69. **Select the option that does not support the role of the Indian Parliament.**
(a) To settle disputes and make judgments between different level of governments
(b) To select the national government
(c) To control, guide and inform the government
(d) The function of law making

70. **How many members are there in the Security Council of the UN as of October 2020?**
(a) 5 permanent members and 10 non-permanent members
(b) 5 permanent and 5 non permanent members
(c) 5 permanent members only
(d) 10 permanent and 5 non permanent members

71. **India's first unmanned lunar probe Chandrayaan-I was launched at:**
(a) Thiruvananthapuram (b) Balasore
(c) Wheeler Island (d) Sriharikota

72. **The Inter - Governmental - Treaty - Based organisation having its headquarters in India is:**
(a) ATS (b) NATO
(c) ISA (d) OECD

73. **Which of the following statements is NOT true ?**
(a) In the short run, a firm cannot vary all the inputs.
(b) A firm, in order to produce different levels of output in the long run may not vary one of the inputs.
(c) One of the factors cannot be varied, and therefore, remain fixed in the short run.
(d) in the long run, all factors of production can be varied.

74. **Demonetisation was announced by Prime Minister Narendra Modi on :**
(a) 8 October, 2016 (b) 8 November, 2016
(c) 8 September, 2016 (d) 8 December, 2016

75. **Who is the editor in chief of the news channel 'Times Now'?**
(a) Rahul Shivashankar (b) Ravish Kumar
(c) Arnab Goswami (d) Sonia Singh

76. **Where is the Vivekananda Rock Memorial located.**
(a) Cochin (b) Kolkata
(c) Kanyakumari (d) Chennai

77. **What is name of India's first research station located at the International Arctic Research Base Ny-Alesund, Svalbard, Norway?**
(a) Maitri (b) Himadri
(c) Dakshin Gangotri (d) Bharathi

78. **Select the correct sequence of states according to the given sequence of cultural festivals celebrated in the respected states.**
Hampi Dance Utsav, Mamallapuram Dance Utsav, Nishagandhi Festival, Taj Mahotsav
(a) Kerala, Tamil Nadu, Karnataka, Uttar Pradesh
(b) Karnataka, Tamil Nadu, Kerala, Uttar Pradesh
(c) Uttar Pradesh, Tamil Nadu, Kerala, Karnataka
(d) Tamil Nadu, Karnataka, Kerala, Uttar Pradesh

79. **Who among the following was the first Chinese Citizen to win Nobel Peace Prize?**
(a) Yu Jie (b) Wang Dan
(c) Liu Xiaobo (d) Liu Xia

80. **Who is the author of the novels Rangbhoomi, Godan, Gaban & Vardan?**
(a) Maithili Sharan Gupt
(b) Munshi Prem Chand
(c) Ramdhari Singh Dinkar
(d) Sumitra Nandan Pant

81. **On which day is World Day to combat desertification and drought observed?**
(a) 22nd April (b) 5th June
(c) 17th June (d) 22nd May

82. **Which award is given to the workers for their outstanding performance, innovation ability, productivity and indigenization contribution by exceptional courage and mental readiness in the field of performance?**
(a) Krish award
(b) Shram Award
(c) Padma Award
(d) Dronacharya Award

83. **Where was the '10th International Yoga Mahotsav' organized on 21 June, 2024 ?**
(a) Uttrakhand
(b) Himachal Pradesh
(c) Leh
(d) Sri nagar

84. **Who has been appointed as first woman DGP of North-East India, on 11 May, 2024 ?**
(a) Kanchan Choudhary Bhattacharya
(b) Idashisha Nongrang
(c) Uttkal Ranjan Sagu
(d) None of the above

85. **Acid rains occurs when the atmosphere is heavily polluted with :**
(a) SO_2 and NO_2 (b) NH_3 and SO_3
(c) CO and CO_2 (d) smoke particles

86. **1 atmosphere = ?**
(a) 1.01×10^5Pa (b) 10.1×10^5Pa
(c) 1.01×10^6Pa (d) 10.1×10^6Pa

87. **Rockets work on the principle of _____ conservation.**
(a) momentum (b) mass
(c) energy (d) velocity

88. **On the basis of buoyancy theory, the ship floats in water, which scientist is first credited with identifying this principle?**
(a) Niles Bohr (b) Kepler
(c) Archimedes (d) Ken Rutherford

89. **Which type of waves is used to penetrate hard object at hospital and airport?**
(a) Sound wave (b) X-rays
(c) Electromagnetic (d) The mechanics

90. **What is the approximate molecular weight of common salt?**
(a) 14 g/mol (b) 28 g/mol
(c) 117 g/mol (d) 58 g/mol

91. **Which of the following is used as 'a fissionable fuel' in a nuclear reactor?**
(a) U^{208} (b) U^{235}
(c) Pu^{229} (d) Pu^{115}

92. **Why were noble gases not included in the Newland's law of octaves?**
(a) These elements were not known at that time.
(b) These elements do not follow the law of octaves.
(c) These elements do not follow the octet rule.
(d) These elements are inert.

93. **The scientific study of the preserved remains or signs of animals, plants and other animals of ancient times is called :**
(a) Anthropology (b) Archaeology
(c) Paleontology (d) Pharmacology

94. **How much salt is present in our body?**
(a) 1% (b) 2%
(c) 0.4% (d) 0.6%

95. **Which of the following is classified under Kingdom Animalia ?**
(a) Protozoa (b) Metazoa
(c) Choanozoa (d) Pipiens

96. **What is the tooth enamel made of?**
(a) Calcium chloride (b) Calcium sulphate
(c) Calcium carbonate (d) Calcium phosphate

97. **In human beings, excretory products in the form of soluble nitrogen compounds are removed by the _____ in the kidneys.**
(a) Mitochondria (b) Nutrition
(c) Nephrons (d) Nucleus

98. **Which of the following is the first generation computer ?**
(a) STAR 100 (b) ATLAS
(c) ABACUS (d) SEAC

99. **What is logo in computer?**
(a) Command (b) Programming Language
(c) Instruction (d) Program

100. **The Indian wild ass is found in:**
(a) Gujarat (b) Kerala
(c) Odisha (d) Rajasthan

SOLUTION : PRACTICE SET- 4

ANSWER KEY

1. (a)	11. (a)	21. (b)	31. (a)	41. (d)	51. (d)	61.(b)	71. (d)	81.(c)	91. (b)
2. (a)	12. (b)	22. (c)	32. (a)	42. (b)	52. (b)	62. (a)	72. (c)	82.(b)	92.(a)
3. (d)	13. (a)	23. (b)	33. (b)	43. (c)	53. (b)	63. (b)	73.(b)	83. (d)	93. (c)
4. (a)	14. (c)	24. (d)	34. (d)	44. (b)	54. (a)	64. (b)	74. (b)	84. (b)	94. (c)
5. (b)	15. (c)	25. (a)	35. (c)	45. (d)	55. (d)	65. (c)	75. (a)	85. (a)	95. (b)
6. (c)	16. (b)	26. (b)	36. (d)	46. (b)	56. (b)	66. (b)	76. (c)	86. (a)	96.(d)
7. (a)	17. (a)	27. (c)	37. (c)	47. (a)	57. (b)	67. (d)	77. (b)	87. (a)	97.(c)
8. (d)	18. (a)	28.(d)	38. (a)	48.(c)	58. (c)	68. (c)	78.(b)	88. (c)	98. (d)
9. (c)	19. (c)	29. (d)	39. (d)	49. (a)	59. (c)	69. (a)	79. (c)	89. (b)	99. (b)
10. (b)	20. (d)	30. (b)	40. (b)	50. (c)	60. (c)	70. (a)	80. (b)	90. (d)	100.(a)

SOLUTION

1. (a)
Let the number be x.
According to the question,
On dividing by 12,

$\frac{x}{12} = 35$

$x = 35 \times 12$

$x = 420$

The number is 420
Dividing 420 by 21-

$\frac{420}{21} = 20$

Hence, the correct answer = 20

2. (a)
Given,

$$\frac{3\sqrt{5}+\sqrt{125}}{\sqrt{80}+6\sqrt{5}}$$

$$=\frac{3\sqrt{5}+5\sqrt{5}}{4\sqrt{5}+6\sqrt{5}}$$

$$=\frac{8\sqrt{5}}{10\sqrt{5}}=\frac{8}{10}=\frac{4}{5}\text{ (rational number)}$$

Therefore $\frac{3\sqrt{5}+\sqrt{125}}{\sqrt{80}+6\sqrt{5}}$ is a rational number

3. (d)
From question,

$\frac{1}{10} = 0.1$

$\frac{1}{100} = 0.01$

$\frac{9}{1000} = 0.009$

$\frac{500}{10000} = 0.05$

$0.1 > 0.05 > 0.01 > 0.009$

$\therefore$ $\frac{9}{1000}$ is the least fraction.
Hence, the correct answer is option (d).

4. (a)

$4.\overline{567}$

$= 4 + \frac{567-5}{990}$

$= 4 + \frac{562}{990}$

$= 4 + \frac{281}{495}$

$= 4\frac{281}{495}$

5. (b) From the question-

$\frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}$

For equaling denominator we have to multiply and divide each fraction by LCM of 3, 4, 5 and 6 = 60.

$\Rightarrow \frac{2}{3}\times\frac{60}{60}, \frac{3}{4}\times\frac{60}{60}, \frac{4}{5}\times\frac{60}{60}, \frac{5}{6}\times\frac{60}{60}$

$\Rightarrow \frac{40}{60}, \frac{45}{60}, \frac{48}{60}, \frac{50}{60}$

Hence, biggest fraction $= \frac{5}{6}$

Smallest fraction $= \frac{2}{3}$

Required difference $= \frac{5}{6} - \frac{2}{3} = \boxed{\frac{1}{6}}$

6. (c)
From question,

$$3\frac{2}{3}+6\frac{7}{12}+4\frac{9}{36}+5+7\frac{1}{12}$$

$$=\frac{2}{3}+\frac{7}{12}+\frac{9}{36}+\frac{1}{12}+(3+6+4+5+7)$$

$$= \frac{24+21+9+3}{36} + 25$$

$$= \frac{57}{36} + 25$$

From option (c),

$$\frac{5}{12} + \frac{57}{36} + 25$$

$$= \frac{15+57}{36} + 25$$

$$= \frac{72}{36} + 25$$

$= 2 + 25 = 27$

Hence, the sum obtained by adding 5/12 will become a whole number.

7. (a)

From question,

$\sqrt[2]{169} = 13, \sqrt[3]{27} = 3, \sqrt[3]{64} = 4, \sqrt[2]{144} = 12$

2	13,	3,	4,	12
2	13,	3,	2,	6
3	13,	3,	1,	3
13	13,	1,	1,	1
	1,	1,	1,	1

Hence, LCM $= 2 \times 2 \times 3 \times 13$

$= 156$

8. (d)

HCF of 51 and 85

$51 = 3 \times 17$

$85 = 5 \times 17$

HCF = 17

According to the question,

$17 = 51m - 85$

$17 + 85 = 51m$

$102 = 51m$

$\boxed{m = 2}$

9. (c)

Difference between number = 3

Then numbers be a and a+3.

We know that,

Product of two numbers = Product of their LCM and HCF

$28 = a(a + 3)$

$a^2 + 3a - 28 = 0$

$a^2 + 7a - 4a - 28 = 0$

$a(a + 7) - 4(a + 7) = 0$

$(a + 7)(a - 4) = 0$

$\Rightarrow a = -7, 4$

$a = 4$ (on taking positive value)

Now, $a = 4$ and $a + 3 = 7$

Hence, the numbers are 4 and 7.

10. (b)

LCM of 3, 6, 12, 15 and 18.

3	3,	6,	12,	15	18
2	1,	2,	4,	5,	6
2	1,	1,	2,	5,	3
3	1,	1,	1,	5,	3
5	1,	1,	1,	5,	1
	1,	1,	1,	1,	1

$= 3 \times 2 \times 2 \times 3 \times 5$

= 180 sec or 3 minutes

According to the question,

The bells rings at 9 : 58 : 45

$9:58:45$

$\underline{\quad : 3 : \quad}$

$10:01:45$ The bells rang together again

Hence, At 10:01:45 hours they will again toll together.

11. (a)

$$\text{Required ratio} = \frac{27 \times 1000\,\text{gm}}{108\,\text{gm}}$$

$$= \frac{1000}{4} = 250 : 1$$

12. (b)

Let distributed amount between Shivani and Parineeta = 5x and 7x

According to the question,

$$\frac{5x+5}{7x-5} = \frac{3}{4}$$

$20x + 20 = 21x - 15$

$x = 35$

Hence, the divided amount = $5x + 7x = 12x$

$= 12 \times 35 = ₹\,420$

13. (a)

Let total marks be x.

According to the question,

$x \times 46\% + 10 = x \times 52\% - 8$

$(x \times 52\%) - (x \times 46\%) = 10 + 8$

$$\frac{x \times 52}{100} - \frac{x \times 46}{100} = 18$$

$$\frac{52x - 46x}{100} = 18$$

$$\frac{6x}{100} = 18$$

$6x = 1800$

$x = 300$

On putting the value of x

Minimum qualifying marks = $(300 \times 46\%) + 10$

$$= \left(\frac{300 \times 46}{100}\right) + 10$$

$= 138 + 10$

= 148 marks

14. (c)

Suppose original price of wheat per kg = ₹ x

After reduction of 25%,

Price of wheat per kg = $x \times \frac{75}{100} \Rightarrow$ ₹ $\frac{3x}{4}$

According to the question

$$\frac{600}{\frac{3x}{4}} - \frac{600}{x} = 5$$

$$\frac{2400}{3x} - \frac{600}{x} = 5$$

$$\frac{2400 - 1800}{3x} = 5$$

or $15x = 600$

$x =$ ₹ 40 per kg

15. (c)

Let the side of equilateral triangle is a cm.

According to the question,

Area of equilateral Δ = 2 × perimeter of equilateral Δ

$$\frac{\sqrt{3}a^2}{4} = (3a) \times 2$$

$$\frac{\sqrt{3}a}{4} = 6$$

$$a = \frac{24\sqrt{3}}{3}$$

$$a = 8\sqrt{3}\text{ cm}$$

$\because$ Area of equilateral $\Delta = \frac{\sqrt{3}}{4}a^2 = \frac{\sqrt{3}}{4} \times 8\sqrt{3} \times 8\sqrt{3}$

$= 2 \times 3 \times 8\sqrt{3} = 48\sqrt{3}$ cm^2

16. (b)

As per the question,

$$\text{length of rectangle} = \frac{5}{2} \times \text{ Breadth}$$

Perimeter of rectangle = 28

$2(L + B) = 28$

$$(\frac{5}{2}B + B) = \frac{28}{2} = 14$$

$$\frac{7}{2}B = 14 \quad \Rightarrow \quad B = 4\text{ cm}$$

$$\therefore L = \frac{5}{2} \times 4 = 10\text{ cm}$$

So length and breadth of rectangle is 10 cm and 4 cm.

17. (a)

(A + B) together do the work = 10 days

Time taken by A alone = 15 days

According to the question,

$$\frac{1}{(A+B)} = \frac{1}{A} + \frac{1}{B}$$

$$\frac{1}{10} = \frac{1}{15} + \frac{1}{B}$$

$$\frac{1}{B} = \frac{1}{10} - \frac{1}{15}$$

$$= \frac{3-2}{30}$$

B = 30 days

Time taken by C to do the same work = 20 days

Then time taken by (B + C) $= \frac{30 \times 20}{50}$

$$= \frac{60}{5}$$

= 12 days

18. (a)

Let the work will complete in x days

According to the question,

$$\frac{x-3}{8} + \frac{x}{12} = 1$$

$$\frac{3x - 9 + 2x}{24} = 1$$

$5x - 9 = 24$

$5x = 24 + 9$

$$x = \frac{33}{5}$$

$$x = 6\frac{3}{5}\text{ days}$$

19. (c)

Let Devesh's usual speed = x km/hr

Total time taken by Devesh to reach office from his home = 8:30 – 7:00 = 1hour 30 minutes

Distance = Speed × Time

$= x \times \frac{3}{2}$ km

According to the question,

Speed to cover $\left(\frac{3x}{2} \times \frac{1}{5}\right)$km distance = $\frac{5x}{6}$km/hr

Remaining distance = $\frac{3x}{2} - \frac{3x}{10} = \frac{12x}{10}$ or $\frac{6x}{5}$km

Speed to cover $\frac{6x}{5}$km = $\frac{6x}{5}$km/hr

Suppose the time taken by Devesh to reach office = t hour.

$$\frac{\frac{3x}{10}}{\frac{5x}{6}} + \frac{\frac{6x}{5}}{\frac{6x}{5}} = t$$

$$\frac{18}{50} + 1 = t$$

$$t = \frac{34}{25}\text{ hours}$$

= 1 hour 21 minutes (approximately)

Therefore, that day Devesh reach office approximately Morning 8 : 21 am

20. (d)

Let the length of train A = x m.

Length of train B = 2.5x

$$\text{Relative speed} = (63 + 45) \times \frac{5}{18} = 30 \text{ m/sec}$$

Distance = Speed × Time.

$$x + 2.5x = 30 \times 21 \Rightarrow x = \frac{630}{3.5} = 180\text{m}$$

The length of train B = 2.5 × 180 = 450 m

Let the length of the bridge = y m.

$$45 \times \frac{5}{18} = \frac{450 + y}{76}$$

$$450 + y = \frac{45 \times 5}{18} \times 76$$

$$y = 950 - 450$$

$$y = 500\text{m}$$

21. (b) Given,

Rate of interest (r) = 8%

Time (t) = 5 years

Simple interest (SI) = ₹6400

Principal (P) = ?

$$SI = \frac{P \times r \times t}{100}$$

$$6400 = \frac{P \times 8 \times 5}{100}$$

$$P = ₹16000$$

22. (c)

Given,

Principal (P) = ₹10000

Time (T) = 5 years

Rate (R) = 10%

$$\therefore A = P\left(1 + \frac{R}{100}\right)^T$$

According to the question,

CI for 4th year

$$= 10000\left[\left(1 + \frac{10}{100}\right)^4 - \left(1 + \frac{10}{100}\right)^3\right]$$

$$= 10000\left[\left(\frac{11}{10}\right)^4 - \left(\frac{11}{10}\right)^3\right]$$

$$= 10000\left[\left(\frac{11}{10}\right)^3 \times \left(\frac{11}{10} - 1\right)\right]$$

$$= 10000\left[\frac{1331}{1000} \times \frac{1}{10}\right]$$

$$= ₹1331$$

23. (b)

Let the marked price of article = ₹ x

$$\therefore \text{ Cost price} = x \times \frac{75}{100} = ₹\frac{3x}{4}$$

$$\text{Selling price after 15\% discount} = x \times \frac{85}{100} = ₹\frac{17x}{20}$$

$$\text{Profit \%} = \frac{\frac{17x}{20} - \frac{3x}{4}}{3x/4} \times 100$$

$$= \frac{17x - 15x}{20} \times \frac{4}{3x} \times 100$$

$$= \frac{2x}{5} \times \frac{1}{3x} \times 100$$

$$= \frac{40}{3}\% \text{ or } 13.33\%$$

24. (d)

Cost price of car = ₹ 1,50,000

X will sell the car to Y after taking 5% profit = ₹ 105% of 1,50,000

$$= 150000 \times \frac{105}{100}$$

$$= ₹ 157500$$

Now according to the question Y will sell it back to X at a loss of 1%

$$= \frac{99}{100} \times 157500$$

$$= ₹ 155925$$

Hence profit of X = 157500 – 155925

$$= ₹1575$$

25. (a) From the question-

$$x^4 - y^4 = (x^2 - y^2)(x^2 + y^2)$$

$$= (x - y)(x + y)(x^2 + y^2)$$

$$x^8 - y^8 = (x^4 - y^4)(x^4 + y^4)$$

$$= (x^2 - y^2)(x^2 + y^2)(x^4 + y^4)$$

$$= (x - y)(x + y)(x^2 + y^2)(x^4 + y^4)$$

$$x^2 - y^2 = (x - y)(x + y)$$

HCF of $(x^4 - y^4)(x^8 - y^8)$ and $(x^2 - y^2) = (x - y)(x + y)$

26. (b)

equation $x^2 - kx + 169 = 0$

$a = 1$ $b = -k$ $c = 169$

∵ roots are equal, Hence $b^2 - 4ac = 0$

$$(-k)^2 - 4 \times 1 \times 169 = 0$$

$$k^2 = 4 \times 169$$

$$k = \pm\sqrt{4 \times 169}$$

$$k = \pm 26$$

27. (c)

$$\sqrt{2+\sqrt{2+2\cos 4\theta}}$$

$$\left\{\begin{matrix}\cos 2\theta = 2\cos^2\theta - 1 \\ 2\cos^2\theta = 1+\cos 2\theta\end{matrix}\right\}$$

$$\Rightarrow \sqrt{2+\sqrt{2(1+\cos 4\theta)}}$$

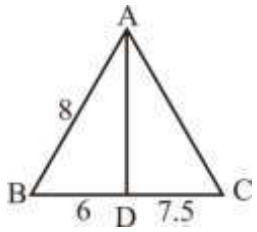
$$\Rightarrow \sqrt{2+\sqrt{2\times 2\cos^2 2\theta}}$$

$$\Rightarrow \sqrt{2+2\cos 2\theta}$$

$$\Rightarrow \sqrt{2.2\cos^2\theta}$$

$$\Rightarrow 2\cos\theta$$

28.(d)



From the interior angle Bisector theorem–

$$\frac{AB}{BD}=\frac{AC}{CD}$$

$$\frac{8}{6}=\frac{AC}{7.5}$$

$$AC=\frac{8\times 7.5}{6}$$

$$AC = 10 \text{ cm}$$

29. (d)

$$\text{Mean} = \frac{\text{sum of total term}}{\text{number of terms}}$$

$$9=\frac{x+x+3+x+5+x+8+x+9}{5}$$

$$45 = 5x + 25$$

$$5x = 45 - 25$$

$$5x = 20$$

$$x = 4$$

Value of last three terms

$$x + 5 = 4 + 5 = 9$$

$$x + 8 = 12$$

$$x + 9 = 13$$

$$\text{Mean} = \frac{9+12+13}{3} = \frac{34}{3}$$

30. (b)

Given data 12, 20, 3, 14, 5, 8 and 15

On arranging data in ascending order 3, 5, 8, 12, 14, 15, 20

$$\text{Median} = \left\{\frac{(n+1)}{2}\right\}^{th} \text{term}$$

$$= \left(\frac{7+1}{2}\right)^{th} \text{term} \quad \{\because n = 7\}$$

$$= 4^{th} \text{ term}$$

Hence, Median = 12

Again, $\text{Mean} = \frac{\text{Sum of all terms}}{\text{No. of terms}}$

$$= \frac{3+5+8+12+14+15+20}{7} = \frac{77}{7} = 11$$

Mean = 11

According to the question-

Required Difference = Median – Mean

= 12 – 11= 1

31. (a)

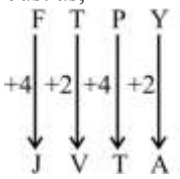
Just as, Cow is a national animal of Nepal. Same as, Tiger is a national animal of India.

32. (a)

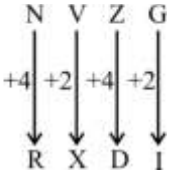
Just as, Expenditure is related with EMI. Similarly Income is related with salary.

33. (b)

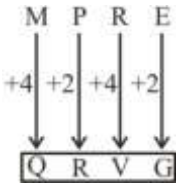
Just as,



And,



Same as,



34. (d)

On multiplying into 11 to its next prime number –

$11\times 13 = 143$

Similarly, on multiplying into 13 to its next prime number = $13\times 17 = 221$

Same as, on multiplying into 7 to its next prime number = $7\times 11 = 77$

11 : 143 :: 13 : 221 :: 7 : 77

Hence, ? = 77

35. (c)

Such as,

$$F \xrightarrow{+3} I \qquad M \xrightarrow{-3} J \qquad 25 \xrightarrow{\times 5} 125$$

And,

$$N \xrightarrow{+3} Q \qquad O \xrightarrow{-3} L \qquad 36 \xrightarrow{\times 6} 216$$

Similarly,

$$M \xrightarrow{+3} P \qquad P \xrightarrow{-3} M \qquad 16 \xrightarrow{\times 4} 64$$

Hence, option (c) is correct answer

36. (d)

Just as,

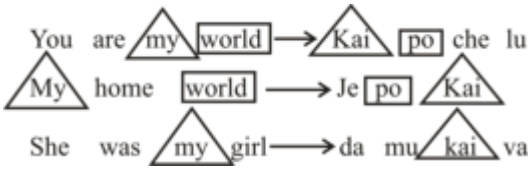
L	$\xrightarrow{-1}$	K		W	$\xrightarrow{-1}$	V
O	$\xrightarrow{+1}$	P		A	$\xrightarrow{+1}$	B
T	$\xrightarrow{-1}$	S		T	$\xrightarrow{-1}$	S
U	$\xrightarrow{+1}$	V		E	$\xrightarrow{+1}$	F
S	$\xrightarrow{-1}$	R		R	$\xrightarrow{-1}$	Q

Same as,

So, WATER will be written as VBSFQ.

37. (c)

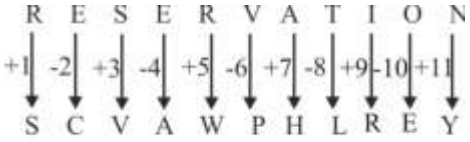
According to the question,



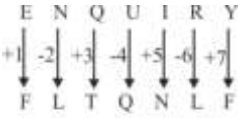
Hence, the code for 'World' is po.

38. (a)

Just as,



Similarly,



Hence, code 2 will be the correct answer.

39. (d)

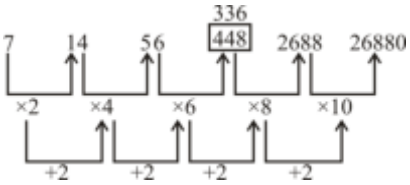
Onion is a type of vegetable whereas Black Pepper, Clove and Cardamom comes under spices.

40. (b)

In figure A, B and D, the shaded portion is the upper part while in figure C the shaded portion is the lower part. Hence figure C is different.

41. (d)

The given series is as follows–



Then 336 will be on the place of 448.

42. (b)

Just as,

$12 + 3 = 15$

and $9 + 12 = 21$

In the same way,

$8 + 14 = 22$

Hence, (?) will be replaced by 2

43. (c)

In first row, $N \xrightarrow{+4} R \xrightarrow{+4} V$

In second row, $Q \xrightarrow{-4} M \xrightarrow{-4} \boxed{I}$

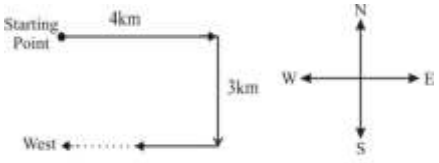
In third row, $P \xrightarrow{+4} T \xrightarrow{+4} X$

In fourth row, $O \xrightarrow{-4} K \xrightarrow{-4} G$

Hence $\boxed{?=I}$

44. (b)

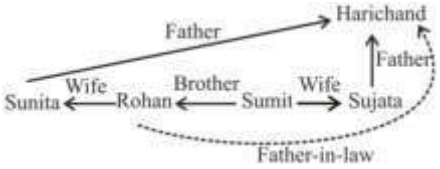
Sunder's walking order is as follows,



It is clear from diagram that Sunder is now going in 'West' direction.

45. (d)

According to the question,



It is clear from the above diagram that Harichand is the father-in-law of Rohan.

46. (b)

Given expression is,

48 S 8 P 7 U 2 G 21

On putting the mathematical sign,

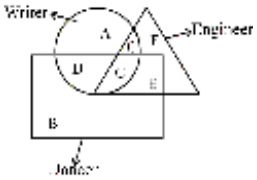
$48 \div 8 + 7 \times 2 - 21$

$6 + 14 - 21 = 20 - 21 = -1$

47. (a)

Hence, the Venn diagram of option (a) best represent the relationship between the given classes.

48.(c)



Hence, it is clear from the above diagram that D represents writers and dancer but not engineers.

49. (a)

Day	Events
Monday	B
Tuesday	D
Wednesday	C
Thursday	A
Friday	Rest day
Saturday	E

Hence the sequence of events ignoring the holiday = BDCAE

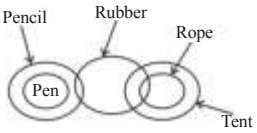
50. (c)

On drawing the Venn diagram as per statement.

Hence, only conclusion 2 follows.

51. (d)

On drawing the diagram as per the statement.



Hence, only conclusion IV follows.

52. (b)

Only conclusion (b) of the given statement 'One must work hard to be successful in life' without hard work one cannot be successful in life follows.

53. (b)

Statement : $F \le H < J \ge V > E$

Conclusion :

(i) $H < V$ (×)

(ii) $J > E$ (✓)

(iii) $F < E$ (×)

Hence, only conclusion II is true.

54. (a)

Since, India has declared a zero-tolerance policy thus, off course in a given course of time India will emerges as a terror free country provided that all our security intelligence are working with might and main. Hence, both assumptions 1 and 2 are implicit.

55. (d)

From I and II,

Basic income of Asha = Basic income of Mala + 100

= 1550 + 100 = Rs.1650

from statement III,

extra allowance of Mala = Rs. 2000

extra allowance of Asha = 2000 + 50 = Rs. 2050

So total income of Asha = 1650 + 2050 = Rs. 3700

Hence, it is clear that all statements I, II and III are sufficient to answer the question.

56. (b)

According to the question,

13	1	19	20	5	18
M	A	S	T	E	R

Hence, it is clear from above letters of the word that the only two pair of letters are there in the word as there are in English alphabetical order.

57. (b)

Given

$5X1 + 6Y7 + 3Z3 = 1471$

For the highest value of X we will take the lowest value of Y and Z.

So take $Y = Z = 0$

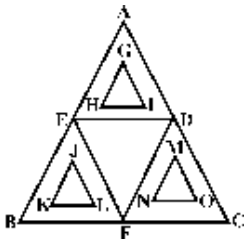
$5X1 + 607 + 303 = 1471$

$5X1 = 1471 - 910 = 561$

Hence $X = 6$

So maximum possible value of $X = 6$

58. (c)



According to the figure-

The number of triangles = ΔABC, ΔGHI, ΔJKL, ΔMNO, ΔEDF, ΔAED, ΔEBF, ΔDFC = 8

So, there is total 8 triangles in the given figure.

59. (c)

Given, 10 March 2011 = Thursday

8 April 2022 = ?

Total number of extra days from 10 March 2011 to 8 April 2022

$$= \frac{29\,\text{days} + 3\,\text{Leap years} + 8\,\text{General years}}{7}$$

$$= \frac{29 + (3 \times 2) + (8 \times 1)}{7}$$

$$= \frac{43}{7} = 1 \text{ (Extra days)}$$

Hence, 8 April 2022 = Thursday + 1 = Friday.

60. (c)

The time spent on school = 7 hr

Now spent time on school = 6 hr .....(After reducing)

$\therefore$ Required percentage $= \frac{(7-6)}{7}$

$$= \frac{1}{7} \times 100$$

$$= 14.28$$

$$= 14\%$$

61.(b)

The Vedic Gods were classified under terrestrial (Prithvisthana), atmospheric (Antarikshasthana), and Celestial (Dyusthana)
Prithvi, Agni, Soma, Brihaspati and rivers belongs to Prithvisthana
Indra, Rudra, Vayu, Vata, Prujanaya belongs to Antarikshasthana.
Surya, Pushan, Vishnu, Mitra, Adityas, Ushas and Asvins belongs to dyusthana (Celestial).

62. (a)

The lethal war with Kalinga transformed the vengeful Emperor Ashoka into a stable and peaceful emperor, and he became a patron of Buddhism. The Kalinga War was fought in ancient time between the Maurya Empire under Ashoka and the state of Kalinga in 261 BC. The Kalinga War is one of the largest and bloodiest battles in Indian history. Edict 13 of the Ashoka Rock Inscriptions expresses the great remorse the king felt after observing the destruction of Kalinga.

63. (b)

Al-Biruni is the author of Kitab-ul-Hind. It contains comments on Indian sciences, Indian religious beliefs, customs, and social organization in the 11th century. Al-Biruni was an Iranian scholar and polymath from Khwarezm, modern day Uzbekistan and Turkmenistan. Most of his works including Kitab-ul-Hind are in Arabic. It is a comprehensive treatise divided into eighty chapters on the basis of topics like religion and philosophy, festivals, astronomy, alchemy, customs and practices, social lifeweight and measurement methods, sculpture and law of sciences, etc.

64. (b)

The Battle of Plassey was fought at Plassey, on the banks of Bhagirathi river near Calcutta on 23 June 1757. Battle of Plassey fought in 1757 was a major turning point in modern Indian history that led to the consolidation of British rule in India. This battle was fought between the East India Company headed by Robert Clive and the Nawab of Bengal (Siraj-ud-Daulah) and his French Troop. After the defeat at Plassey, Sirajuddaulah was assassinated and Mir Jafar made the Nawab. Mughal emperor Alamgir-II was ruling the empire when Battle of Plassey took place. As a result of the war of Plassey, the French were no longer a significant force in Bengal. In 1759, the British defeated a larger French Garrison at Masulipatam, securing the Northern Circars. By 1759, Mir Jafar felt that his position as a subordinate to the British could not be tolerated. After this Battle, the trade of the East India company expanded.

65. (c)

Equinox is a situation in which sun is vertical over equator. It happens every year on 23rd September (autumnal equinox) and on 21st March (vernal equinox) such situation occurs during which the duration of day and night on earth becomes equal. As the sun is vertically over equator, hence neither of the poles is tilted towards sun. The inclination exists whenever sun is vertical over Tropic of Cancer and Tropic of Capricorn.

66. (b)

The crops that increase the natural fertility of the soil through nitrogen fixation area called legume crops. These crops can fix atmospheric nitrogen through their root nodules. This reduces the use of chemical fertilisers like urea and ammonium nitrate. It is significant that, growing legume crops for the natural fixation of atmospheric nitrogen was an age-old practice of traditional farmers.

67. (d)

The South Pole (90°S) latitude is the most distant from India. India is situated north of equator between 8°4' North to 37°6' North latitude and 68°7' east to 97°25' east longitude. India is the seventh largest country in the world in terms of landmass.

68. (c)

Suspension of Fundamental Rights during emergency of Indian constitution is inspired by the Constitution of Germany. The emergency provisions are contained in Part XVIII of the Constitution of India, from Article 352 to 360. These provisions enable the central government to meet any abnormal situation effectively.

69. (a)

The Supreme Court acts as an umpire in case of disputes arising between different levels of the government in the exercise of their respective powers of dual objectives.

70. (a)

As of October 2020, there are 5 permanent members and 10 non-permanent members in the Security Council of the United Nations. The five permanent members are USA, Russia, Britain, France and China. Non-permanent members are elected for a term of two years. India, for the eighth time, has entered the UNSC, as a non-permanent member in 2021 and will stay on the council for two years i.e. 2021-22.

71. (d)

Chandrayaan-I was the first Indian lunar probe mission under the Chandrayaan program. It was launched by the Indian Space Research Organisation in October 2008, and operated until August 2009. The mission included a lunar orbiter and an impactor. India launched the spacecraft using a PSLV-XL C11 rocket on 22 October 2008 from Satish Dhawan Space Centre, Sriharikota, Andhra Pradesh. Wheeler Island, now known as Dr.Abdul Kalam Island is an Integrated Test Range, located on off the coast of Odisha. Radio contact with Chandrayaan-I spacecraft was abruptly lost on August 29, 2009.

72. (c)

International Solar Alliance (ISA) is a cooperation organization of 124 countries based on solar energy, headquartered in Gurugram (Gurgaon), Haryana. This organization will bring the nations situated between the Tropic of Cancer and Capricorn under one platform. The availability of sunlight is in abundance in such countries. In this organization, all these countries will work together in the field of solar energy.

73.(b)

In order of producing a good or a set of goods, a firm uses different factors such as land, labour, capital etc. These inputs are counted as variable inputs and in long run all factors of production are variable.

As per the Microeconomic principles, during short run a firm may vary one of its factors in order to increase production, while in the long run the firm may vary more than one factors for maximizing its production.

74. (b)

Demonetisation was announced by Prime Minister Narendra Modi on 8 November, 2016. Even before this, demonetization has happened twice in India.

The British government did demonetization for the first time in 1946. After that, in January 1978, the Janata Party government of Morarji Desai did demonetization.

High denomination notes were discontinued by bringing ordinances in 1946 and 1978.

In 2005, Manmohan Singh (the then Prime Minister) had demonetized 500 notes.

75. (a)

'Times now' is an English news channel based in Mumbai. It broadcast's in India, Singapore and U.S.A. The channel launched on 23 January, 2006 in partnership with Reuters.

76. (c)

The Vivekananda Rock Memorial is located in Kanyakumari, Tamil Nadu. It is a popular tourist monument in Kanyakumari and was built in 1970 in honour of Swami Vivekananda. He delivered an iconic and eloquent speech at the Chicago convention of parliament of religions on September 11 in 1893. Introducing Hinduism to the world, he spoke about intolerance, religion and the need to end all forms of fanaticism.

77. (b)

Himadri 'the abode of snow' is India's first research station located at the International Arctic Research base, Ny-Alesund, Svalbard, Norway. It is located at a distance of 1,200 kilometers from the North Pole. It was inaugurated on the 1st July, 2008 by Shri Kapil Sibal the Former Minister of Science and Technology and Earth Science, in the presence of dignitaries from Norway, UK, Germany, and other countries besides India. National Centre for Polar and Ocean Research (NCAOR) as nodal agency make sure availability of the requisite facilities at the Himadri. Dakshin Gangotri-the first, Maitri- the second and Bharti, India's latest research station in Antarctica.

78.(b)

Some of the famous cultural festivals of Karnataka are Hampi Dance Utsav, Pattadakal Dance, Ugadi and Karaga festival etc. Popular festivals in Tamil Nadu are Mamallapuram Dance Utsav, Pongal, Jallikattu and Mahamaham festival etc. Kerala is most popularly known for its major festivals like Onam, Vishu, Theyyam, Attukal Pongal and Nisha Gandhi Dance festival. Taj Mahotsav is cultural festival of Uttar Pradesh.

79. (c)

Liu Xiaobo was the first Chinese citizen to be awarded a Nobel Prize of any kind while residing in China.The Nobel Prizes are five separate prizes that, according to Alfred Nobel's will of 1895, are awarded to "those who, during the preceding year, have conferred the greatest benefit to Mankind." Alfred Nobel was a Swedish chemist, engineer, and industrialist most famously known for the invention of dynamite. In 1968 Sveriges Riksbank (Swedish Central Bank) founded the establishment of prize in economics sciences in memory of Alfred Nobel, to also be administrered by the Nobel Foundation.

80. (b)

Munshi Premchand was the prolific writer of Hindi literature. His original name was Dhanpat Rai Srivastava. In field of Hindi literature, he was known as King of Novels (UPANYAAS SAMRAT). His important literary works are : Sewa Sadan, Premashram, Rangbhoomi, Nirmala, Gaban, Karmabhoomi, Godan, Vardan etc. He wrote some stories also Kafan, Poos Ki Raat, Panch Parmeshwar, Bade Ghar ki beti etc.

81.(c)

World Desertification and Drought Prevention Day is observed on 17th June every year. In 1994, the United Nations General Assembly declared it to be celebrated on June 17. World Environment Day is observed every year on June 5, Earth Day on April 22, and International Day for Biodiversity on May 22nd.

82.(b)

The Prime Minister's Shram Award were instituted in 1975 by the Government of India. This national award is conferred on workers for outstanding contributions that improve productivity, innovation and indigenization, resulting in saving foreign exchange. This award is given in four (Shram Ratna, Shram Bhushan, Shram virangana and Shram SHREE/Devi) Categories.

83. (d)

Prime Minister Narendra Modi led the nation in organising a joint Yog-Protocol session on the occastion of 10th International Yoga Day, on 21st June 2024. Prime Minister Modi who came on a 2 day visit of J & K and performed 'Yoga' along with other important dignitaries at the Sher-e-Kashmir International Convention Centre of Srinagar.

84. (b)

IPS officer Idashisha Nongrang has been appointed as India's first women Director General of Police (DGP). She is related to 'Kashi' community.

85. (a)

Acid rain occurs when the atmosphere is heavily polluted with Sulphur Dioxide (SO_2) and Nitrogen Oxides (NO_x). These gases are emitted into the atmosphere and transported by wind and air currents.

86. (a)

1 Atmosphere = 101325 Pa

$= 1.01325 \times 10^5$ Pa

$\because$ 1 Bar = 1×10^5 Pa

1 Atmosphere = 1.01325 bar

= 1 atmosphere = 101.325 kPa

1 atmosphere = 760 Torr

1 Atmosphere = 760 mm Hg column.

87. (a)

Rocket works on the principle of conservation of momentum. Rocket emits gases in backward direction which creates momentum of the gases backward direction and thus by conservation of momentum, the rocket gets motion in the forward direction making it to move forward.

88. (c)

Ships float in water based on buoyancy theory. The credit for first identifying this principle goes to 'Archimedes'.

According to Archimede's Principle the upward buoyant force that is exerted on a body immersed in a fluid, whether fully or partially submerged, is equal to weight of the fluid that of the body displaces.

Niels Bohr - On the basis of quantum ideas, he explained the spectrum of hydrogen atom and presented a theory of nuclear fission.

Kepler - Theory of motion of planets of solar system

89. (b)

Note : Question has discrepancy.

- X-ray is used to penetrate hard object at hospital and Airport.
- X-rays are used in hospitals whereas electromagnetic waves are also used for MRI and CT scanning.
- X-rays are discontinued at airport which has been replaced by millimeter scanner and full body scanner.

90. (d)

The formula of common salt is NaCl.

The molecular weight of sodium (Na) = 22.98

and the molecular weight of chlorine (Cl) = 35.45

Hence the molecular weight of common salt (NaCl)

= 22.98 + 35.45 = 58.43

91. (b)

Nuclear power plants use a certain type of Uranium - U^{235} as fuel because its atoms are easily split apart. U^{235} is relatively rare at just over 7% of natural Uranium - U^{235} Contains 92 protons and 143 neutrons.

92.(a)

Noble gases not included in the Newland's law of octaves because these elements were not known at that time. If the noble gases are included in Newlands arrangement of elements will not fit the musical scale.

93. (c)

The scientific study of the preserved remains or signs of animals, plants and other creatures of ancient times is called paleontology.

94. (c)

The amount of salt present in our body is 0.4%. Salt is used to keep ice from melting. Sodium chloride is found in human tears.

95. (b)

All animals are member of the Kingdom Animalia also called Metazoa. Amongst the five kingdoms, the largest kingdom is the animal kingdom. This kingdom does not contains prokaryotes or protists

96.(d)

The tooth enamel is made of calcium phosphate. All teeth have three layers: enamel, dentine, and pulp. The enamel is the outermost layer and is primarily made of calcium phosphate minerals. Enamel is the hardest substance in the human body, but it does not grow back once it's lost.

97.(c)

In human beings, excretory products in the form of soluble nitrogen compounds are removed by the nephrons in the kidneys. Each of our kidney is made up of about a million filtering units called nephrons. Each nephron includes a filter, called the glomerulus and a renal tubule. The nephrons work through a two-step process : the glomerulus filters blood, and the tubule returns needed substances to our blood and removes wastes.

98. (d)

SEAC (Standards Eastern Automatic Computer or Standards Electronic Automatic Computer) was a first-generation electronic computer, built in 1950 by the U.S. National Bureau of Standards (NBS). The team that developed SEAC was organized by Samuel N. Alexander.

99. (b)

Logo is a simple computer programming language which can be used to control devices. For example, a small robot known as a turtle can be moved around the floor using logo. The full form of logo stands for Language of Graphics-Oriented.

100. (a)

The Indian Wild Ass is found in the little Rann of Kutch, Gujarat. The little Rann of Kutch, which covers an area of roughly 5000 square km, is primarily known as the Indian Wild Ass Sanctuary.

PRACTICE SET - 5

1. If 3 is added to each odd digit and 2 is subtracted from each even digit in the number 6452851, what will be difference between the largest and smallest digits thus formed?
(a) 8 (b) 6
(c) 4 (d) 2

2. Find the value of the denominator of $\frac{1}{(5+\sqrt{3})}$ in rational number.
(a) $\frac{(5-\sqrt{3})}{22}$ (b) $5+\frac{\sqrt{3}}{22}$
(c) $5-\frac{\sqrt{3}}{20}$ (d) $\frac{(5-\sqrt{3})}{20}$

3. Which of the following is the smallest fraction?
$\frac{4}{9}, \frac{5}{4}, \frac{3}{8}, \frac{6}{7}$
(a) $\frac{3}{8}$ (b) $\frac{4}{9}$
(c) $\frac{6}{7}$ (d) $\frac{5}{4}$

4. Simplify $1.\overline{45}+0.3\overline{12}-1.11\overline{2}$.
(a) $\frac{13}{20}$ (b) $\frac{374}{495}$
(c) $\frac{589}{900}$ (d) $\frac{163}{300}$

5. What number should be added to $\frac{-5}{7}$ to get $\frac{-2}{3}$?
(a) $\frac{-7}{21}$ (b) $\frac{10}{21}$
(c) $\frac{1}{21}$ (d) $\frac{7}{21}$

6. Find out the fraction which add $\frac{1}{2}$ to get 2?
(a) $\frac{1}{2}$ (b) $\frac{1}{-1}$
(c) $\frac{3}{2}$ (d) $\frac{5}{3}$

7. The LCM of 2.05, 1.05, 2 is equals to which among the following?
(a) LCM of 205/100, 105/100 and 200/100
(b) LCM of 205, 105 and 200
(c) LCM of 21/20, 41/20 and 20/20
(d) LCM of 205, 105 and 200/10

8. HCF of $2^4 \times 3^4 \times 5^3 \times 7^2$ and $2^2 \times 3^6 \times 5^5$ is:
(a) $2^2 \times 3^4 \times 5^3$
(b) $2^3 \times 3^5 \times 5^4 \times 7$
(c) $2^6 \times 3^{10} \times 5^8 \times 7^2$
(d) $2^2 \times 3^2 \times 5^3 \times 7^2$

9. Find the HCF and the LCM of 570 and 1425.
(a) 285, 2750 (b) 285, 2850
(c) 289, 2650 (d) 185, 2850

10. A, B and C begin together to move around a circular stadium and they complete their revolutions in 42s, 63s and 84s respectively. After how much time will they come together at the starting point?
(a) 152s (b) 252s
(c) 452s (d) 256s

11. If the ratio of a : b is 45 : 56 and the ratio of b : c is 16 : 35, then what is the ratio of a : c?
(a) 9 : 7 (b) 18 : 49
(c) 7 : 2 (d) 7 : 9

12. A number is divided in the ratio of 3 : 2. When 8 is added to each of the numbers then the ratio changes to 7 : 5. So which of the two numbers will be larger?
(a) 42 (b) 48
(c) 27 (d) 69

13. In a class 82% students passed and 2% students were placed in the reappear category. The number of students who failed was 592. What was the total number of students in the class?
(a) 3700 (b) 3600
(c) 2000 (d) 2700

14. An investor invests 1/2 part of his money at 5%, 1/4 part at 10% and the rest at 8%, after 2 years his income is ₹ 2800 then find the total amouont.
(a) ₹10000 (b) ₹15000
(c) ₹20000 (d) ₹12000

15. A rectangle of sides 34 cm and 18 cm is reconstructed to form a rhombus whose perimeter is equal to that of the rectangle and one of its angle is 120°. Find the area of the rhombus in cm^2.
(a) $\frac{169\sqrt{3}}{3}$ (b) $169\sqrt{3}$
(c) $338\sqrt{3}$ (d) $\frac{338\sqrt{3}}{3}$

16. The cost of painting a cube on all the external surfaces at the rate of ₹2/cm^2 is ₹588. Find the volume of the cube (in cm^3).
(a) 343 (b) 512
(c) 216 (d) 274.625

17. Arjun alone can do a work in 12 days and Bheem alone can do the same work in 15 days with the help of Chetan, they together complete that work in 5 days. How many days will Chetan alone take to do that work ?
(a) 20 days (b) 24 days
(c) 15 days (d) 16 days

18. A alone can finish a task in 30 days. He works for 6 days on the same task and then B finishes it in 24 days. In how many days can A and B together finish the task?
(a) 25 (b) 10
(c) 20 (d) 15

19. Rahman takes 10 hours to walk to a certain place and return by ride. However, if he had traveled on both sides by ride, he could have saved 5 hours. How long will it take to travel on both sides by walking?
(a) 15 hours (b) 10 hours
(c) 5 hours (d) 20 hours

20. A 153 metre long train crosses a 747 metre long bridge in 40.5 seconds. What is the speed of train?
(a) 75 km/hr (b) 85 km/hr
(c) 70 km/hr (d) 80 km/hr

21. A person invested 2/3 of his capital at the rate of 6%, 1/5 at the rate of 10% and the remaining at the rate of 15%. If his annual income is ₹600, the capital will be.
(a) ₹2500 (b) ₹4500
(c) ₹5000 (d) ₹7500

22. What will be the compound interest on a sum of ₹25,000 after 3 years at a rate of 12% per annum, compounded annually?
(a) ₹ 900.30 (b) ₹ 10,123.20
(c) ₹ 1,048.20 (d) ₹ 9,720

23. A seller buys a certain number of bananas at the rate of 8 for ₹5 and sells them at the rate of 5 for ₹8. What will be his profit percentage?
(a) 40% (b) 144%
(c) 156% (d) 48%

24. The difference of selling prices of an item on the basis of profit of 8% and 12% is ₹ 3. The ratio of the selling prices of both the items is:
(a) 27 : 28 (b) 27 : 29
(c) 29 : 31 (d) 27 : 31

25. Find the HCF of $(a^3 + b^3)$, $(a + b)^2$ and $(a^2 - b^2)$.
(a) $(a + b)$ (b) $(a - b)$
(c) $(a + b)(a - b)$ (d) $(a^3 + b^3)(a^2 - b^2)$

26. The Sum of the zeros of the polynomial $5x^2 + (5p - 1)x - (2p + 5)$ is the same as one fourth of their product. Find the value of p.
(a) -2 (b) 2
(c) $-\frac{1}{2}$ (d) $\frac{1}{2}$

27. If $a\cos\theta - b\sin\theta = c$, then find the value of $a\sin\theta + b\cos\theta$.
(a) $\sqrt{a^2 + b^2 + c^2}$ (b) $\pm\sqrt{a^2 + b^2 - c^2}$
(c) $\pm\sqrt{a^2 + c^2 - b^2}$ (d) $\sqrt{b^2 + c^2 - a^2}$

28. The diagonals of a rhombus shaped field are 96 m and 110 m long. What is the perimeter (in m) of the filed?
(a) 296 (b) 292
(c) 288 (d) 300

29. Find the median of the given observation –
67, 34, 57, 32, 12, 92, 51, 62, 62 57, 93 and 5
(a) 56.5 (b) 32
(c) 57 (d) 62

30. If the mean and median of the numbers 3, 4, a, b, 10 are 6 and 5 respectively where a>b, What will be the value of a and b.
(a) 7,6 (b) 5,8
(c) 6,7 (d) 8,5

31. Select the option that is related to the third term in the same way as the second term is related to the first term.
Daman and Diu : Daman :: Andaman and Nicobar : ?
(a) Nicobar (b) Indira Point
(c) Garacharma (d) Port Blair

32. 'Manipur' is related to 'Imphal' in the same way as 'Nagaland' is related to '_____'
(a) Gangtok (b) Aizawl
(c) Shilong (d) Kohima

33. Select the option that is related to fifth letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster and the fourth letter-cluster is related to the third letter-cluster.
PJEB : SQHI :: MCQX : PJTE :: LRCT : ?
(a) OWFY (b) OYFA
(c) QWHY (d) QYHA

34. Select the option that is related to the third number in the same way as the second number is related to the first number.
2 : 32 :: 4 : ?
(a) 728 (b) 128
(c) 1536 (d) 1024

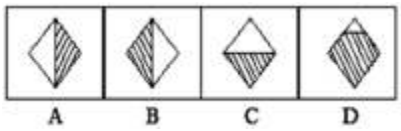
35. In a certain code language, TRY is written as 63 and NOT is written as 49. How will DUG be written in the same language?
(a) 30 (b) 40
(c) 36 (d) 32

36. In a certain language SMILE is coded as HNROV, how will TEACH be coded in that language?
(a) GVZXS (b) GSZVX
(c) GXVSZ (d) GZVXS

37. **In a code language, 'hay in the sack' is written as 'it fn en ho', 'the sack is full' is written as 'en ho go bu' and 'the hay is full' is written as 'en bu fn go'. What is the code for the word 'sack' in that language?**
(a) it (b) ho
(c) en (d) fn

38. **The word RAILWAY is coded in 4 different codes :**
Code/ 1: TCKNYCA
Code/ 2: PYGJUYW
Code/ 3: IZRODZB
Code/ 4: SCLPBGF
Which of the following code is used to write BERTH as YVIGS ?
(a) Code 1 (b) Code 3
(c) Code 2 (d) Code 4

39. **Among the four words listed, three are alike in some manner and one is different. Select the odd one.**
Gratitude, Patience, Honesty, Greed.
(a) Patience (b) Greed
(c) Gratitude (d) Honesty

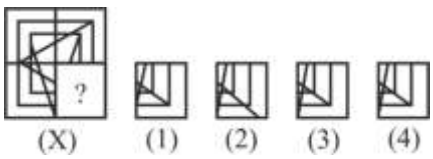
40. **Identify the odd from following.**


(a) A (b) C
(c) D (d) B

41. **Select the numbers that can replace the question marks (?) in the following series.**
4, 8, 6, 18, 15, 60, 56 ?, ?
(a) 108, 110 (b) 172, 178
(c) 280, 275 (d) 216, 230

42. **Study the given pattern carefully and select the number from among the given options that can replace the question mark (?) in it.**


(a) 6 (b) 11
(c) 18 (d) 7

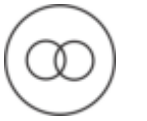
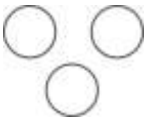
43. **Complete the Figure X from the given alternatives 1, 2, 3, 4**


(a) 1 (b) 2
(c) 3 (d) 4

44. **Pranitha goes in the north direction, and then turns right and again it turns right and then turn left. Now in which direction is Pranitha going?**
(a) East (b) West
(c) South (d) North

45. **Selena is the sister of James and James is the father of Eden. Marco is James's sister's son. Eden's husband Robert has a friend, Ileana, who is Selena's aunt. How is Robert related to James?**
(a) Sister's Son (b) Daughter's husband
(c) Wife's Father (d) Son

46. **Consider the following information. P means multiplied, T means subtracted, M means added and B means divided, then the value of-**
28 B 7 P 8 T 6 M 4 = ?
(a) 30 (b) 32
(c) 34 (d) None of the above

47. **Choose the most suitable Venn diagram for the following words?**
Grapes, Pineapple, Fruit
(a) 
(b) 
(c) 
(d) 

48. **Study the diagram and answer the question that follows. The numbers in different sections indicate the number of persons. What is the sum of the two categories, that is teachers who are doctors and teachers who are mothers but excluding teachers who are doctors as well as mothers?**


(a) 34 (b) 50
(c) 43 (d) 31

49. **Six teams DD, MI, RCB, KKR, RR and CSK are compared on the basis of the number of matches won by them in 2019. DD won more matches than RR and RCB but less matches than MI and CSK. KKR won more matches than MI but less matches than CSK.**
Who won the most numbers of matches?
(a) MI (b) CSK
(c) KKR (d) RCB

50. **Read the given statements and conclusions carefully. Assuming that the information given in the statement is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.**

Statements :

Some sisters are brothers.

Very few balloons are sisters.

Conclusions :

I. Some brothers are balloons.

II.Some brothers are not balloons.

(a) Both the conclusions I and II follows.
(b) Either conclusions I or II follows.
(c) Only conclusions II follows.
(d) Only conclusions I follows.

51. **Statement : Some buds are flowers.**

All flowers are trees.

All trees are leaves.

Conclusion : I. Some leaves are buds.

II. All flowers are leaves.

(a) Only conclusion I follows
(b) Only conclusion II follows
(c) Both conclusion I and II follows
(d) Neither conclusion I nor II follows

52. **Read the given statements and conclusions carefully and decide which of the conclusions logically follow(s) from the statements.**

Statement:

1. **Some of the languages taught in this school are English, Portuguese, Tamil and Sanskrit**
2. **Neither Arabic nor French is taught in this school**
3. **All languages are taught by well qualified teachers in this school**

Conclusion :

(i) Some other languages are also taught in this school apart from English, Portuguese, Sanskrit and Tamil

(ii) Tamil is taught by a well-qualified teacher in this school

(iii) Either Arabic or French is taught in this school

(a) Only conclusions (i) and (iii) follows
(b) Only conclusions (i) and (ii) follows
(c) Only conclusions (iii) follows
(d) Only conclusions (i) follows

53. **Statements:**

I. Raju is older than Rinku.

II. Tanu is older than Sushma.

Conclusion: Sushma is eldest among four.

(a) Correct (b) Incorrect
(c) Probably incorrect (d) Cannot say

54. **Consider the given statement and decide which of the given assumptions is/are implicit in the statement.**

Statement :

Many farmers are taking up organic farming

Assumptions

I. Organic farming is easy to practice

II. Organic farming is more beneficial to farmers

(a) Neither assumption I nor II is implicit
(b) Only assumption II is implicit
(c) Either assumption I or II is implicit
(d) Only assumption I is implicit

55. **Question:**

What is a two-digit number?

Statement:

I. The difference of number and the number obtained by converting their digits is 9.

II. The sum of the digits is 17.

III. The difference between the data of the tens place and at the unit place is 1. Choose the correct option from the answer.

(a) Only statement II is sufficient
(b) Statement II and III are sufficient
(c) All three statements are necessary
(d) Data are insufficient

56. **If each vowel in the word RUBAL is changed to the next vowel in the English alphabetical order and each consonant is changed to the next letter in the English alphabetical order, which letter will be present in the newly formed word?**

(a) L (b) U
(c) A (d) R

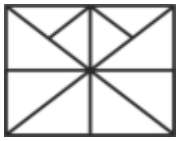
57. **The arrow represents a set of calculations that are common across all the given equations. Identify the calculations involved and solve the fourth equation on the same basis :**

4 → 5 = 21 **I.** **7 → 8 = 57** **II.**

6 → 9 = 55 **III.** **5 → 3 = ?** **IV.**

(a) 8 (b) 15
(c) 2 (d) 16

58. **How many triangles are there in the above figure?**

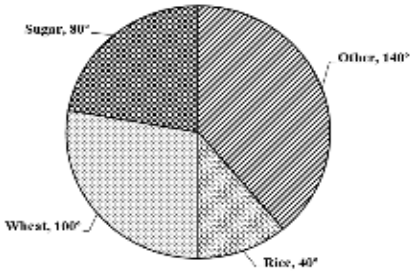


(a) 8 (b) 12
(c) 20 (d) 16

59. **Which of the following year's calendar year will be similar to 2008 calendar?**

(a) 2020 (b) 2036
(c) 2033 (d) 2018

60. Study the given pie chart that shows the annual Agricultural yield of a certain place and answer the question that follows.



If the total production is 8100 tonnes, then the yield of rice (in tonnes) will be:
(a) 2025 (b) 900
(c) 4860 (d) 3240

61. According to the real Indian philosopher, each object is made up of basic elements.
(a) 2 (b) 4
(c) 3 (d) 5

62. Chandra Gupta's son ___ was the second ruler to sit on the throne of the Mauryan Empire.
(a) Dhananand (b) Ashoka
(c) Bimbisara (d) Bindusara

63. A unique type of land distribution and administrative system evolved during Sultanate Period. That was called __
(a) Iqtadari (b) Patwari
(c) Mahalwari (d) Zamindari

64. The Indian Council Act of 1909 is also termed as the _____.
(a) Morley-Minto Reform
(b) Quit India Movement
(c) Simon Commission
(d) Chauri Chaura incident

65. International Date line passes through____.
(a) 0^0 Greenwich (b) 180^0 Greenwich
(c) 90^0 Greenwich (d) 270^0 Greenwich

66. The Ural Industrial region is located in which country?
(a) USA (b) Britain
(c) Russia (d) China

67. Which of these cities has the longest coastline of India situated?
(a) Mangalore (b) Mumbai
(c) Cochin (d) Chennai

68. The Annual Financial Statement, which is presented as a part of budget, is covered under which Article of the Constitution of India?
(a) Article 115 (b) Article 114
(c) Article 113 (d) Article 112

69. The first 'Lokpal Bill' was introduced in the Parliament of India in the year-
(a) 1967 (b) 1966
(c) 1968 (d) 1969

70. Which is not an agency of United Nations?
(a) Red Cross international Committee
(b) International Labour Organization
(c) World Health Organization
(d) Food and Agriculture Organization

71. When was the INSAT-1B launched??
(a) 1987 (b) 1990
(c) 1989 (d) 1983

72. Which is the busiest sea port in Europe?
(a) Le Havre (b) Antwerp
(c) Rotterdam (d) Southampton

73. Which law states that 'as the quantity of one factor is increased, keeping the other factors fixed, the marginal product of that factor will eventually decline?
(a) The law of unstable economy
(b) The law of variable proportions
(c) The law of constant proportions
(d) The law of money savings

74. In 2016, a new Product "SBI Exclusif" availed by State Bank of India. What is the financial nature of this product?
(a) Money management
(b) Recurring deposit plan
(c) Insurance
(d) After of mutual fund

75. Who was 'Charles Correa'?
(a) A famous Play writer
(b) A famous poet
(c) A famous film maker
(d) A famous Architect

76. Where is the 'forbidden city' located?
(a) Vietnam (b) Myanmar
(c) Greece (d) China

77. Tata Istitute of Fundamental Research (TIFR) is situated at____.
(a) Pune (b) Mumbai
(c) Bengaluru (d) New Delhi

78. Which Muslim festival is celebrated to mark the culmination of the hajj (pilgrimage) rites at Minā , Saudi Arabia, near Mecca ?
(a) Milad un-Nabi (b) Eid Al-Adha
(c) Muharram (d) Eid-Ul-Fitr

79. Name the Indian scientist who shared the Nobel Prize for Medicine and Physiology in 1968 for cracking the genetic code.
(a) Har Gobind Khorana
(b) Visvesvaraya
(c) Venkatarman Radhakrishnan
(d) Meghnad Saha

80. Who wrote the great Indian literary works 'Meghadoota' and 'Abhigyan Shakuntalam'?
(a) Bhasa (b) Kalidas
(c) Chanakaya (d) Shudraka

81. **World Hindi day is celebrated annually :**
(a) 10 January (b) 10 September
(c) 10 March (d) 10 April

82. **Which Union Ministry organizes National film award every year?**
(a) Culture and Tourism
(b) Ministry of Home Affairs
(c) Youth Affairs
(d) Information and Broadcasting

83. **What rank is given to India among 119 countries in the 'Travel Tourism Development Index 2024 released by the World Economic Forum on 21 May 2024 ?**
(a) 37^{th}
(b) 38^{th}
(c) 39^{th}
(d) 41^{th}

84. **Which country gave the name of storm 'Remal' that caused devastation in the coastal area of West Bengal and Bangladesh in 2024 ?**
(a) UAE
(b) Saudi Arabia
(c) Oman
(d) Yaman

85. **Which of the following is the most in India the village is suffering from none other?**
(a) Air pollution
(b) Noise pollution
(c) Radiation pollution
(d) Water pollution

86. **Tachometer is used for-**
(a) R.P.M.
(b) Torque
(c) Rotational kinetic energy
(d) Distance

87. **Which of the following is not true about friction force?**
(a) Friction is the force which opposes motion relative to two surfaces in contact.
(b) The force of friction that acts when a body is moving (sliding) on a surface is called sliding friction.
(c) Friction in machines wastes energy and also causes wear and tear.
(d) Rolling friction is much more than sliding friction, the use of ball bearings in a machine considerably reduces friction.

88. **Pressure is measured by-**
(a) Mass and density (b) Work done
(c) Force and area
(d) Force and distance

89. **The speed of sound _____ as it passes from solid to gaseous medium?**
(a) does not change (b) increases
(c) fluctuates (d) decreases

90. **Which of the following groups of metals are so soft that they can be cut with a knife and have low densities and low melting point?**
(a) Arsenic, Antimony, Bismuth
(b) Beryllium, Calcium, Magnesium
(c) Lithium, Sodium, Potassium
(d) Germanium, Gallium, Indium

91. **Valence electrons are present in the:**
(a) innermost as well as outermost shell of an atom
(b) outermost shell of an atom
(c) innermost shell of an atom
(d) just outside an atom

92. **Scientists named Newlands, Mendeleev and Mayer developed .....?**
(a) Metallurgy
(b) Periodic Table of Contents
(c) atomic structure
(d) discovery of elements

93. **Apart from nucleus of the cell, which two cell organelles have their own DNA and Ribosomes?**
(a) Plastids and Mitochondria
(b) Mitochondria and Lysosomes
(c) Plastids and Golgi bodies
(d) Mitochondria and Golgi bodies

94. **How many pairs of autosomes does a normal human have?**
(a) 22 (b) 44
(c) 1 (d) 23

95. **A sexual reproduction as in the case of amoeba in which an animal reproduces by dividing into two individuals is called:**
(a) Transverse fission (b) Longitudinal fission
(c) Simple fission (d) Binary fission

96. **Which of the following events takes place during diastole in the human heart?**
(a) Blood enters the aorta
(b) Blood enters the lungs
(c) Blood leaves the ventricle
(d) Blood enters the ventricle

97. **Which of the following is not a part of the human excretory system?**
(a) Kidney (b) Urinary duct
(c) Uterus (d) Urethra

98. **Who invented HTML in 1990?**
(a) Tim Berners - Lee (b) David Noble
(c) Kane Kramer (d) Niklaus Wirth

99. **Which of the following is NOT a computer programming language?**
(a) Python (b) Java
(c) C^{++++} (d) Swift

100. **What is the habitat of the Musk Deer ?**
(a) High alpine environments above altitudes of 2500 m
(b) Plains of the Ganga below altitudes of 500 m
(c) Western Ghat
(d) Thar desert

SOLUTION : PRACTICE SET- 5

ANSWER KEY

1. (a)	11. (b)	21. (d)	31. (d)	41. (c)	51. (c)	61. (d)	71. (d)	81. (a)	91. (b)
2.(a)	12.(b)	22. (b)	32. (d)	42. (a)	52. (b)	62. (d)	72. (c)	82. (d)	92.(b)
3. (a)	13. (a)	23. (c)	33. (b)	43. (d)	53. (b)	63. (a)	73. (b)	83. (c)	93.(a)
4. (c)	14. (c)	24. (a)	34. (d)	44. (a)	54. (b)	64. (a)	74. (a)	84. (c)	94. (a)
5. (c)	15. (c)	25. (a)	35. (d)	45. (b)	55.(c)	65. (b)	75. (d)	85. (d)	95. (d)
6. (c)	16. (a)	26. (d)	36. (a)	46. (a)	56. (c)	66. (c)	76. (d)	86.(a)	96. (d)
7. (a)	17. (a)	27.(b)	37. (b)	47. (c)	57. (d)	67. (d)	77. (b)	87. (d)	97.(c)
8. (a)	18. (d)	28. (b)	38. (b)	48. (a)	58. (c)	68. (d)	78.(b)	88. (c)	98. (a)
9. (b)	19. (a)	29. (c)	39. (b)	49. (b)	59. (b)	69. (c)	79. (a)	89. (d)	99. (c)
10. (b)	20. (d)	30. (b)	40. (c)	50. (b)	60. (b)	70. (a)	80. (b)	90. (c)	100.(a)

SOLUTION

1. (a)

The number obtained by adding 3 to the odd digit and substracting 2 from the even digit of the number is

$$\begin{array}{r} 6\ 4\ 5\ 2\ 8\ 5\ 1 \\ -2\ -2\ +3\ -2\ -2\ +3\ +3 \\ \hline 4\ 2\ 8\ 0\ 6\ 8\ 4 \end{array}$$

Hence the difference of largest and smallest digits

$= 8-0$

$= 8$

2.(a)

According to the question-

$$\frac{1}{(5+\sqrt{3})} = \frac{(5-\sqrt{3})}{(5+\sqrt{3})(5-\sqrt{3})}$$

$$= \frac{(5-\sqrt{3})}{(5)^2-(\sqrt{3})^2}$$

$$= \frac{(5-\sqrt{3})}{25-3} \qquad = \frac{(5-\sqrt{3})}{22}$$

3. (a)

From question,

$\frac{4}{9} = 0.444 \Rightarrow \frac{5}{4} = 1.25$

$\boxed{\frac{3}{8} = 0.375}$

$\frac{6}{7} = 0.857$

Hence, it is clear that $\frac{3}{8}$ is the smallest fraction.

4. (c)

From question,

$1.\overline{45} + 0.3\overline{12} - 1.1\overline{2}$

$$= 1+\frac{45}{99}+0+\frac{312-3}{990}-\left(1+\frac{112-11}{900}\right)$$

$$= 1+\frac{5}{11}+\frac{309}{990}-\left(1+\frac{101}{900}\right)$$

$$= 1+\frac{5}{11}+\frac{103}{330}-\frac{101}{900}-1$$

$$= \frac{5}{11}+\frac{103}{330}-\frac{101}{900}$$

$$= \frac{4500+3090-1111}{9900}$$

$$= \frac{6479}{9900}$$

$$= \frac{589}{900}$$

5. (c)

From question,

$$\frac{-5}{7}+?=\frac{-2}{3}$$

$$= \frac{-2}{3}-\left(\frac{-5}{7}\right) = \frac{-2}{3}+\frac{5}{7} = \frac{5}{7}-\frac{2}{3} = \frac{15-14}{21}$$

$\boxed{= \frac{1}{21}}$

6. (c)

Let the fraction is $\frac{x}{y}$

According to the question,

$$\frac{1}{2}+\frac{x}{y}=2$$

$$\frac{x}{y}=2-\frac{1}{2}$$

$$\frac{x}{y}=\frac{3}{2}$$

Hence, the fraction will be $\frac{3}{2}$.

7. (a)

From the question,

$$2.05 = \frac{205}{100}$$

$$1.05 = \frac{105}{100}$$

$$2 = \frac{200}{100}$$

So, the LCM of 2.05, 1.05, 2

$$= \text{LCM of } \left(\frac{205}{100}, \frac{105}{100}, \frac{200}{100}\right)$$

8. (a)

On finding the HCF of

$(2^4 \times 3^4 \times 5^3 \times 7^2)$ and $(2^2 \times 3^6 \times 5^5)$

HCF $= 2^2 \times 3^4 \times 5^3$

9. (b)

HCF of given numbers,

$$570 = 2 \times 3 \times 5 \times 19$$

$$1425 = 3 \times 5 \times 5 \times 19$$

$$HCF = 3 \times 5 \times 19 = 285$$

LCM of given numbers,

2	570	1425
3	285	1425
5	95	475
5	19	95
19	19	19
	1	1

$$LCM = 2 \times 3 \times 5 \times 5 \times 19 = 2850$$

10. (b)

Time taken by A, B and C to meet again at the starting point = LCM of 42, 63 and 84 = 252 seconds.

$$42 = 2 \times 3 \times 7$$

$$63 = 3 \times 3 \times 7$$

$$\underline{84 = 2 \times 2 \times 3 \times 7}$$

LCM = 2 × 2 × 3 × 3 × 7

= 252s

11. (b)

Given,

$$a : b = 45 : 56$$

$$b : c = 16 : 35$$

$$\therefore a : c = \frac{a}{c} = \frac{a}{b} \times \frac{b}{c} = \frac{45}{56} \times \frac{16}{35}$$

$$= \frac{18}{49} = 18 : 49$$

12.(b)

Let the numbers be 3x and 2x respectively.

According to the question,

$$\frac{3x+8}{2x+8} = \frac{7}{5}$$

$$15x + 40 = 14x + 56$$

$$x = 16$$

Now the numbers = 3 × 16 , 2 × 16

= 48, 32

Hence, the larger number = 48

13. (a)

Let, no. of the total students in class = x

Passed student $= x \times 82\% = x \times \frac{82}{100}$

Again passed students in reappear category

$$= x \times 2\% = x \times \frac{2}{100}$$

Total passed students $= x \times \frac{2}{100} + x \times \frac{82}{100}$

$$= x \times \frac{84}{100}$$

Failed students $= x - x \times \frac{84}{100} = x \times \frac{16}{100}$

According to the question-

$$x \times \frac{16}{100} = 592$$

$$x = \frac{592}{16} \times 100$$

$$\boxed{x = 3700}$$

14. (c)

Let the total amount of the investor is ₹x,

Rest part $= x - \left(\frac{x}{2} + \frac{x}{4}\right) = \frac{x}{4}$

$$\therefore \frac{\frac{x}{2} \times 5 \times 2}{100} + \frac{\frac{x}{4} \times 10 \times 2}{100} + \frac{\frac{x}{4} \times 8 \times 2}{100} = 2800$$

$$\frac{x}{20} + \frac{x}{20} + \frac{x}{25} = 2800$$

$$\frac{5x + 5x + 4x}{100} = 2800$$

$14x = 280000 \Rightarrow x = ₹20000$

15. (c)

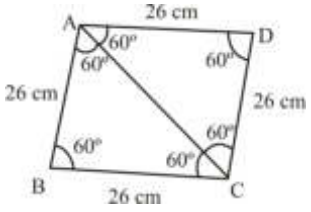
Let the side of rhombus be a cm.

According to the question,

Perimeter of rhombus = Perimeter of rectangle

$4a = 2\ (34 + 18)$

$a = 26$



Area of rhombus ABCD = 2 × Area of equilateral triangle ABC

$$\text{Area} = 2\times\frac{\sqrt{3}}{4}\times \text{side}^2$$

$$= 2\times\frac{\sqrt{3}}{4}\times 26\times 26\,\text{cm}^2$$

$$= 26\times 13\times\sqrt{3}\ \text{cm}^2$$

and diagonal AC = 14 cm

$$= 338\sqrt{3}\ \text{cm}^2$$

16. (a)

$$\text{Surface area of a cube} = \frac{\text{cost of paintings}}{2}$$

$$6a^2 = \frac{588}{2}$$

$$6a^2 = 294$$

$$a^2 = \frac{294}{6}$$

$$a^2 = 49$$

$$a = 7$$

Volume of the cube $= a^3$

$= (7)^3$

$= 343\ \text{cm}^3$

17. (a)

According to the question,

$$\text{One day work of Arjun} = \frac{1}{12}\text{ part}$$

$$\text{One day work of Bheem} = \frac{1}{15}\text{ part}$$

$$\text{Let, one day work of Chetan} = \frac{1}{x}\text{ part}$$

$$\text{One day work of all three} = \frac{1}{12}+\frac{1}{15}+\frac{1}{x}$$

$$\frac{1}{5} = \frac{5+4}{60}+\frac{1}{x}$$

$$\frac{1}{x} = \frac{1}{5}-\frac{9}{60}$$

$$\frac{12-9}{60} = \frac{1}{x}$$

$$\frac{1}{x} = \frac{3}{60} = \frac{1}{20}$$

So time taken by Chetan to finish the work alone = 20 days

18. (d)

According to the question,

$$\text{A's 1 day work} = \frac{1}{30}\text{ part}$$

$$\text{A's 6 days work} = \frac{6}{30} = \frac{1}{5}\text{ part}$$

$$\because\ \text{Remaining work} = 1-\frac{1}{5} = \frac{4}{5}\text{ part}$$

$$\therefore\ \frac{4}{5}\text{ part of work done by B} = 24\text{ days}$$

Time taken by B to complete the work = 30 days

$\therefore$ Time taken by both (A + B) to complete the work

$$= \frac{1}{\left(\frac{1}{30}+\frac{1}{30}\right)} = \frac{1}{\frac{1+1}{30}}$$

= 15 days

19. (a)

Let the time taken to walk = tx

Time taken by ride = ty

According to the question,-

$$tx + ty = 10 \quad \ldots..(i)$$

And, $ty + ty = 5$

$$2ty = 5$$

$$ty = \frac{5}{2}$$

From equation (i)

$$tx + \frac{5}{2} = 10$$

$$tx = \frac{15}{2}$$

Time taken to walk on foot both sides.

$$tx + tx = 2tx = 2\times\frac{15}{2} = 15\text{ hours}$$

20. (d)

$$\because\ \text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Speed of train} = \frac{\text{Length of train + Length of Bridge}}{\text{Total Time taken}}$$

$$= \frac{153+747}{40.5} = \frac{900}{40.5} = \frac{9000}{405}\text{ m./sec.}$$

$\because$ On changing the speed of train in km/hr.–

$$= \frac{9000}{405}\times\frac{18}{5}$$

$$= \frac{1800\times 18}{81\times 5}$$

$$= \frac{200\times 18}{9\times 5} = \frac{200\times 2}{5} = 80\text{ km./hr.}$$

21. (d)

Let the capital of person be = ₹x

As per question,

$$x\times\frac{2}{3}\times\frac{6}{100}+x\times\frac{1}{5}\times\frac{10}{100}+x\left[1-\left(\frac{2}{3}+\frac{1}{5}\right)\right]\times\frac{15}{100} = 600$$

$$\frac{x}{25}+\frac{x}{50}+x\left[\frac{15-(10+3)}{15}\right]\times\frac{15}{100} = 600$$

$$\frac{x}{25}+\frac{x}{50}+\frac{2x}{15}\times\frac{15}{100} = 600$$

$$\frac{x}{25}+\frac{x}{50}+\frac{2x}{100}=600$$

$$\frac{4x+2x+2x}{100}=600$$

$$\frac{8x}{100}=600$$

$x = ₹7500$

Total capital of person $= ₹7500$

22. (b)

Given, $P = ₹\ 25000$

$r = 12\%$

$t = 3$ years

$$A = P\left(1+\frac{r}{100}\right)^t$$

$$= 25000\left(1+\frac{12}{100}\right)^3$$

$$= 25000\times\left(\frac{28}{25}\right)^3$$

$$= 25000\times\frac{28}{25}\times\frac{28}{25}\times\frac{28}{25}$$

$$= \frac{40\times21952}{25}$$

$= 35123.2$

$C\cdot I = A - P$

$= 35123.2 - 25000$

$C\cdot I = ₹\ 10,123.20$

23. (c)

According to the question,

8 bananas were bought ₹5

Cost price of 1 bananas $= ₹\frac{5}{8}$

5 bananas sold for ₹ 8

Selling price of 1 bananas $= ₹\frac{8}{5}$

We know that,

Profit % $= \left(\frac{SP-CP}{CP}\right)\times100$

$$= \frac{\frac{8}{5}-\frac{5}{8}}{\frac{5}{8}}\times100$$

$$= \left(\frac{64-25}{40}\right)\times\frac{8}{5}\times100$$

$$= \frac{39}{40}\times\frac{8}{5}\times100$$

$= 156\%$

24. (a)

Let the cost price of the item = ₹ x.

The difference of selling prices = ₹ 3

According to the question,

$$x\times\frac{112}{100}-x\times\frac{108}{100}=3$$

$$\frac{4x}{100}=3,\quad x=\frac{300}{4}=75$$

So, the required ratio $= 75\times\frac{108}{100}:75\times\frac{112}{100}$

$= 108 : 112 = 27 : 28$

25. (a)

$(a^3+b^3) = (a+b)(a^2+b^2-ab)$

$(a+b)^2 = (a+b)(a+b)$

and

$(a^2-b^2) = (a+b)(a-b)$

So, HCF $= (a+b)$

26. (d)

$5x^2+(5p-1)x-(2p+5)=0$

$$\text{Sum of zeros} = \frac{-b}{a} = -\frac{(5p-1)}{5}$$

$$\text{Product of zeros} = \frac{c}{a} = -\frac{(2p+5)}{5}$$

According to the question,

$$\frac{(5p-1)}{5}=\frac{(2p+5)}{5}\times\frac{1}{4}$$

$$20p-4=2p+5$$

$$18p=9$$

$$p=\frac{1}{2}$$

27.(b)

Given that,

$a\cos\theta - b\sin\theta = c$

On squaring both sides

$$(a\cos\theta-b\sin\theta)^2=c^2$$

$$a^2\cos^2\theta+b^2\sin^2\theta-2ab\sin\theta\times\cos\theta=c^2$$

$$a^2(1-\sin^2\theta)+b^2(1-\cos^2\theta)-2ab\sin\theta\times\cos\theta=c^2$$

$$a^2-a^2\sin^2\theta+b^2-b^2\cos^2\theta-2ab\sin\theta\times\cos\theta=c^2$$

$$a^2+b^2-c^2=a^2\sin^2\theta+b^2\cos^2\theta+2ab\sin\theta\times\cos\theta$$

$$a^2+b^2-c^2=(a\sin\theta+b\cos\theta)^2$$

$$a\sin\theta+b\cos\theta=\pm\sqrt{a^2+b^2-c^2}$$

28. (b)

Diagonal $d_1 = 98$ m, $d_2 = 110$ m

$$\text{Side of rhombus (a)} = \sqrt{\left(\frac{d_1}{2}\right)^2+\left(\frac{d_2}{2}\right)^2}$$

$$= \sqrt{\left(\frac{96}{2}\right)^2+\left(\frac{110}{2}\right)^2}$$

$$= \sqrt{(48)^2+(55)^2}$$

$$= \sqrt{2304+3025}$$

$= 73$ m

Perimeter of rhombus $= 4a$

$= 4\times73$

$= 292$ m

29. (c)

Arranging the given numbers in ascending order 5, 12, 32, 34, 51, 57, 57, 62, 62, 67, 92, 93

total numbers (n) = 12 (even)

$$\text{median} = = \left[\frac{\left(\frac{n}{2}\right)\text{th term} + \left(\frac{n}{2}+1\right)\text{th term}}{2}\right]$$

$$= \left[\frac{6^{\text{th}}\text{ term} + 7^{\text{th}}\text{ term}}{2}\right]$$

$$= \left[\frac{57+57}{2}\right] = \frac{114}{2} = 57$$

30. (b)

$$\text{Mean} = \frac{\text{sum of total number}}{\text{total number}}$$

$\because$ the mean of 3, 4, a, b, 10 is 6

$$\therefore \quad 6 = \frac{3+4+a+b+10}{5}$$

$$30 = 17 + a + b$$

$$a + b = 13 \qquad \ldots.(i)$$

$\because$ median is 5–

number of terms (n) = 5

$$\therefore \text{ median} = \left(\frac{5+1}{2}\right)^{\text{th}} \text{term} = 3^{\text{rd}} \text{ term}$$

$$5 = a$$

$\because$ $a + b = 13$ (from equ^{n} ···(i))

$\Rightarrow$ $5 + b = 13$

$\Rightarrow$ $b = 8$

$\therefore$ a = 5, b = 8

31. (d)

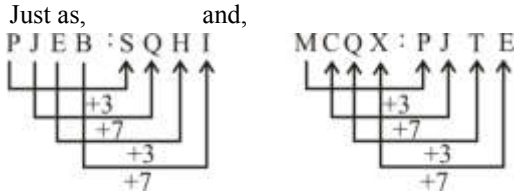
Just as, Daman is the Capital of Daman and Diu. Similarly, the Capital of Andaman and Nicobar is Port Blair.

32. (d)

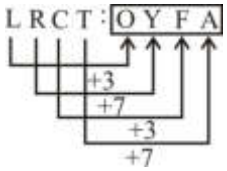
Just as, 'Imphal' is the capital of Manipur. Same as, 'Kohima' is the capital of Nagaland.

33. (b)

Just as, and,



Same as,



34. (d)

Just as,	Same as,
2 : 32	4 : ?
$(2)^5 = 32$	$(4)^5 =$ 1024

35. (d)

Such as,

T R Y $\rightarrow$ 20+18+25 = 63

And,

NOT $\rightarrow$ 14+15+20 = 49

Similarly,

D U G $\rightarrow$ 4+21+7 = 32

Hence option (d) is correct answer.

36. (a)

Just as –

S M I L E

↓ ↓ ↓ ↓ ↓ Opposite letter

H N R O V

Similarly,

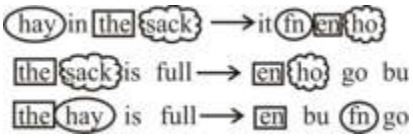
T E A C H

↓ ↓ ↓ ↓ ↓ Opposite letter

G V Z X S

37. (b)

According to the question,



Hence, the code for 'Sack' is ho.

38. (b)

By using Code 3-

Just as,

Similarly,

Hence, the word RAILWAY has been written as IZRODZB via code 3.

39. (b)

Greed is a negative sentiment word while Patience, Gratitude and Honesty all express positive sentiment.

40. (c)

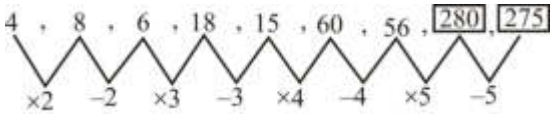
According to the question,

Except in the figure D, all other figures are shaded half.

Hence, option (c) is odd one.

41. (c)

The given series is as follows–



Hence, option (c) is correct.

42. (a)

Just as,

$$4 \times 8 - 6 \times 2 = 20$$

And, $8 \times 6 - 5 \times 6 = 18$

Same as,

$$9 \times 2 - 4 \times 3 = 6$$

Hence, ? = 6

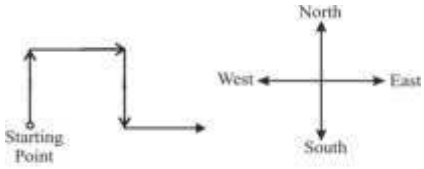
43. (d)

Answer figure (4) will complete the given question figure.

Hence, option (d) is correct.

44. (a)

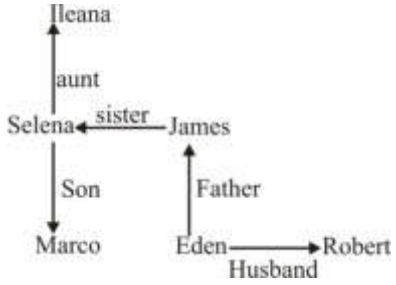
The path sequence of Pranitha is as follows:



Hence, Pranitha is going in the east direction.

45. (b)

According to the question



Hence, it is clear from blood relation diagram that Robert is husband of James daughter.

46. (a)

Given,

$P \rightarrow \times$, $T \rightarrow -$, $M \rightarrow +$, $B \rightarrow \div$

According to the question,

28 B 7 P 8 T 6 M 4

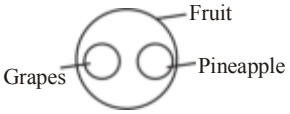
$= 28 \div 7 \times 8 - 6 + 4$

$= 4 \times 8 - 2$

$= 32 - 2 = 30$

47. (c)

Grapes and Pineapple are Fruits.



Hence, option (c) is correct.

48. (a)

According to the question,

Number of teachers who are doctors = 12

Number of teachers who are mothers but excluding teachers who are doctors as well as mothers = 22

Hence sum = 12+22 = 34

49. (b)

MI > DD > RR — (i)

CSK > DD > RCB — (ii)

CSK > KKR > MI — (iii)

On writing all the equation together.

CSK > KKR > MI > DD > RR > RCB .....(iv)

It is clear from the equation (iv) most number of the matches won by CSK.

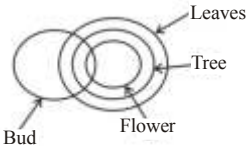
50. (b)

According to the question.

According to question it is clear from the Venn diagram that either conclusion I or conclusion II follows.

51. (c)

On drawing the diagram as per the statement



Hence, conclusion I and II both follows.

52. (b)

Some of the languages taught in this school are English, Portuguese, Tamil and Sanskrit. All languages are taught by well qualified teachers in this school. According to the statement only conclusion (i) and (ii) follows.

53. (b)

In the statement,

1. Raju is older than Rinku . Raju > Rinku

2. Tanu is older than Shushma. Tanu > Shushma

Conclusion–Shushma is eldest of the four. From statement II it is clear that Tanu is older than Shushma. Hence, it is clear that Shushma is not the eldest among all.

54. (b)

Many farmers do organic farming, farmers doing organic farming will be given 10 thousand rupees per acre by the Government. Not only this, when the farmers crops are ready, the government will make separate arrangements to buy them in the mandis. So that organic farming is more beneficial for the farmers. Therefore only assumption II is implicit in the statement.

55.(c)

From statement I,

Suppose unit digit is y and tens digit = x then number = 10 x + y .....(i)

The new number on interchanging the digits = 10 y + x..(ii)

For the difference of statement (i) & (ii)

(∵To find the difference smaller number will have to subtracted from the larger number)

From statement III, It is known that ten's digit is greater than unit digit

so $x > y$

or $\boxed{x - y = 1}$

or Statement (ii)

$10x + y - 10y - x = 9$

$9x - 9y = 9$

$9(x - y) = 9$

$x - y = 1$ .....(iii)

From statement II,

$x + y = 17$ .....(iv)

From equation (iii) & (iv), we have-

$x - y = 1$

$+x + y = 17$

$2x = 18$

$\boxed{x = 9}$

On putting the value of x in statement (i), we get-

$9 - y = 1$

$-y = 1 - 9$

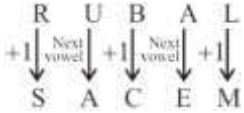
$\boxed{y = 8}$

Hence, desired no = $\boxed{98}$

Hence, it is clear that to answer the question all the three statements are necessary.

56. (c)

According to the question,



Hence, it is clear from given option that the only letter 'A' will be present in newly formed word.

57. (d)

In the given equation

Just as,

(i) $4 \rightarrow 5 = 21 \Rightarrow 5 \times 4 + 1 = 21$

(ii) $7 \rightarrow 8 = 57 \Rightarrow 7 \times 8 + 1 = 57$

(iii) $6 \rightarrow 9 = 55 \Rightarrow 6 \times 9 + 1 = 55$

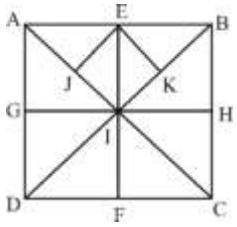
Similarly,

(iv) $5 \rightarrow 3 = ? \Rightarrow 5 \times 3 + 1 = 16$

Hence $\boxed{? = 16}$

58. (c)

Triangles in the picture-



The number of triangle ΔAGI, ΔAEI, ΔEBI, ΔBHI, ΔGDI, ΔFDI, ΔCHI, ΔFCI, ΔAJE, ΔEKB, ΔEJI, ΔEKI, ΔAID, ΔBCI, ΔAIB, ΔDIC, ΔADC, ΔABC, ΔBCD, ΔABD

So, total number of triangles = 20

59. (b)

According to the question,

∵ Leap year + 28 = Normal Calendar

∴ 2008 + 28 = 2036

Hence, Calendar of 2036 will be same as of 2008.

60. (b)

Total production = 8100 Tonnes

$$\text{Yield of rice} = 8100 \times \frac{40^0}{360^0}$$

$$= 900 \text{ Tonnes}$$

61. (d)

Panchabhoota (Panchatatva or Panch Mahabhoota) is considered as the origin of all substances in Indian Philosophy. These five elements are considered to be the great powers of sky, air, fire water and earth by whose creation every substance is made of. But the materials made from these are rooted, they need a soul to become alive. The soul is called Purusha in Vedic literature. In Sankhya Philosophy, nature is believed to be composed of these five elements.

62. (d)

Bindusara, son of Chandragupta (298 BC to 273 BC) of Mauryan Empire was the second ruler to sit on the throne of the Mauryan Empire. Bindusara was a follower of the Ajivak sect, In Vayupuranas, he is called Bhadrasar. Bindusara is also known as Amitraghata. Greek ambassador Deimachus came to his court. Buddhist scholar Taranath has described him as the winner of 10 states.

63. (a)

Iltutmish started Iqtadari system in Delhi sultanate. The Iqtadari was a unique type of land distribution among the army for their service. He set up the Iqtadari system in which division of empire was done into iqtas, which were assigned to the nobles and officers in lieu of salary. Although this system was not hereditary. Iqtadar were transfered between different Iqta's which gave it bureaucratic nature. They were different from Mansabdar of Mughal period.

64. (a)
Indian Council Act of 1909, also called as Morley-Minto Reform, was named after the Secretary of State for Indian Affairs lord John Morley and the Viceroy Lord Minto. It introduced for the first time the method of election, an attempt to widen the scope of legislative councils, placate the demands of moderates in Indian National Congress and to increase the participation of Indians in the governance. The main provision of Indian council act was that it is traduced the separate electorate for the Muslims.

65. (b)
In the year of 1884, an international conference was organized at the Washington D.C. (United States of America) in which time zone of 1 hour was set up at 15º longitude. On the same time the International Date Line was also adopted which passes through the 180º meridian and it separates the whole world into two consecutive calendar days. It is not a perfectly straight line. It passes through the middle of Pacific ocean roughly following the 180º line of longitude. There is a difference of one day on either side of the 180º meridian. The time increases east of the prime meridian and decreases to its west. The maximum number of time zone is found in France as 12 time zone.

66. (c)
The Ural Industrial region is located in Russia. It is one of the twelve economic regions of Russia located in central and partly in southern and northern parts of Urals but also includes the parts of the East European and West Siberian Plain. The area is rich in various ores and minerals, such as Chalcopyrite, Nickel Oxides, Chromite, Magnetite, Bauxite, Potassium salts, Manganese, Aluminium, Gold, Platinum as well as Coal, Oil and Natural gases.

67. (d)
Coastline of Tamil Nadu is part of Coromandel Coast of Bay of Bengal and is the third longest coastline in the country after Gujarat and Andhra Pradesh. The coast of Tamil Nadu has Major seaport like Tuticorin and Chennai, Major fishing harbors and longest natural urban beach in India called Marina Beach in Chennai and Gulf of Mannar Marine National Park.

68. (d)
Article-112 of Indian constitution deals with Annual Financial statement, which is presented as a part of budget. This Article of constitution entails that the President shall in respect of every financial year cause to be laid before both the houses of parliament, a statement of the Annual receipts expenditures in this part referred to as the "Annual Financial Statement".

69. (c)
The Lokpal Bill was first introduced in the Parliament of India in 1968. The bill was also passed by the Lok Sabha in 1969 but remained stuck in the Rajya Sabha. Meanwhile, due to dissolution of the Lok Sabha, this bill was abolished in the first place. After eight unsuccessful attempts, the Lokpal Bill was passed in the year 2013 and it was enacted as soon as the President approved in 2014. According to Act the Lokpal will have a President and Maximum 8 Members, out of 8 members, half will be from judicial background and half members will be from scheduled castes, scheduled tribes, backward castes, minorities and women. Currently (from 19 March 2019)-Justice Pinaki Chandra Ghosh has been appointed the First Lokpal of India.

70. (a)
Major specialized agencies and related organs of the UN include the International Labour Organisation (ILO) established in 1919 and headquartered in Geneva, the Food and Agriculture Organization of the United Nations (FAO) established in 1945 and headquartered in Rome, the United Nations Educational, Scientific and Cultural Organization (UNESCO) established in 1945 and headquartered in Paris, and the World Health Organization (WHO) established in 1948 and headquartered in Geneva.

71. (d)
INSAT-1B, the second in the INSAT-1 series was successfully launched by Space Shuttle of USA on August 30, 1983. It was stationed at 74ºE in place of INSAT-1A. It was the first operational satellite in the Indian National Satellite System (INSAT) series and provided telecommunication, broadcasting radio networking, weather observation and forecasting services. It was operational till July 1990 with all its 4375 two way vice or equivalent circuits in use.

72. (c)
The Port of Rotterdam is by far the largest and busiest port in Europe and the 11th busiest port in the world.Rotterdam is a major port city in the Dutch province of South Holland.
Some busiest port of the world

Le Havre	–	France
Antwerp	–	Belgium
Southampton	–	England

73. (b)
Law of variable proportion is regarded as an important theory in economics.
It is referred to as the law which states that when the quantity of one factor of production is increased when keeping all other factors constant, it will result in the decline of the marginal product of that factor.
The law of variable proportions or returns to a factor plays an important role in the study of the theory of production. Hence, this law exhibits the short-run production functions in which one factor varies while the others are fixed.

74. (a)
In 2016, any individual who has availed loans of over ₹1 Crore from a Bank or holds deposits of ₹30 Lakhs or earns a salary of ₹72 Lakhs and more a month can become an "SBI Exclusif" customer. It is a Premium elite service completely reserved for wealth management. A separate relationship manager is assigned to you who advises and invests your money for best returns.

75. (d)
Charles Mark Correa was an Indian architect and urban planner. Credited with the creation of modern architecture in post-independent India. Jawahar Kala Kendra, Bharat Bhawan, Sabarmati Ashram, Gandhi Smarak, British Council, India and Kanchanjunga Apartment are famous structures made by Charles Correa.

76. (d)
Forbidden City is imperial palace complex at the heart of Beijing (Peking), China. It was commissioned in 1406 by the Yongle emperor of the Ming dynasty, it was first officially occupied by the court in 1420. It was so named because access to the area was barred to most of the subjects of the realm. Government functionaries and even the imperial family were permitted only limited access; the emperor alone could enter any section at will. The 178-acre (72-hectares) compound was designated a UNESCO World Heritage Site in 1987.

77. (b)
Tata Institute of Fundamental Research (TIFR) is situated at Mumbai in India. Tata Institute of Fundamental Research is national centre for nuclear science and mathematics working under Department of Atomic Energy, Government of India. It is also a university that offers postgraduate and Ph.D programme.

78.(b)
Eid Al-Adha is celebrated to mark the culmination of hajj rites at Mina, Saudi Arabia. Muharram is the first month of Islamic calendar. Eid-ul-Fitr is celebrated by Muslims to – mark the end of months- long dawn-to-sunset fasting of Ramadan.

79. (a)
The Nobel Prize in physiology or medicine in 1968 was awarded jointly to Robert W Holley, Har Gobind Khorana and Marshall W. Nirenberg for their interpretation of the genetic code and its function in protein synthesis. In 2021, this award was awarded jointly to David Julius and Ardem Patapoution for their discoveries of receptors for temperature & touch.

80. (b)

Book	**Authors**
Mudrarakshasa	Visakhadatta
Rajtarangini	Kalhana
Kathasaritsagara	Somadeva
Kamasutra	Vatsyayana
Prashnottarmalika	Amoghavarsha
Swapanvasdattam	Bhasa
Buddha-charita	Asvaghosha
Natyashastra	Bharata
Abhigyan Shakuntalam, Meghaduta Vikramorvasiyam, Raghuvamsha	Kalidasa
Amarkosa	Amarshimha
Panchasidddhantika, Brihat Samhita	Varaha Mihira
Surya Siddhanta, Aryabhatta	Aryabhatta
Panch tantra	Vishnu Sharma
Nitisara	Kamandaka
Aihole Prasasti	Ravi Kriti
Indica	Megasthanese
Arthasastra	Kautilya
Charaka Samhita	Charaka
Lilawati	Bhaskara II
Harshacharita, Kadambari, Nagananda, Ratnavali	Harsha vardhan
Bhavabhuti	Mahaviracharita, Malti Madhav, Uttararamcharita
Bharati	Kiratarjuniyam

81. (a)
World Hindi Day is celebrated annually on January 10 since 2006 to promote the language at the global level. The day marks the anniversary of first World Hindi Conference which was inaugurated on January 10, 1975 by Prime Minister Indira Gandhi. However, the celebration of first World Hindi Day commenced on 10 January 2006 by former Prime Minister Dr. Manmohan Singh. It must be noted that the National Hindi Day is celebrated in India on 14 September every year. On that day in 1949, the constituent assembly adopted Hindi, written in Devanagari Script, as the official language of the Union.

82. (d)
The National film awards is presented by Ministry of Information and Broadcasting in India to felicitate the best of Indian cinema censored in the year 1953. Ceremony took place at Vigyan Bhavan, New Delhi on 10 October 1954 and awards were given by the President of India, Dr. Rajendra Prasad.

83. (c)
In the 'Travel and Tourism Development Index, 2024' released by World Economic Forum (WEF) on 21st May, 2024, India has been accorded at 39th place in the list of 119 countries. It is an Important jump of 13 place from the last year ranking.

84. (c)
On 20th May 2024, the cyclone 'Remal' which devastated the coastal regions of West Bengal and Bangladesh. The cyclone name Remal given by Oman. Oman is a part of that Regional list which covers the Arabian Sea and Bay of Bengal and they sanctioned & offered the name– 'Remal' out of the names suggested in the cyclone name list for the year 2024.

85. (d)
In India most of the villages is suffering from the water pollution. The villages in India are more prone to water pollution than air pollution, noise pollution and radiation pollution. All the cities of India are facing water pollution problem due to different types of waterborne diseases.

86.(a)

Tachometer is an instrument used for measuring the rotation or revolution speed of objects, such as an engine or a shaft. The tachometer measures rotations per minute (RPM) of engines shafts and is widely used in automobiles, airplanes, marine engineering field and many others.

87. (d)

Sliding friction is friction that acts on objects when they are sliding over a surface. Sliding friction is weaker than static friction. While in case of rolling friction it is the friction that acts on objects when they are rolling over a surface. Rolling friction is much weaker than sliding friction or static friction. In case of ball bearings are another use of rolling friction. The out let parts of a wheel or other machine roll rather than slide over on another. The ball bearings, in this wheel reduce friction between the inner and outer cylinders when they turn.

It found that.

Rolling friction < Sliding friction < Static friction

88. (c)

Pressure is measured by force and area.

$$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

$\Rightarrow$ The unit of Pressure is Pascal (N/m^2).

89. (d)

The speed of sound decreases, when it travels through solid to gas because the speed of sound is maximum in solid and minimum in gas.

90. (c)

Lithium, Sodium, Potassium are alkali group metals. These are so soft that they can be cut with a knife, they also have low density and low melting point.

91. (b)

Electrons present in the outermost orbital/ shell are called valence electrons. Valancy is the number of electrons an atom must lose or gain to attain the nearest noble gas or inert gas state. The valence electrons are part of most of the chemical reactions because they contain more energy compared to the electrons present in inner orbits. It also gives us an idea of how readily the atoms can form bonds, the number of unpaired electrons, and how many atoms can take part.

92. (b)

Scientists named Newlands, Mendeleev and Mayer developed periodic table contents. In the 19th century, several attempts were made to groupsify the elements, including Proust's hypothesis, Doberiner's triad theory, the Duma's equidistant series, Newland's Octave law, etc., in which the atomic weights of the elements in these early attempts to groupsify the elements was made the basis of classification.

93.(a)

Plastids and Mitochondria are the organelles of cells present in Eukaryotes. Mitochondria are found in both plants and animals while plastids are found only in plant cells. These two organelles have their own DNA and Ribosome.

94. (a)

In humans, each cell normally contains 23 pairs of chromosomes, for a total of 46. Twenty-two of these pairs, called autosomes, look the same in both males and females.

The last 23rd pair of chromosomes are chromosome X and chromosome Y, which determine sex in humans. Females have 44+XX chromosomes while males have 44+XY chromosomes.

95. (d)

Amoeba reproduces asexually by the process called binary fission. Binary fission occurs in single- celled organisms belonging to Kingdom Monera, and Protista (Amoeba and Paramecium). In this process, the parent organism divides into two halves, each half forming an independent daughter organism.

96. (d)

Systole and diastole are two phases of the cardiac cycle. Systole occurs when the heart contracts, while diastole takes place when the heart relaxes after contraction. During diastole, when heart muscle is relaxed, the blood flows freely through the atria and owing to the low pressures in the chambers, it enters into the ventricles.

97.(c)

Kidney, urinary duct and urethra are organs related to the human excretory system, while the uterus is the organ related to reproduction.

98. (a)

HTML was discovered by Tim Berners Lee in 1990. The full form of HTML is Hyper Text Markup Language.

99. (c)

Computer programming language allows us to give instructions to a computer in a language that computer understands. Python, Java, Java Scripts PHP Swift etc are programming languages. PHP is a server-side scripting language while Javascript is a client-side scripting language. $C^{+ + + + +}$ is not a computer programming language.

100. (a)

Usually, musk deers are species of cold region and are mainly found in Alpine and Siberian region, based on which they are also named with Musk deers are endemic to mountainous terrains, covered with forests. Hence, rest of the options (b), (c) & (d) are incorrect in context of habitat of Musk Deers.

PRACTICE SET - 6

1. The least number consisting of five - digit which is divisible by 97 is x. What is the sum of the digits of x?
(a) 13 (b) 15
(c) 17 (d) 16

2. Find the rational value of the denominator of $\frac{1}{(5+2\sqrt{3})}$
(a) $\frac{(5-2\sqrt{3})}{12}$ (b) $\frac{(5-2\sqrt{3})}{13}$
(c) $5-\frac{2\sqrt{3}}{13}$ (d) $5+\frac{2\sqrt{3}}{13}$

3. Which of the following is the smallest fraction?
$\frac{6}{11}, \frac{13}{18}, \frac{15}{22}, \frac{19}{36}, \frac{5}{6}$
(a) $\frac{19}{36}$ (b) $\frac{13}{18}$
(c) $\frac{6}{11}$ (d) $\frac{5}{6}$

4. 1.236576576 ... can be written in the form of:
(a) $\frac{125334}{99000}$ (b) $\frac{123534}{99000}$
(c) $\frac{123534}{99900}$ (d) $\frac{125434}{99900}$

5. The difference between the fractions 5 minutes of an hour and 20 seconds of an hour is:
(a) $\frac{16}{180}$ (b) $\frac{28}{270}$
(c) $\frac{0.7}{9}$ (d) $\frac{7}{12}$

6. If the numerator of a fraction is increased by 30% and its denominator is decreased by 35%, the value of the fraction becomes $\frac{3}{15}$. Find the original fraction.
(a) $\frac{3}{10}$ (b) $\frac{1}{10}$
(c) $\frac{1}{5}$ (d) $\frac{3}{5}$

7. Find the LCM of 24, 96 and 36.
(a) 576 (b) 216
(c) 288 (d) 144

8. Find the HCF of $(3^3 \times 5^3 \times 6^3)$, $(3^2 \times 3^5 \times 5^2 \times 6^4)$, $(3^3 \times 3^2 \times 5 \times 6^3)$.
(a) 1560 (b) 1600
(c) 1280 (d) 29160

9. The LCM of two numbers is 42 times their HCF. The sum of LCM and HCF is 602. If one of them is 84, then find the other number.
(a) 98 (b) 78
(c) 87 (d) 89

10. Three different traffic signals change lights every 72, 108 and 48 seconds respectively. If the lights change simultaneously at 9:30:00 am, then at what time will they change next simultaneously?
(a) 9:44:24 am (b) 9:37:12 am
(c) 9:37:20 am (d) 9:36:12 am

11. If a/b = 1/4, b/c = 1/8 and a = 2 then the value of c is-
(a) 8 (b) 16
(c) 32 (d) 64

12. Find the ratio between the third proportion of 20 and 50 and the median proportion of 9 and 16
(a) 25 : 2 (b) 12 :125
(c) 2 :25 (d) 125 :12

13. The ratio of the number of boys to the girls in a school is 3 : 2. If 20% of the boys and 25% of the girls are scholarship holders, find the percentage of those who are NOT scholarship holders.
(a) 78% (b) 87%
(c) 68% (d) 86%

14. A number, when 42 is subtracted from it, reduces to its 70%. What is two-fifth of that number?
(a) 84 (b) 140
(c) 100 (d) 56

15. A circular racing track has been developed in a field. If the difference between the outer circumference and the inner circumference of the racing track is 33 m, then find the width of the track (in m) (Use $\pi = \frac{22}{7}$)
(a) $5\frac{1}{5}$ (b) $4\frac{3}{4}$
(c) $5\frac{3}{4}$ (d) $5\frac{1}{4}$

16. If the edge of a cube is increased by 3 cm, the volume will increases by 657 cm^3. Then what is the original length of each edge of the cube?
(a) 7 cm (b) 8 cm
(c) 6 cm (d) 9 cm

17. **A can do a piece of work alone in 32 days, while together with B she can do the work in 24 days. If C alone can do the work in 64 days, in how many days can B and C together do the work.**
(a) $38\frac{4}{5}$ days (b) $38\frac{3}{5}$ days
(c) $38\frac{4}{5}$ days (d) $38\frac{2}{5}$ days

18. **A can finish a work in 5 days while B takes 10 days to do the same work. They started working together but A has to leave the work 4 days before the end of work. How many days did A work?**
(a) 1 (b) 1.5
(c) 2 (d) 2.5

19. **Julie can cover a distance of 140 m in 18 second. At that given speed how much distance can Julie cover in 1 hour?**
(a) 25.2 km (b) 31.5 km
(c) 28 km (d) 29.4 km

20. **A train crossed a 110 m long platform in 13.5 seconds and a 205 m long platform in 18.25 seconds. What was the speed of the train?**
(a) 75 km/h (b) 72 km/h
(c) 69 km/h (d) 66 km/h

21. **If the simple interest on a certain sum for 15 months at 7.5% per annum exceeds the simple interest on the same sum for 8 months at 12.5% per annum. by ₹ 32.50, then find the sum.**
(a) ₹ 3000 (b) ₹ 3060
(c) ₹ 3120 (d) ₹ 2900

22. **What will be the compound interest of ₹172000 for 3 years, at the rate of 8% (rounded off to the nearest ₹) per annum.**
(a) ₹44,670 (b) ₹11,667
(c) ₹41,280 (d) ₹46,470

23. **A shopkeeper sells an article at 20% profit. If he had bought the article at 10% less and sold it at ₹18 more than the previous selling price, he would have made 40% profit. What is the original cost price of the article? (in ₹)**
(a) ₹ 350 (b) ₹ 320
(c) ₹ 300 (d) ₹ 280

24. **A dealer sells a table for ₹ 400 making a profit of 25%. He sells another table at a loss of 10% and on the whole transaction he makes neither profit nor loss. How much (in ₹) did the second table cost for him?**
(a) 750 (b) 700
(c) 800 (d) 850

25. **If x + y = 8 product of x and y is, 15 then find the value of $x^4 + y^4$:**
(a) 606 (b) 806
(c) 906 (d) 706

26. **Find the root of $2x^2 - 15x + 28$**
(a) Both negative
(b) Not real
(c) One positive, one negative
(d) Both positive

27. **If $\sin\theta - \cos\theta = 0$, then what is the value of $\sin^4\theta + \cos^4\theta + \tan^4\theta$**
(a) $\frac{5}{4}$ (b) $\frac{3}{2}$ (c) $\frac{7}{4}$ (d) 2

28. **The length of one side of rhombus and one of the two diagonals is 6 m. The area of rhombus is _____ cm^2.**
(a) 18 (b) $9\sqrt{3}$
(c) $27\sqrt{3}$ (d) $18\sqrt{3}$

29. **Find out the mean of the given below data–**
$1, \frac{1}{2}, \frac{1}{2}, \frac{3}{4}, \frac{1}{4}, 2, \frac{1}{2}, \frac{1}{4}, \frac{3}{4}$
(a) $\frac{15}{18}$ (b) $\frac{13}{18}$
(c) $\frac{7}{9}$ (d) $\frac{8}{9}$

30. **What is the value of median, mode and mean of the given following numbers?**
9, 8, 3, 5, 1, 9, 8, 2, 9
(a) 9, 9, 6
(b) 9, 6, 9
(c) 8, 9, 6
(d) 8, 5, 6

31. **Select the option that is related to the third term in the same way as the second term is related to the first term.**
Fracture : Bone :: Sprain : ?
(a) Ankle (b) Skin
(c) Ligament (d) Tissue

32. **Omelete is related to Egg in the same way as metal is related to:**
(a) Ore (b) Iron
(c) Gold (d) Aluminium

33. **In the given letter-cluster pairs, the first letter-cluster is related to the second letter-cluster following a certain logic. Study the given pairs carefully, and from the given options, select the pair that follows the same logic.**
POT : UPQ
EST : UTF
(a) CAT : UBD (b) TWO : UPU
(c) MEN : NFO (d) PTU : VUV

34. **Select the number from the given options, that has the same relation to the fifth number as the second and fourth numbers have with the first and third numbers respectively.**
15 : 1365 : : 27:2817 : : 43 : ?
(a) 3489 (b) 4893
(c) 4123 (d) 4493

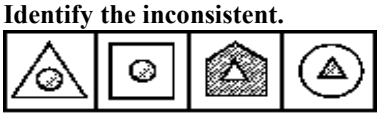
35. **In a particular language, AC is written as 13 and FG is written as 67. How will HI be written in that language?**
(a) 81 (b) 73
(c) 75 (d) 89

36. **In a certain code language, TEACHER is written as TFCFLJX. How will CATCHER be written as in that language?**
(a) BCVFLXJ (b) CBVFLJX
(c) CBVFJLX (d) BCVFLJY

37. **In a certain code language.**
'You are bad' is written as 'YO LO PO', 'Schools are bad' is written as 'NO PO YO' and 'You are human' is written as 'LO PO RO'.
How will 'Human are bad' be written in that language?
(a) RO NO PO (b) RO PO LO
(c) RO YO NO (d) RO YO PO

38. **In a certain coded language A means 26 and b means 25. Which among the following represent a country's name?**
(a) 18–19–22–12–18–26
(b) 13–22–11–26–15
(c) 11–26–16–13
(d) 16–26–11–14–26

39. **Four words have been given, out of which three are alike in some manner and one is different. Select the odd one.**
Pupil, Cochlea, Cornea, Iris
(a) Cochlea (b) Cornea
(c) Iris (d) Pupil

40. **Identify the inconsistent.**


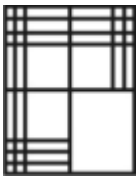
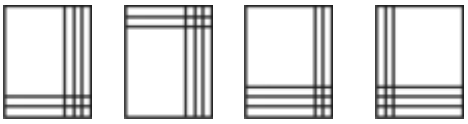
(a) D (b) C
(c) A (d) B

41. **Select the letter from the given options that can replace the question mark (?) and complete the 4th letter cluster in the following series**
CIL, QDU, PFV, KN?
(a) W (b) Z
(c) X (d) Y

42. **Study the given pattern carefully and select the number that can replace the question mark (?) in it.**

35	35
33	42
49	31
?	56

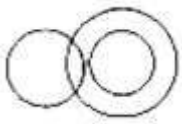
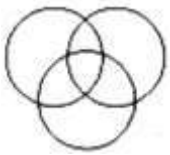
(a) 33 (b) 29
(c) 45 (d) 47

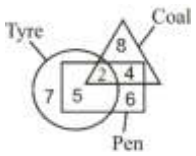
43. **Complete the figure x with the help of one of the given alternatives 1, 2, 3, 4.**

(x)

(a) (b) (c) (d)

44. **Pavani is walking towards south. Then she turns left and walks 5 km, she again turns left and continues walking. Which direction is she walking now?**
(a) West (b) North
(c) South (d) East

45. **If you are the only child of your mother, Mary. Your material uncle, Christopher, is the husband of Mereiya. Sophie is the only sister of Merciya. Jonathan is Sophie's sister's son. How is your mother related to Jonathan?**
(a) Father's Sister (b) Father's Mother
(c) Mother's Mother (d) Mother's Sister

46. **If A means '+', @ means '×', & means '÷' and V means '–', then the value of**
7 @2V135 & 5 @ 3 & 9 A 1 = ?
(a) 14 (b) 9
(c) 6 (d) 1

47. **Choose the most suitable Venn diagram for the following words?**
TV, Camera, Train
(a)  (b) 
(c)  (d) 

48. **How many pens are coal?**


(a) 9 (b) 8
(c) 7 (d) 6

49. **Six bags A, B, C, D, E and F are kept one above another (not necessarily in the same order). Only three bags are kept between B and D. Bag A is kept above E but below C. There are only two bags between A and F. B is kept above D. D is not kept below F.**
If we re-arrange these bags in alphabetical order from top to bottom, then position of how many bags will remain same?
(a) Two (b) Three
(c) One (d) Zero

50. **Read the given statements and conclusions carefully and decide which of the conclusions logically follow(s) from the statements.**
Statements:
1. Some boys are cricketers.
2. Some girls are cricketers.
Conclusions:
1. All girls are cricketers.
2. Some cricketers are girls.
(a) Neither conclusions 1 nor 2 follows
(b) Only conclusion 1 follows
(c) Both conclusions 1 and 2 follow
(d) Only conclusion 2 follows

51. **Statement :**
Some doors are cupboards. All cupboards are windows.
Conclusion : I. Some doors are windows
II. No cupboards is door.
(a) Only conclusion I follows
(b) Only conclusion II follows
(c) Either conclusion I or II follows
(d) Neither conclusion I nor II follows

52. **Read the given statements and conclusions carefully and decide which of the conclusions logically follow(s) from the statements.**
Statements:
i. I have not yet read all the seven Harry Potter books
ii. I have read all the Jane Austen books
iii. I don't like reading self-help books even though I have read a few of them just to try something new
Conclusions:
i. Though book reading is my hobby, I am very selective about the books I read
ii. I have read some of the Harry Potter books
iii. I like to experiment while selecting my next book to read
(a) Only conclusion (iii) follows
(b) Only conclusion (i) and (iii) follows
(c) Only conclusion (ii) and (iii) follows
(d) Only conclusion (i) follows

53. **If A < B < C > D < E > A, then which of the following can be concluded?**
(a) A < D < B (b) C > A < E
(c) B > A > E (d) E > C > D

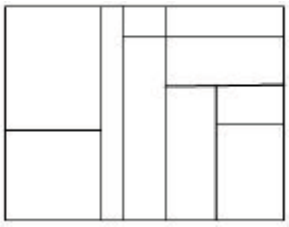
54. **Consider the given statement and decide which of the given assumptions is/are implicit in the statement**
Statement:
If you don't follow traffic rules, you will be fined
Assumption:
I: People may start following rules to avoid fine
II: Traffic rules are for people's safety
(a) Only assumption I is implicit
(b) Neither I nor II is implicit
(c) Only assumption I is implicit
(d) Both I and II are implicit

55. **Question:**
What is the meaning of 'Sen' in the code language?
I. In code language 'you are beautiful' is written as 'sen tou ki'
II. In same code language 'will you have coffee' is written as 'ti sen ae toce'
(a) Only statement I is sufficient
(b) Statement I and statement II together are not sufficient
(c) Statement II is sufficient
(d) Both statement I and statement II are necessary to explain the statement in question.

56. **Each vowel in the word 'FOURTH' is changed to the letter following it in the English alphabetical order and each consonant is changed to the letter preceding it in the English alphabetical order. If each letter of the word thus formed is arranged in alphabetical order, which letter will be third from the left?**
(a) P (b) Q
(c) S (d) G

57. **B, C, D, E, F and G are six tem members who joined a team different days of the same month, viz, 2nd, 4th 5th, 8th, 10th and 11th of January.**
C joined on one of the days before F. E and G, B joined immediately before F. D joined immediately before C. E joined on one of the days after B and before G. Who joined the team on 10th of January?
(a) E (b) G
(c) F (d) B

58. **How many rectangle are there in the following figure?**



(a) 21 (b) 24
(c) 20 (d) 22

59. **On 26 February 2018, it was Monday. In which of the following years will it be Monday on 26 February?**

(a) 2023 (b) 2021
(c) 2025 (d) 2024

60. **The loan disbursement at ABC bank in the last 5 years is as shown in the table.**

Sr. No.	Years	Rupees (in Crore)
1	2016	75
2	2017	85
3	2018	125
4	2019	145
5	2020	190

Which year has the maximum percentage growth in the loan disbursement over the previous years?

(a) 2020 (b) 2017
(c) 2019 (d) 2018

61. **Out of the five constraints in life that the Jains need to follow, which of the following means non-acquisition?**

(a) Aparigraha (b) Brahmacharya
(c) Asteya (d) Ahimsa

62. **Kanishka was related to which dynasty?**

(a) Chol (b) Pallava
(c) Kushan (d) Maurya

63. **Which among the following ruler built the city "Siri" for military deployment?**

(a) Mohammad Tuglak
(b) Giyasuddin Tughlaq
(c) Alauddin Khalji
(d) Qutubuddin Aibak

64. **The first Revenue Settlement in the Bombay Deccan came into operation in the year:**

(a) 1920 (b) 1820
(c) 1720 (d) 1280

65. **Which of the following are the fastest seismic waves?**

(a) Primary waves (b) Secondary waves
(c) Surface waves (d) Tidal waves

66. **Which sea route is the busiest in the world?**

(a) The North Pacific sea route
(b) Cape of Good Hope sea route
(c) The South Pacific sea route
(d) The North Atlantic sea route

67. **IST (Indian standard time) is how many minutes ahead PKT (Pakistan Standard time)?**

(a) 25 minute (b) 35 minute
(c) 40 minute (d) 30 minute

68. **Which community gets special provision for certain services in Article 336?**

(a) Muslim Community
(b) Sikh Community
(c) Hindu Community
(d) Anglo-Indian Community

69. **Select the correct statement about Rajya Sabha.**

(a) A member who is elected for a full term in Rajya Sabha serves for a period of four years.
(b) The President of India act as ex-officio Chairman of Rajya Sabha.
(c) It is the lower house of parliament and it dissolves every five years.
(d) It is called upper house of parliament and it never dissolves.

70. **Which UN body directly deals with reproductive health of population?**

(a) WIPO (b) UNDP
(c) UNFPA (d) IFAD

71. **Where is ISRO rocket launch pad located in India?**

(a) Sriharikota (b) Trombay
(c) Bangalore (d) Mysore

72. **The Chabahar port is located in:**

(a) Afghanistan (b) Pakistan
(c) Muscat (d) Iran

73. **A Giffen good is related to which of the following?**

(a) Income effect has no relation to the substitution effect
(b) Income effect is stronger than the substitution effect
(c) Substitution effect is stronger than the income effect
(d) Income effect is equal to the substitution effect

74. **In which of the following prime minister has name on the Indian currency note?**

(a) Atal Bihari Vajpayee (b) Indira Gandhi
(c) Dr. Manmohan Singh (d) Narsimha Rao

75. **Who was the first Indian to travel into space?**

(a) Ravish Malhotra (b) Sunita Williams
(c) Rakesh Sharma (d) Kalpana Chawla

76. Where is Angkor Archaeological Park situated?
(a) Cambodia (b) Thailand
(c) Myanmar (d) Nepal

77. The headquarters of Bharat Electronics Limited is located at:
(a) New Delhi (b) Bengaluru
(c) Mumbai (d) Chennai

78. Which of the following festivals is celebrated in the month in the month of January every year?
(a) Ugadi (b) Onam
(c) Gudi Padwa (d) Pongal

79. Which former Prime Minister of India was awarded the Bharat Ratna posthumously?
(a) Rajiv Gandhi
(b) P.V. Narshimbha Rao
(c) Moraji Desai
(d) I.K. Gujral

80. Name the literary work done by Ravindra Nath Tagore during the 19th and 20th centuries.
(a) Pather Panchali
(b) Jhutha Sach
(c) The Home and World
(d) Ganadevata

81. When is National Science Day celebrated in India?
(a) 21 March (b) 19 February
(c) 20 January (d) 28 February

82. In India, which vegetation has dominating species i.e., Teak, Sal and Shisham?
(a) Tropical Thorn Forests and Scrubs
(b) Tropical Deciduous Forests
(c) Mangrove Forests
(d) Tropical Evergreen Forests

83. Who recently won the Best Actress award at the 'New York India Film Festival 2024' ?
(a) Sanya Malhotra
(b) Sara Ali Khan
(c) Anasuya Sengupta
(d) Kiara Advani

84. Who was recently given the famous annual 'Hindi Sahitya Bharti Award' ?
(a) Arjun Sen
(b) Arpit Goyal
(c) Deep Chand Joshi
(d) Krishna Prakas

85. What is the full form of index SPM in pollution?
(a) Solid pollution matter
(b) Suspended Particulate Matter
(c) Soluble Particle Method
(d) Surrounding Pollution Matter

86. The gravitational potential energy of an object at a point above the ground. Is defined as the work done in. . . . . .
(a) Lifting it from the ground to the point opposite gravity
(b) Applying gravitational force on it
(c) Keep it at the center
(d) Placing it on the ground of against gravity

87. What force acts in a rollercoaster ride?
(a) Centrifugal (b) Centripetal
(c) Gravitational (d) Normal

88. The normal temperature of a human body is ——.
(a) 98.6°C (b) 98.6°F
(c) 37°F (d) 40°C

89. Which of the following are false. Sound waves are…… waves.
(a) Pressure (b) Longitudinal
(c) Electromagnetic (d) Mechanical

90. Three of the four words given below are identical in some way while one is different. Which is different?
(a) Germanium (b) Silicon
(c) Potassium (d) Gallium

91. What is oxidization?
(a) A substance gaining hydrogen during a chemical reaction
(b) A substance gaining oxygen during a chemical reaction
(c) A substance losing oxygen during a chemical reaction
(d) A substance losing both oxygen and hydrogen in a chemical reaction

92. Name the German chemist who grouped elements into triads in 1817.
(a) John Newlands
(b) Henry Moseley
(c) Johann Wolfgang Dobereiner
(d) Dmitri Ivanovich Mendeleev

93. The jelly-like substance between the nucleus and cell membrane is called_____ .
(a) Otic (b) Cytoplasm
(c) Amniotic (d) Pleural

94. Gene groups of genetic traits are known as:
(a) Alleles (b) Phenotype
(c) Genotype (d) Dominant gene

95. Pseudopodia are finger-like extensions on:
(a) Hydra (b) Paramecium
(c) Amoeba (d) Earthworms

96. Which of the following elements is part of heme (haem) of human blood?
(a) Manganese (b) Iron
(c) Cobalt (d) Magnesium

97. Which of the following is a basic structural and functional unit of the nervous system?
(a) Nasopalatine (b) Nephron
(c) Neurons (d) Nephric

98. Who is remembered for giving the theory of programmable computer?
(a) Charles Babbage (b) John Tucker
(c) Bill Gates (d) Steve Jobs

99. Which of the following is a graphical representation of the algorithm?
(a) Programming (b) Software
(c) flowchart (d) Pseudo code

100. Which of the following two regions are biodiversity hot-spots of India?
(a) Krishna Wildlife Sanctuary and Kolleru Bird Sanctuary
(b) Western Ghats and Eastern Himalayas
(c) Similipal National Park and Satkosia Tiger Reserve
(d) Kaziranga National Park and Eastern Ghats

SOLUTION : PRACTICE SET- 6

ANSWER KEY

1. (c)	11. (d)	21. (c)	31. (c)	41. (d)	51. (a)	61. (a)	71. (a)	81. (d)	91. (b)
2. (b)	12. (d)	22. (a)	32. (a)	42. (b)	52. (c)	62. (c)	72. (d)	82.(b)	92. (c)
3. (a)	13. (a)	23. (c)	33.(a)	43. (c)	53. (b)	63. (c)	73. (b)	83. (a)	93.(b)
4. (c)	14. (d)	24. (c)	34. (d)	44. (b)	54. (a)	64. (b)	74. (c)	84. (d)	94. (c)
5. (c)	15. (d)	25. (d)	35.(d)	45. (a)	55. (d)	65. (a)	75. (c)	85. (b)	95. (c)
6. (b)	16. (a)	26. (d)	36. (b)	46. (c)	56. (a)	66. (d)	76. (a)	86. (a)	96. (b)
7. (c)	17. (d)	27. (b)	37. (d)	47. (c)	57. (a)	67. (d)	77. (b)	87. (b)	97. (c)
8. (d)	18. (c)	28. (d)	38. (b)	48. (d)	58. (b)	68. (d)	78. (d)	88. (b)	98. (a)
9. (a)	19. (c)	29. (b)	39. (a)	49. (c)	59. (d)	69.(d)	79. (a)	89. (c)	99. (c)
10. (b)	20. (b)	30. (c)	40. (b)	50. (d)	60. (d)	70. (c)	80. (c)	90. (c)	100. (b)

SOLUTION

1. (c)

Minimum five - digit number = 10000

$97\overline{)10000}(103$

-97

300

-291

$\times 9$

Hence, five - digit number that is divisible by 97

x = 10000 + (97 –9)

x = 10000 + 88

x = 10088

Required sum = 1 + 0 + 0 + 8 + 8

= 17

2. (b)

Rationalizing the denominator of the given fraction,

$$= \frac{1}{(5+2\sqrt{3})} \times \frac{(5-2\sqrt{3})}{(5-2\sqrt{3})}$$

$$= \frac{(5-2\sqrt{3})}{(5)^2-(2\sqrt{3})^2} \qquad [(a+b)(a-b) = a^2-b^2]$$

$$= \frac{5-2\sqrt{3}}{25-12} = \frac{5-2\sqrt{3}}{13}$$

3. (a)

$\frac{6}{11}, \frac{13}{18}, \frac{15}{22}, \frac{19}{36}, \frac{5}{6}$

$\frac{6}{11} = 0.54$, $\frac{13}{18} = 0.72$

$\frac{15}{22} = 0.68$, $\frac{19}{36} = 0.52$

$\frac{5}{6} = 0.83$

Hence, it is clear that the smallest fraction is $\frac{19}{36}$.

4. (c)

$1.236576576\ldots\ldots$

$$= 1 + 0.\overline{236576}$$

$$= 1 + \frac{236576 - 236}{999000}$$

$$= \frac{1235340}{999000}$$

$$= \frac{123534}{99900}$$

5. (c)

From question,

The fractions 5 minutes of an hour and 20 seconds of an hour

$$= \frac{5}{60}\text{h} - \frac{20}{3600}\text{h}$$

$$= \frac{5}{60} - \frac{2}{360}$$
$$= \frac{30-2}{360}$$
$$= \frac{28}{360}$$
$$= \frac{7}{90} = \frac{0.7}{9}\text{h}$$

6. (b)

Let original fraction $= \frac{x}{y}$ $\rightarrow$ Numerator, $\rightarrow$ Denominator

According to the question,

$$\frac{\frac{x \times 130}{100}}{y \times \frac{65}{100}} = \frac{3}{15}$$
$$\frac{130x}{65y} = \frac{3}{15}$$
$$\frac{x}{y} = \frac{1}{10}$$

7. (c)

Finding the LCM by using common division method,

2	24, 96, 36
2	12, 48, 18
2	6, 24, 9
2	3, 12, 9
2	3, 6, 9
3	3, 3, 9
3	1, 1, 3
	1, 1, 1

The required LCM = $2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 = 288$

8. (d)

HCF of given expressions,

$3^3 \times 5^3 \times 6^3 \Rightarrow 3^3 \times 5^3 \times 6^3$

$3^2 \times 3^5 \times 5^2 \times 6^4 \Rightarrow 3^7 \times 5^2 \times 6^4$

$3^3 \times 3^2 \times 5 \times 6^3 \Rightarrow 3^5 \times 5 \times 6^3$

So, the required HCF = $3^3 \times 5 \times 6^3 = 27 \times 5 \times 216$
$= 29160$

9. (a)

According to the question,

LCM = HCF × 42

LCM + HCF = 602

HCF × 42 + HCF = 602

HCF (42 + 1) = 602

$$\text{HCF} = \frac{602}{43} = 14$$

So, First number × Second number = LCM × HCF

$84 \times$ Second number $= 14 \times 42 \times 14$

$$\text{Second number} = \frac{14 \times 42 \times 14}{84} = 98$$

10. (b)

According to the question,

LCM of 72, 108 and 48

2	72, 108, 48
2	36, 54, 24
2	18, 27, 12
2	9, 27, 6
3	9, 27, 3
3	3, 9, 1
3	1, 3, 1
	1, 1, 1,

LCM = $2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 = 432$

If at 9:30 light change simultaneously and 432 seconds or 7 min. 12 second after they change simultaneously again.

Hence, Required time = 9:37:12 a.m.

11. (d)

$$\frac{a}{b} = \frac{1}{4} \Rightarrow \frac{2}{b} = \frac{1}{4} \quad (\because a = 2)$$
$$b = 2 \times 4$$
$$b = 8$$

and $\frac{b}{c} = \frac{1}{8} \Rightarrow \frac{8}{c} = \frac{1}{8}$

$$c = 8 \times 8 \Rightarrow c = 64$$

12. (d)

Third proportion of 20 and 50 -

$$c = \frac{b^2}{a}$$
$$= \frac{50 \times 50}{20}$$
$$= 125$$

Median proportion of 9 and 16 -

$$b = \sqrt{ac}$$
$$b = \sqrt{9 \times 16}$$
$$b = \sqrt{144}$$
$$b = 12$$

Required ratio = 125 : 12

13. (a)

Let the number of boys in school = 3x

Number of girls = 2x

Total number of students in school = 5x

Number of students who hold scholarship

$$= 3x \times \frac{20}{100} + 2x \times \frac{25}{100}$$
$$= \frac{110x}{100} = \frac{11x}{10}$$

Number of students who don't hold scholarship

$= 5x - \frac{11x}{10}$

$= \frac{39x}{10}$

Required percentage $= \frac{\frac{39x}{10}}{5x} \times 100$

$= \frac{39x \times 100}{10 \times 5x}$

$= 78\%$

14. (d)

Let the number $= x$

According to the question,

$x - 42 = x \times 70\%$

$x - 42 = x \times \frac{7}{10}$

$10x - 420 = 7x$

$3x = 420$

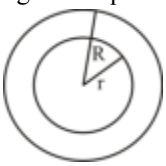
$x = 140$

$\therefore \frac{2}{5}^{th}$ part of this number $= x \times \frac{2}{5} = 140 \times \frac{2}{5}$

$= 56$

15. (d)

According to the question,



Let the radius of the outer circle be R and the inner circle be r

Now,

$2\pi (R - r) = 33$

$(R - r) = \frac{33 \times 7}{2 \times 22}$

$(R - r) = \frac{21}{4} = 5\frac{1}{4}$

Hence, width of racing track (in m) $= 5\frac{1}{4}$

16. (a)

Let length of the edge of cube $= a$

So volume $= a^3$

As per the question,

Length increased by 3 cm

So length of new edge of cube $= a + 3$

So new volume $= (a+3)^3$

As per the question,

$(a+3)^3 - a^3 = 657$

$a^3 + 27 + 9a(a+3) - a^3 = 657$

$27 + 9a^2 + 27a = 657$

$9a^2 + 27a = 657 - 27$

$9a^2 + 27a = 630$

$a^2 + 3a = \frac{630}{9}$

$a^2 + 3a - 70 = 0$

$a^2 + 10a - 7a - 70 = 0$

$a(a + 10) - 7(a + 10) = 0$

$(a + 10)(a - 7) = 0$

$a + 10 = 0$

$a = -10$

$a - 7 = 0$

$a = 7$

So required length of edge of the cube = 7 cm

17. (d)

Work done by A in one day $= \frac{1}{32}$ part

Work done by A and B in one day $= \frac{1}{24}$ part

Work done by B in one day $= \frac{1}{24} - \frac{1}{32}$

$= \frac{4-3}{96} = \frac{1}{96}$

Work done by C in one day $= \frac{1}{64}$ part

Work done by B and C in 1 day

$= \frac{1}{96} + \frac{1}{64}$

$= \frac{2+3}{192} = \frac{5}{192}$ part

Time taken by B and C to complete the total work $= \frac{192}{5} = 38\frac{2}{5}$ days

18. (c)

One day work of A $= \frac{1}{5}$ part

One day work of B $= \frac{1}{10}$ part

Let B work for x days

Then A work for (x – 4) days

According to the question

$\frac{(x-4)}{5} + \frac{x}{10} = 1$

$\frac{2(x-4)+x}{10} = 1$

$2x - 8 + x = 10$

$3x - 8 = 10$

$3x = 18$

$\boxed{x = 6}$

Time taken by A to complete the work = (x – 4)

= 2 days

19. (c)

Speed = Distance / Time

Time = 18 seconds

Distance = 140 meter

$$\text{then, Speed} = \frac{140}{18}\text{ m/sec}$$

$$= \frac{140}{18} \times \frac{18}{5}\text{ km/hour}$$

$$= 28\text{ km/h.}$$

The distance covered by Julie in 1 hour = 28 km.

20. (b)

Let the length of train = x m.

According to the question-

$$\frac{(110+x)10}{135} = \frac{(205+x)\times 100}{1825}$$

$$\frac{(110+x)}{135} = \frac{(205+x)\times 2}{365}$$

$$\frac{(110+x)}{27} = \frac{(205+x)\times 2}{73}$$

$$8030 + 73x = 11070 + 54x$$

$$73x - 54x = 11070 - 8030$$

$$19x = 3040$$

$$\boxed{x = 160}$$

$$\text{Speed of train} = \frac{(110+160)\times 10}{135} = \frac{270\times 10}{135}$$

$$= 20\text{ m/s} = \frac{20\times 18}{5} = 72\text{ km./hr.}$$

21. (c)

Suppose that Amount is ₹ P

$$\frac{P\times 7.5\times 15}{100\times 12} - \frac{P\times 12.5\times 8}{100\times 12} = 32.50$$

$$\frac{P}{100\times 12}(112.5-100) = 32.50$$

$$P \times 12.5 = 32.50 \times 100 \times 12$$

$$P \times 125 = 325 \times 100 \times 12$$

$$\therefore P = ₹\,3120$$

22. (a)

Given-

Principal (P) = ₹172000,

Rate = 8% annually

Time (n)=3 Years

$$\text{C.I} = P\left(1+\frac{r}{100}\right)^n - P = P\left[\left(1+\frac{r}{100}\right)^n - 1\right]$$

$$= 172000\left[\left(1+\frac{8}{100}\right)^3 - 1\right]$$

$$= 172000\left[\left(\frac{27}{25}\right)^3 - 1\right]$$

$$= 172000\left[\frac{19683}{15625} - 1\right]$$

$$= 172000 \times \frac{19683-15625}{15625}$$

$$= 11.008 \times 4058 = 44{,}670$$

23. (c)

Let Cost price of the article = ₹x

$$\text{Selling price} = \frac{x\times 120}{100}$$

$$= ₹\,\frac{6x}{5}$$

According to the question,

$$\text{Cost price of the article if he bought 10\% less} = \frac{90x}{100}$$

$$= ₹\,\frac{9x}{10}$$

$$\text{Selling price} = \frac{6x}{5} + 18$$

$$\text{Again, Selling price} = \text{Cost price} \times \frac{100+\text{Profit}}{100}$$

$$\frac{6x}{5} + 18 = \frac{9x}{10} \times \frac{100+40}{100}$$

$$\frac{6x}{5} + 18 = \frac{9x}{10} \times \frac{140}{100}$$

$$\frac{90+6x}{5} = \frac{63x}{50}$$

$$900 + 60x = 63x$$

$$3x = 900$$

$$x = ₹\,300$$

24. (c)

Let the cost price of the second table (CP_2) = ₹ x

According to the question –

$$400 - 400\times\frac{100}{125} = x - x\times\frac{90}{100}$$

$$\therefore\ 400 + x\times\frac{90}{100} = 400\times\frac{100}{125} + x$$

$$400 + \frac{9x}{10} = 320 + x$$

$$80 = \frac{x}{10} \Rightarrow\ \therefore\ x = ₹\,800$$

25. (d)

Given,

$$x + y = 8 \quad \text{.....(i)}$$

$$xy = 15 \quad \text{.....(ii)}$$

From the eq. (i) square on both side

$(x + y)^2 = 8^2$

$x^2 + y^2 + 2xy = 64$

$x^2 + y^2 + 2 \times 15 = 64 \quad \{\because xy = 15\}$

$(x^2 + y^2) = 34$

Again square on both side

$(x^2 + y^2)^2 = (34)^2$

$x^4 + y^4 + 2x^2y^2 = 1156$

$x^4 + y^4 = 1156 - 2 \times (15)^2$

$x^4 + y^4 = 706$

26. (d)

$2x^2 - 15x + 28 = 0$

$2x^2 - (8 + 7)x + 28 = 0$

$(2x^2 - 8x) - (7x - 28) = 0$

$2x(x-4) - 7(x-4) = 0$

$(2x-7)(x-4) = 0$

$2x - 7 = 0$

$x = 7/2$

$x - 4 = 0$

$x = 4$

It is clear that both roots is positive.

27. (b)

$\sin\theta - \cos\theta = 0$, then $\sin^4\theta + \cos^4\theta + \tan^4\theta$ value will be–

$\sin\theta - \cos\theta = 0$

$\sin\theta = \cos\theta$

$\because \quad \theta = 45°, \ \sin\theta = \cos\theta$

On putting, $\theta = 45°$

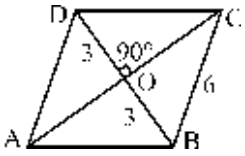
$\sin^4\theta + \cos^4\theta + \tan^4\theta$

$= \sin^4 45° + \cos^4 45° + \tan^4 45°$

$= \left(\frac{1}{\sqrt{2}}\right)^4 + \left(\frac{1}{\sqrt{2}}\right)^4 + (1)^4$

$= \frac{1}{4} + \frac{1}{4} + 1 = \frac{2}{4} + 1 = \frac{1}{2} + 1 = \frac{3}{2}$

28. (d)



According to the figure,

In ΔOBC

$(OC)^2 = (BC)^2 - (OB)^2$

$(OC)^2 = (6)^2 - (3)^2$ (from phythagoras theorem)

$(OC) = 3\sqrt{3}$

Area of $\Delta OBC = \frac{1}{2} \times 3 \times 3\sqrt{3} = \frac{9\sqrt{3}}{2} cm^2$

Area of rhombus ABCD = 4 × area of ΔOBC

$= 4 \times \frac{9\sqrt{3}}{2} cm^2$

$= 18\sqrt{3} cm^2$

29. (b)

$\text{Mean} = \frac{\text{Sum of numbers}}{\text{number of terms}}$

$= \frac{1 + \frac{1}{2} + \frac{1}{2} + \frac{3}{4} + \frac{1}{4} + 2 + \frac{1}{2} + \frac{1}{4} + \frac{3}{4}}{9}$

$= \frac{\frac{4+2+2+3+1+8+2+1+3}{4}}{9} = \frac{26}{36} = \frac{13}{18}$

30. (c)

Arranaging the number in ascending oreder-

1, 2, 3, 5, 8, 8, 9, 9, 9

n = 9 (odd)

$\text{Median} = \left(\frac{n+1}{2}\right)^{th} \text{ term} = \left(\frac{9+1}{2}\right)^{th} \text{ term}$

$= 5^{th}$ term = 8

$\text{Mean} = \frac{\text{sum of all numbers}}{\text{Total numbers}}$

$= \frac{9+8+3+5+1+9+8+2+9}{9} = \frac{54}{9} = 6$

Mode = 9 (Most frequent)

Hence median, mode and mean is 8, 9, 6.

31. (c)

Just as, fracture occurs in bone. Same as, sprain occurs in ligament.

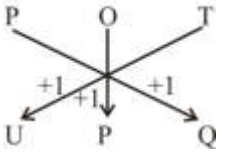
32. (a)

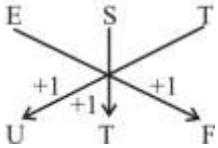
Just as,– Omelete is obtained from eggs.

Same as – Metal is obtained from Ore.

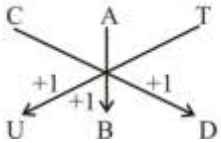
33.(a)

Just as, and,





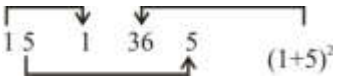
Similarly from option (a),



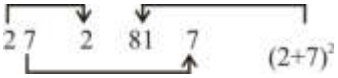
Hence, CAT is coded as UBD.

34. (d)

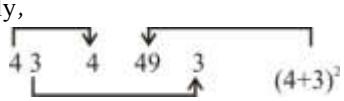
Just as,



and



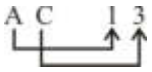
Similarly,



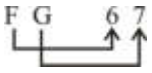
Hence, option (d) is correct.

35.(d)

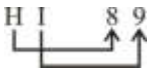
Just as,



And,



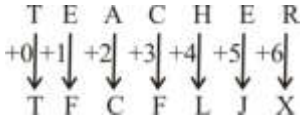
Same as,



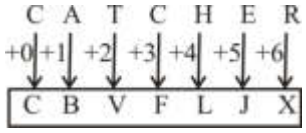
Hence, option (d) is correct.

36. (b)

Just as,

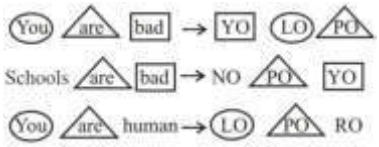


Same as,



37. (d)

According to the question,



Hence, Human are bad is codes as RO YO PO .

38. (b)

A means 26 and B means 25. Hence, given alphabets are coded in reverse order.

(a)	18 -19 -22 - 12 -18 -26 I H E O I A	(b)	13 -22-11-26-15 N E P A L
(c)	11 -26 -16 - 13 P A K N	(d)	16 -26-11-14 -26 K A P M A

Hence option (b) is showing the name of a country.

39. (a)

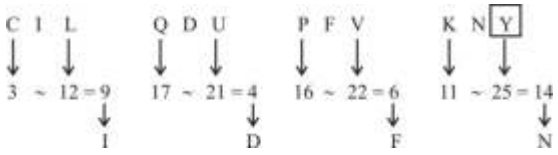
Pupil, Cornea and Iris are related to eye but Cochlea is related to ear. So, Cochlea is different from rest.

40. (b)

Out of the given figures, in figure C the outer shape is shaded while the inside figure is shaded in all the others. Hence, option (b) is correct.

41. (d)

The given series is as follows-

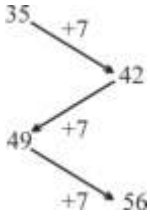


Hence, ? = Y

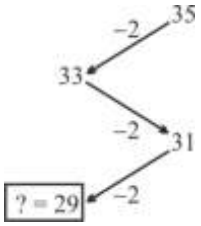
42. (b)

The diagonal relationship between the numbers in the given pattern is as follows,

Just as,



Similarly,



So, on the place of question mark there will be number 29.

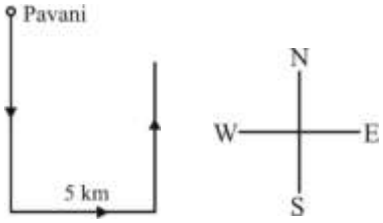
43. (c)

Option figure (c) will fill in the blank of the question figure.

Hence, option (c) is correct.

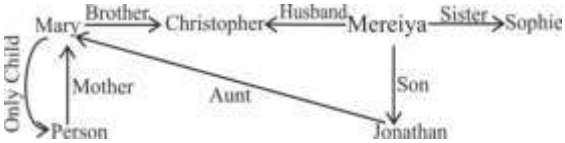
44. (b)

The walking path of Pavani as follows:



It is clear from the above figure that Pavani is going in the North direction.

45. (a) According to the question-



Hence, relationship of man's mother to Jonathan father's sister.

46. (c)

Given expression is,

7 @2V135 & 5 @ 3 & 9 A 1 = ?

(A → +, @ → ×, & → ÷, V → –)

On changing the symbols,

$= 7 \times 2 - 135 \div 5 \times 3 \div 9 + 1$

$= 14 - 27 \times 3 \div 9 + 1$

$= 14 - 9 + 1$

$= 6$

47. (c)

TV, Camera and Train are different from one another.

Hence, option (c) is correct.

48. (d)

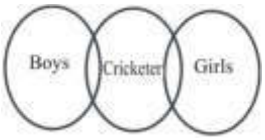
It is clear from the above diagram that 4+2 = 6 pens are coal.

49. (c)

Sequence of six bag.	
sequence of bag	sequence of alphabets up to down
B	A
C	B
A	C
E	D
D	E
F	F
Hence bag F remains same.	

50. (d)

According to the statement-



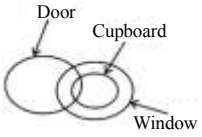
Conclusions –

1. (×)
2. (✓)

It is clear from the above Venn diagram that only conclusion 2 logically follows the statement.

51. (a)

On drawing the Venn diagram as per the statement.



Conclusions –

1. (✓)
2. (×)

From the above Venn-diagram only conclusion 1 follows.

52. (c)

Only conclusion (ii) and (iii) follows from the statements.

53. (b)

According to the question

A < B < C > D < E > A

From option (b)

C > A < E

It is clear that obtion (b) can be concluded.

54. (a)

According to the given statement only conclusion I follows. Hence option (a) will be right answer.

55. (d)

∵ In both the statement, only 'you' and 'sen' is common. Hence, the meaning of 'sen' will be 'you'.

Hence, to answer the question, statement I and statement II are sufficient.

56. (a)

According to the question,

F	O	U	R	T	H
−1 ↓	+1 ↓	+1 ↓	−1 ↓	−1 ↓	−1 ↓
E	P	V	Q	S	G

[Vowels = +1, Consonants = −1]

Now, on arranging in alphabetical order,

(Left) E P V Q S G ⟶ E G P Q S V (Right)

Hence, it is clear from the above that third letter from the left will be 'P'.

57. (a)

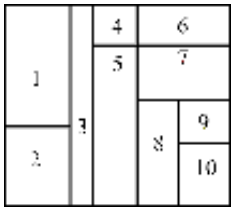
According to the question,

D	C	B	F	E	G
2nd	4th	5th	8th	10th	11th

Hence, it is clear from above that E, joined the team on 10th January.

58. (b)

Ans. (b) : According to the figure,



⇒ Number of rectangles made of one-digit = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 = 10

⇒ Number of rectangles made of two-digits = (1, 2), (4, 5), (4, 6), (6, 7), (9, 10) = 5

⇒ Number of rectangles made of three-digit = (1, 2, 3), (3, 4, 5), (8, 9, 10) = 3

⇒ Number of rectangles made of five-digits = (1, 2, 3, 4, 5), (6, 7, 8, 9, 10), (5, 7, 8, 9, 10) = 3

⇒ Number of rectangles made of seven-digits = (4, 5, 6, 7, 8, 9, 10) = 1

⇒ Number of rectangles made of eight-digits = (3, 4, 5, 6, 7, 8, 9, 10) = 1

⇒ Number of rectangles made of ten-digits = 1

Total number of rectangles

=10 + 5 + 3 + 3 + 1 + 1 + 1= 24

59. (d)

26 February, 2018 → Monday

26 February, 2019 → Tuesday

26 February, 2020 → Wednesday (leap year)

26 February, 2021 → Friday

26 February, 2022 → Saturday

26 February, 2023 → Sunday

26 February, 2024 → Monday

Hence, in 2024 it will be Monday on 26 February

60. (d)

Percentage growth in year 2020

$$= \frac{190-145}{145}\times 100 = \frac{4500}{145} = 31.03\%$$

Percentage growth in year 2017 =

$$= \frac{85-75}{75}\times 100 = \frac{10}{3}\times 4 = 13.33\%$$

Percentage growth in year 2019 =

$$= \frac{145-125}{125}\times 100 = \frac{20}{5}\times 4 = 16\%$$

Percentage growth in year 2018

$$= \frac{125-85}{85}\times 100$$

$$= \frac{40}{85}\times 100$$

$$= 47.05\ \%$$

Hence, in year 2018 has the maximum percentage growth in the loan disbursement over the previous years.

61. (a)

Aparigraha is the Jainism principle of non-possessiveness that focuses on creating balance between desires and needs and detachment from your own possessions. Out of the five constraints in life that the Jains need to follow, in which Aparigraha means non-acquisition. This is on of the main virtues of Jainism.

62. (c)

Kanishka was the most powerful ruler of the Kushan dynasty. In 78 AD he ascended the throne and launched a Samvat called Saka Samvat which is used by the Government of India. 78 AD is also considered to be the beginning of the Shaka era, during its reign, the fourth Buddhist association, at Kundalvan (Kashmir) under the Chairmanship of the Buddhist scholar Vasumitra was held. Kanishka died in 101 AD. He was a follower of Mahayana sect. The last ruler of the Kushan dynasty was Vasudeva.

63. (c)

Siri city, in the city of New Delhi, was built during the rule of Alauddin Khalji, the ruler of the Delhi Sultanate, to defend the city from the onslaught of the Mongols. Siri fort was built around 1303 AD.

64. (b)

The revenue system introduced by the British Government by Thomas Munro in the Bombay Deccan was called as the Ryotwari Settlement. It had the following features as under:

(i) It estimated the average income from different types of land.

(ii) It also assessed the revenue-paying capacity of the ryot. It is the first revenue settlement in the Bombay Deccan was made in the 1820s. The revenue that was demanded was so high that in many places peasants deserted their villages and migrated to new regions.

65. (a)

An earthquake in simple words is the shaking of the earth. It is a natural event. It is caused due to release of energy, which generates waves that travel in all directions. Earthquake waves can be classified under two categories: Body wave, surface wave. There are two types of body waves. They are called P and S-waves.

Primary waves are called P-wave because they are the first seismic wave detached by Seismic station. They have the fastest velocities (11 km/sec.) among the type of seismic waves ranging between along the earth surface.

66. (d)

The North Atlantic sea route is the busiest sea route in the world, which connects important European and North American ports such as New York, Boston, Toronto, London etc.

67. (d)

The world uses 0º longitude meridian for time. Prior to 1972 it was called Greenwich Mean Time (GMT) but now is termed as Coordinated Universal Time (UTC). Pakistan Standard Time is 5 hours of UTC Hence, IST is ahead of 30 minutes from PKT.

68. (d)

Article-336 provides special provision for the Anglo-Indian Community for certain services. During the first 2 years after the commencement of this Constitution, the members of the Anglo-Indian community would be appointed to the posts in the Union's railway customs, postal and telegraph services on the same basis on which they were made just before 15 August, 1947.

69.(d)

Rajya Sabha is the upper house of Parliament and it never dissolves.

70. (c)

United Nations Population Fund (UNFPA), formerly the United Nations Fund for Population Activities, is a UN agency aimed at improving reproductive and maternal health worldwide. Its work includes developing national healthcare strategies and protocols, increasing access to birth control, and leading campaigns against child marriage, gender-based violence, obstetric fistula, and female genital mutilation.The agency began operations in 1969 as the United Nations Fund For Population Activities under the administration of the United Nations Development Fund. Its headquarter is situated in New York.

71. (a)
Satish Dhawan Space Centre (SDSC) or Sriharikota Range (SHAR) is a rocket launch centre operated by ISRO. It is located in Sriharikota in Andhra Pradesh. Indian Space Research Organization (ISRO) was formed in 1969 by the help of Vikram Sarabhai

72. (d)
The Chabahar port is located in Iran. It is a joint effort of India and Iran to provide trade route to central Asia. The Chabahar port located in next to the Gulf of Oman and at the mouth of the Strait of Hormuz. It is the only Iranian port with direct access to the Indian Ocean. Being close to Afghanistan and the Central Asian countries of Turkmenistan, Uzbekistan and others, it has been termed as the "Golden Gate" to these landlocked countries.

73. (b)
If the income effect is stronger than the substitution effect, the demand for the good would be positively related to its price. Such a good is called a Giffen good. These are the goods that are highly inferior. Such goods share a positive relationship with the price. That is as the price of the good increases the demand also increases. This is because such goods have strong income effect. Examples of Giffen goods include bread, rice, and wheat.

74. (c)
Former Prime minister Dr. Manmohan Singh name can be seen on the Indian Currency note because he has been the governor of Reserve Bank of India during 1982-85. So, all the new currency note during those three years will have the sign of Manmohan Singh. They also held the post of finance secretary, deputy chairman of planning commission. Chief advisor of prime-minister and chairman of U.G.C and Finance Minister in Narshimha Rao government

75. (c)
Rakesh Sharma was the first Indian to travel into space. Wing commander Rakesh Sharma, AC is a former Indian Air Force pilot who flew aboard Soyuz T-11 on 3 April 1984 with the Soviet Interkosmos programme. He is the only Indian citizen to travel in space. He was born on 13 January 1949 in Patiala. He was confered with India's highest peace time gallantry award, the Ashoka Chakra.

76. (a)
Angkor Archaeological Park is situated in northern Cambodia. It is one of the most important archaeological sites in southeast asia. It is home to the magnificent temple ruins of Angkor. The temples ruins contained, between the 9th and 12th century AD the pinnacle of ancient Khmer architecture, art and civilization of Khmer Empire.

77. (b)
Bharat Electronics Limited (BEL) is an Indian Government-owned aerospace and defence electronics company. It primarily manufactures advanced electronic products for ground and aerospace applications. BEL is one of nine PSUs under the Ministry of Defence of India. It has been granted Navratna status by the Government of India. Its headquarters is in Bengaluru.

78. (d)
Pongal is a harvest festival celebrated by the Tamil community. It is a celebration to thank the Sun, Mother Nature and the various farm animals that help to contribute to a bountiful harvest celebrated over four days, Pongal also marks the beginning of the Tamil month called Thai, which is considered an auspicious month. It usually falls on the 14th or 15th of January each year.

79. (a)
Rajiv Gandhi, former Prime Minister of India was awarded the Bharat Ratna posthumously. Seven Prime Minister have so far been awarded the Bharat Ratna in India. Their names are Jawahar lal Nehru (1955), Lal Bahadur Shastri (1966), Indira Gandhi (1971), Morarji Desai (1991), Rajiv Gandhi (1991-posthumously), Gulzarilal Nanda (1997) and Atal Bihari Vajpayee (2015).

80. (c)
Gitanjali, short work of Ravindranath Tagore and 'The Home and the World' is a famous book of Ravindranath Tagore.

81. (d)
National Science Day is celebrated on 28th February every year to commemorate the discovery of the "Raman Effect" by Sir Chandrasekhara Venkata Raman, for which he was awarded the Nobel Prize in 1930. The first National Science Day was celebrated in 1987.

82.(b)
Teak, Sal and Shisham are the dominant species of tropical deciduous forests. Tropical deciduous are the monsoon forests found in a large part of India, northern Australia and Central America. These regions experience seasonal changes. Trees shed their leaves in the dry season to conserve water.

83. (a)
Sanya Malhotra won the 'Best Actress' award at the New York Indian Film Festival 2024. She was given this award for her role in 'Mrs'.

84. (d)
Mumbai's Super Cop Krishna Prakash was awarded the Hindi Sahitya Bharti Award 2024. Krishna Prakash is known for leading the Mumbai Police's Special Anti-terrorism team, Force.

85. (b)
Particulates, also known as atmospheric aerosol particles, atmospheric particulate matter, particulate matter (PM), or suspended particulate matter (SPM) are microscopic particles of solid or liquid matter suspended in the air. Sources of particulate matter can be natural or anthropogenic.

86. (a)

The gravitational potential energy of an object at a point above the ground is defined as the work done to lift it from the ground to the point opposite to gravity.

87. (b)

When an object moves in a circle which is roller coaster when it travels through a loop, the moving object is forced toward the centre of rotation. Its push toward the centre by centripetal force that keeps an object moving along curved path.

88. (b)

The normal temperature of a healthy human body is–

In Fahrenheit – 98.6°F

In Celcius – 37°C

In Kelvin – 310.15K

89. (c)

Sound is a mechanical wave, not an electromagnetic wave, that requires a medium of transmission. The transmission of sound is only in the form of longitudinal waves in air or gases while in solid and liquid both transverse and longitudinal. Transmission of sound energy is possible through the transmission of waves.

90. (c)

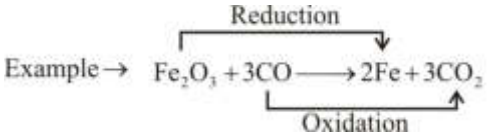
The elements germanium, silicon, and gallium are elements of the p-block in the periodic table and these element are called metalloids. While potassium (K) is the element of the s-block. Potassium is not the metalloids it is the only metal.

91. (b)

Oxidation is a process in which a chemical substance changes because of the addition of oxygen. Oxidation and reduction with respect to oxygen transfer.

Oxidation is the gain of oxygen

Reduction is the loss of oxygen



92. (c)

In 1817, a German Chemist Johann Wolfgang Dobereiner arranged the elements with similar properties in a group. Dobereiner Triad is based on three elements group. He was the first person who started grouping of elements on the basis of atomic weight.

Note: He has also discovered the halogen triad of Chlorine, Bromine and Iodine and the alkali metal triad of Lithium, Sodium and Potassium.

93.(b)

Cytoplasm is the jelly-like substance between the nucleus and the cell membrane. The cytoplasm is often colourless and is surrounded by the cell membrane which keeps the contents within the cell.

94. (c)

Gene groups of genetic traits are known as Genotype. The sum of an organism's observable characteristics is their phenotype. A key difference between phenotype and genotype is that, whilst genotype is inherited from an organism's parents, the phenotype is not. For example: tall or dwarf stem is phenotype of length of plant and DD, Dd & dd are its genotype.

95. (c)

Pseudopodia are finger like extensions on Amoeba. The word "pseudopodia" means false feet, and they help the amoeba move forward and to ingest food. An amoeba extends its pseudopodia toward a food particle and then surrounds it. An amoeba is a type of unicellular organism which has the ability to alter its shape, primarily by extending and refracting Pseudopods.

96. (b)

Iron is a part of heme (haem) of human blood. Haemoglobin is a type of globular protein present in Red Blood Cells (RBCs), which transports oxygen in our body through blood. It is a tetrameric protein and contains the haem prosthetic group attached to each subunit. Haem is an iron porphyrin complex.

97. (c)

A neuron or nerve cell is an electrically excitable cell that communicates with other cells via specialized connections called synapses. It is the main component of nervous tissue in all animals except sponges and placozoa. It is a basic structural and functional unit of the nervous system. Neurons are the longest tissue of a human body.

98. (a)

Charles Babbage was an English polymath. A mathematician, philosopher, inventor and mechanical engineer, Babbage originated the concept of a digital programmable computer.

99. (c)

A flowchart is a type of diagram that represents a workflow or process. A flowchart can also be defined as a diagrammatic representation of an algorithm, a step-by-step approach to solving a task. The flowchart shows the steps as boxes of various kinds, and their order by connecting the boxes with arrows.

100. (b)

Western Ghats and Eastern Himalayas are two regions of biodiversity hot-spots of India. To be classified as a Bio diversity hotspot, a region must have lost at least 70% of its original natural vegetation, usually due to human activity (Deforestation, Pollution, etc.). There are 36 recognized biodiversity hot-spots in the world.

PRACTICE SET - 7

1. One-third of the sum of all the prime numbers greater than 5 but less than 18 is the square of:
(a) 3 (b) 5
(c) 6 (d) 4

2. Three times the square of a number subtracting by 4 times the number is equal to 50 more than the number. Find the number.
(a) 5 (b) 4
(c) 6 (d) 10

3. The descending order of the fractions $\frac{2}{3},\frac{1}{6},\frac{1}{5},\frac{3}{7}$ is:
(a) $\frac{3}{7},\frac{2}{3},\frac{1}{6},\frac{1}{5}$ (b) $\frac{2}{3},\frac{3}{7},\frac{1}{5},\frac{1}{6}$
(c) $\frac{3}{7},\frac{1}{6},\frac{1}{5},\frac{2}{3}$ (d) $\frac{1}{6},\frac{1}{5},\frac{3}{7},\frac{2}{3}$

4. What is the correct expression of $0.0\overline{654}$ [($\bar{}$) sign represents continuous decimal)]?
(a) $\frac{18}{275}$ (b) $\frac{18}{277}$
(c) 654 (d) $\frac{654}{1000}$

5. The value of $\frac{3}{15}+\frac{13}{14}-\frac{19}{21}+\frac{31}{35}-\frac{23}{30}$ =?
(a) $\frac{8}{21}$ (b) $\frac{1}{3}$
(c) $\frac{2}{5}$ (d) $\frac{12}{35}$

6. The numerator of a fraction is 5 less than its denominator. If 2 is subtracted from the numerator and 2 is added to the denominator, the fraction becomes 2/5 find the original fraction.
(a) $\frac{9}{11}$ (b) $\frac{11}{13}$
(c) $\frac{5}{7}$ (d) $\frac{8}{13}$

7. The least number which on being divided by 2, 3, 4, 5 and 6 leaves a remainder of 1 but no remainder when divided by 7 is :
(a) 322 (b) 301
(c) 308 (d) 315

8. Sheeba has 24 chocolates, 36 biscuits and 60 ice creams to distribute to her classmates. She wants each of her classmates to get the same number of each thing. What is the maximum number of classmates in which she can distribute completely without saving a single thing?
(a) 6 (b) 18
(c) 12 (d) 15

9. Two natural number are in the ratio of 6:5 and the product of their LCM and HCF is 6750. What is the sum of the numbers ?
(a) 180 (b) 165
(c) 160 (d) 145

10. Four bells ring at intervals of 16, 24, 36 and 42 minutes respectively. If they were last ring together at 6:00 am, then after how many minutes will they ring together again?
(a) 842 minute (b) 964 minute
(c) 886 minute (d) 1008 minute

11. If a : b = 3 : 5 , c : b = 3 : 2 , c : d = 5 : 6 then find a : d = ?
(a) 12 : 36 (b) 12 : 15
(c) 1 : 3 (d) 11 : 36

12. If 49 : x :: x : 81, and 64 : y :: y : 169, where x and y are both natural numbers, then find the value of 2x + 3y.
(a) 348 (b) 438
(c) 126 (d) 312

13. In an examination a student scored 65% marks but was 20 marks below the qualifying marks. Another student scored 80% marks and scored 5% more marks than the qualifying marks. Total marks of the examination are:
(a) 400 (b) 500
(c) 300 (d) 200

14. If 15% of A : 25% of B :: 8 : 11, then A : B is equal to :
(a) 33:32 (b) 5 : 4
(c) 40 : 33 (d) 4 : 33

15. Find the area of the circular path, which is formed around a circle of circumference 440 m and whose width is 7 m.
(a) 3856 sq.m. (b) 3234 sq.m.
(c) 3900 sq.m. (d) 3204 sq.m.

16. The measurement of a rectangular box is in the ratio of 2:3:5. If the total surface area is 6200 cm^2, find the dimensions of the cuboid.
(a) 20cm × 40cm × 50cm
(b) 20cm × 30cm × 40cm
(c) 30cm × 40 cm × 50cm
(d) 20cm × 30cm × 50cm

17. Ramu and Somu together can complete a task in 10 days. Somu and Dhamu together can complete it in 12 days. Dhamu and Ramu together can complete it in 15 days. If Ramu, Somu and Dhamu work together, in how many days will they complete the task?
(a) 8 (b) 6
(c) 9 (d) 7

18. Working together, Sandra and Mayuri can complete a work in 45 days. However, Mayuri works alone and leaves after completion of one third of the work and then Sandra finishes the remaining work by herself. As a result, both are able to complete the work in 104 days. If Mayuri worked faster than her. So in how many days Sandra alone will complete the work?
(a) 72 (b) 60
(c) 240 (d) 120

19. A man travels 360 km in 4h, partly by air and partly by train. If he had travelled all the way by air, he would have saved $\frac{4}{5}$ of the time he travelled by train, and he would have arrived at his destination 2 h early. Find the distance he travelled by air.
(a) 260 km (b) 290 km
(c) 270 km (d) 280 km

20. A train travelling at 76 km/h crosses a 450 m long platform in 27 seconds. What is the length of the train?
(a) 110 metre (b) 120 metre
(c) 130 metre (d) 100 metre

21. ₹600 was given to two persons, of which to the first at 5% per annual and the second person at 10% per annual. After one year, the sum of their interest is ₹40. Find the amount given to the first person.
(a) ₹ 400 (b) ₹ 420
(c) ₹ 380 (d) ₹ 200

22. The interest received on a fixed amount at a rate of 10% in a year is ₹400. Compound interest for the same amount at the same rate and for the same period if the interest is compounded half yearly will be–
(a) ₹ 400 (b) ₹ 210
(c) ₹ 410 (d) ₹ 200

23. Anupama sold a book at 10% profit. If she would have sold the book for ₹20 more her profit % would have been 15%. Find the cost price of book?
(a) ₹450 (b) ₹400
(c) ₹500 (d) ₹375

24. A shopkeeper cheats up to 7% by using under-weight in buying and selling fruits, then his total profit percentage is:
(a) 14.25 (b) 14.49
(c) 14.75 (d) 14.55

25. If $a^{2x} = b$, $b^{2y} = c$, $c^{2z} = a$ then the value of xyz is:
(a) 1 (b) $\frac{1}{8}$
(c) 8 (d) 0

26. Solve the following equation to find the value of 'x'. $(x-2)^2 - 36 = 0$; $x \in N$
(a) 4 (b) –8
(c) –4 (d) 8

27. If $\tan\alpha = 3 - 2\sqrt{2}$, then what is the value of $\tan\alpha - \cot\alpha$?
(a) –4 (b) $3 + 2\sqrt{2}$
(c) $-4\sqrt{2}$ (d) $-8\sqrt{2}$

28. In a circle AB and CD are produced to meet at E outside the circle. If AB = 9 cm and AE = 12 cm and ED = 4 cm, then what is the length of the chord CD?
(a) 5.5 cm (b) 4 cm
(c) 5 cm (d) 4.5 cm

29. Find the median of the data 11, 16, 33, 15, 51, 18, 71, 75, 22, 17.
(a) 18 (b) 24
(c) 20 (d) 22

30. There are 20 people in a party. If every person shakes hand with every other person, then what will be the total number of handshakes?
(a) 145 (b) 190
(c) 180 (d) 155

31. Select the option that is related to the third term in the same way as the second term is related to the first term.
Dog : Guard : : Horse : ?
(a) Cart (b) Saddle
(c) Stable (d) Ride

32. Which of the following is same as foot, inch and yard?
(a) Gram (b) Mile
(c) Quart (d) Pound

33. In the given letter-cluster pairs, the first letter-cluster is related to the second letter-cluster following a certain logic. Study the given pairs carefully and from the given option, select the pair that follows the same logic.
ADG : EHK
TJF : XNJ
(a) KOH : OSL (b) JQR : NTV
(c) FJW : HLZ (d) IPD : RKW

34. Identify missing number.
676 : 841 :: 324 : .....
(a) 484 (b) 361
(c) 441 (d) 400

35. In a certain code language, PAINT is coded as 83527 and SCORE is coded as 49061. How would you code RECENT in the same language?
(a) 921235 (b) 190985
(c) 648497 (d) 619127

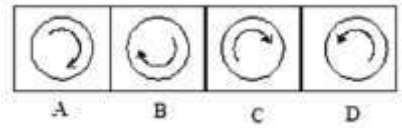
36. In a certain code language, MAHARAJA is written as ZNUNENWN. How will RAINDROP be coded as in that language?
(a) ENVAEQBC (b) ENVAQEBC
(c) EVNAQEBC (d) ENAVQEBC

37. **In a certain code language,**
'find my book' is coded as 'tu en li'
'my new house' is coded as 'ab uv tu'
'book house tomorrow' is coded as 'li mo ab'.
(Note: All codes are two letter codes only)
What is the probable code for 'new tomorrow' in the given code language?
(a) uv ab (b) ab li
(c) en tu (d) mo uv

38. **In a symbolic language, 'Surat is a hot place' is written as 'a hot is place Surat' and 'water vapour to air here' is written as 'to air vapour here water', then in the same language, 'Shimla is a hill place' would be written as?**
(a) A hill is place Shimla
(b) Shimla is a hill place
(c) A hill place is Shimla
(d) Shimla is a place hill

39. **Select the option that is different from the rest in a certain way.**
(a) Army (b) Judiciary
(c) Legislature (d) Executive

40. **Select odd one.**



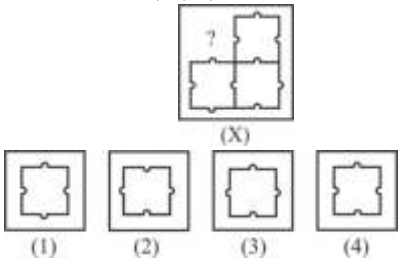
(a) D (b) B
(c) C (d) A

41. **Identify the letter that does not belong to the following series**
X, U, Q, M, F, Y
(a) M (b) Q
(c) Y (d) F

42. **Study the given pattern carefully and select the number from among the given options that can replace the question mark (?)**

(a) 8 (b) 5
(c) 9 (d) 7

43. **Complete the Figure X from the given alternatives 1, 2, 3, 4**



(a) 1 (b) 2
(c) 3 (d) 4

44. **Arun walks 10 yards straight from his house which is facing north and then he walks 20 yards in the reverse direction. Further he takes a left turn and walks 10 yards. In which direction is Arun now from his original position?**
(a) South-east (b) North-west
(c) South-west (d) North-east

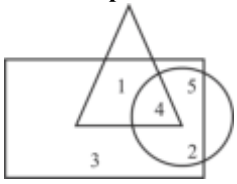
45. **X%Y means X is daughter of Y.**
X@Y means X is wife of Y.
XSY means X is brother of Y.
X&Y means X is the father of Y.
Based on the above information which of the following expression indicated that K is the father-in-law of H.
(a) H@P$J&L%K (b) H@J$L%P&K
(c) H@J$L%K&P (d) H@J$P&L%K

46. **If mathematical operator 'R' means ×, 'C' means +, 'E' means ÷ and 'W' means – then the value of 4 C 9 R 7 E 3 W 23 ?**
(a) 4 (b) 2
(c) –2 (d) –4

47. **Choose the most suitable Venn diagram for the following words-**
Garlic, Ginger, Chilly

(a) 
(b) 
(c) 
(d) 

48. **The given figure contains many shape. Which of these numbers is present in only one shape?**



(a) 4 (b) 3
(c) 2 (d) 1

49. **Six girls P, Q, R, U, V and W are sitting in the school ground. P and Q are from Maitri house, while other are from Gargi House. U and W are short, while the other girls are tall. P, R and U are wearing caps while others are not. Which tall girl from Gargi House is not wearing a cap ?**
(a) W (b) Q
(c) V (d) P

50. **Statements:**
Some jaguars are cheetah. Some cheetah are leopard.
Conclusions:
(i) No leopards is a jaguar.
(ii) Some jaguars are leopards.

(a) Both conclusion I and II follows
(b) Only conclusion II follows
(c) Only conclusion I follows
(d) Either conclusion I or II follows

51. **Statement : Some papers are pencils.**
Some pencils are rubbers.
All rubbers are boxes.
Conclusion : I. Some rubbers are papers.
II. Some papers are boxes.
(a) Only conclusion I follows
(b) Only conclusion II follows
(c) Both conclusion I and II follows
(d) Neither conclusion I nor II follows

52. **Read the given statement and conclusions carefully and select the conclusion(s) that logically follows(s) from the statements.**
Statement:
Indian Education is lacking quality due to low funds. India is allocating additional funds to education sector.
Conclusions:
I. There would be improvement in quality of education in India.
II. Only funds can improve the education standards.
(a) Only conclusion I follows
(b) Either I or II follows
(c) Only conclusion II follows
(d) Neither I nor II follows

53. **Read the given events and select the option that is the most appropriate explanation for them.**
Events:
A. Suraj died on his way to office
B. Suraj had been feeling depressed since month regarding the loss of his spouse
(a) Event A is the effect and event B is its immediate and principal cause
(b) Event A is an effect but event B is not its immediate and principal cause
(c) Event A is the immediate and principal cause and event B is its effect
(d) Event B is an effect but event A is not its immediate and principal cause

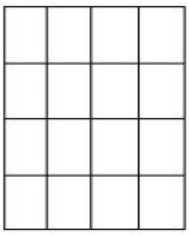
54. **Consider the given statement and decide which of the given assumption(s) is/are implicit in the statement.**
Statement:
The government has instructed all private colleges in the city to not increase the current fees for at least 3 years.
Assumptions:
1. The authorities of private colleges may not follow the government's instruction since they are not dependent on the government funds.
2. The parents of the students from the city's private colleges are still be eager to pay higher fees.
(a) Only Assumption 2 is implicit
(b) Only Assumption 1 is implicit
(c) Neither assumption 1 and nor 2 is implicit
(d) Either assumption 1 or 2 is implicit.

55. **You are given a question and two statements. Identify which of the statements is/are necessary/sufficient to answer the question.**
Question:
Who is father of M?
Statements:
I. P and Q are brothers.
II. Q's wife is the sister of M's wife.
(a) Statement I alone is sufficient.
(b) Statement I and II both are necessary
(c) Statement II alone is sufficient
(d) Statement I and II both are not sufficient.

56. **Each vowel in the word 'EXACTLY' is changed to the letter following it in the English alphabetical order and each consonant is changed to the letter preceding it in the English alphabetical order. If each letter, thus formed, is arranged in alphabetical order, which letter will be third from the right end ?**
(a) F (b) W
(c) K (d) S

57. **Of the four given equations, the first three are solve on the basis of a certain system, where the function of remains the same. Find the correct answer for the unsolved fourth equation on the same basis.**
I. 9 → 6 = 28
II. 7 → 4 = 15
III. 3 → 8 = 13
IV. 3→ 6 = ?
(a) 15 (b) 2
(c) 10 (d) 8

58.



How many rectangles are there in the above figure?
(a) 80 (b) 90
(c) 95 (d) 100

59. **Calculate the number of leap years between 1800 and 2000 (including both years).**
(a) 48 (b) 49
(c) 50 (d) 51

60. **This table shows the number of males and females in some groups. Which of the groups listed has the highest ratio of females to males?**

Group Name	No. of Male	No. of Female
C	950	414
B	650	414
M	700	410
S	720	408
R	740	405

(a) Group C (b) Group B
(c) Group S (d) Group R

61. In Jainism, who is a Tirthankara ?
(a) A saviour and spiritual teacher of the dharma who teaches the way to moksha, or liberation.
(b) A person who believes in one God and one spirit and believes in rebirth
(c) A person who never believes in God
(d) A group of pilgrims.

62. Ravikirti's Aihole inscription speaks in detail the victory of Pulakesin II over;
(a) Kirtivarman (b) Kharavela
(c) Samudragupta (d) Harsha

63. The noted traveller and writer Mohammad Ibn Battuta who travelled to many countries including India in the 14th century, belonged to which of the following countries?
(a) Libya (b) Algeria
(c) Ghana (d) Morocco

64. In which year was the William Hunter Commission formed to review the progress of education in India?
(a) 1882 (b) 1910
(c) 1801 (d) 1810

65. Which of the following is a dormant volcano?
(a) Sakurajima in Japan
(b) Mt. Erebus in Antarctica
(c) Etna in Italy
(d) Mauna Kea in Hawaii

66. The nuclear power plant CHASHMA - III is located in?
(a) Pakistan (b) Afghanistan
(c) Bangladesh (d) India

67. The range is bounded by the Satpura range on the south and the Aravalis on the northwest.
(a) Shivalik (b) Vindhyan
(c) Kailash (d) Gir

68. An introductory statement in a constitution that states the reasons and guiding values of the constitution is called:
(a) Article (b) Fundamental rights
(c) Preamble (d) Clause

69. What is the maximum strength of the members of the Lok Sabha?
(a) 543 (b) 547
(c) 552 (d) 549

70. _____ is the UN specialized agency which directs and co-ordinates health related matters internationally.
(a) UNDP (b) UNESCO
(c) WHO (d) WFP

71. Which of the following is a multi-barrel rocket system developed by DRDO?
(a) Trishul (b) Dhanush
(c) Pinaka (d) Prithvi

72. Who coined the term 'Geography' ?
(a) Karl Ritter
(b) Ulisse Aldrovandi
(c) Alexander von Humboldt
(d) Eratosthenes

73. Which one of the following is NOT a feature of an Open Economy?
(a) Restrictions on Large-scale industries
(b) Delicensing of Industries
(c) Freedom to foreign investment
(d) Freedom to import technology

74. Name the region where "The Great Depression of 1929" started
(a) Asia (b) South America
(c) Europe (d) North America

75. Who was the first recipient of Rajiv Gandhi Khel Ratna Award?
(a) Virat Kohli (b) Vishwanathan
(c) Mahesh Bhupati (d) Sachin Tendulkar

76. The World Heritage Site Pashupatinath Temple is located_____.
(a) Peshawar (b) Kabul
(c) Kathmandu (d) Multan

77. The headquarter of the Archaeological Survey of India is located in:
(a) Jodhpur (b) New Delhi
(c) Mumbai (d) Jaipur

78. Which Indian state celebrates Makar Sankranti as 'Poush Sankranti'?
(a) West Bengal (b) Himachal Pradesh
(c) Maharashtra (d) Rajasthan

79. Who was the first winner of the Jnanpith Award?
(a) Uma Shankar Joshi (b) Amrita Pritam
(c) G Sankara Kurup (d) Ashapurna Devi

80. Who is the author of 'Biography of Indira Gandhi'?
(a) Shobha De (b) Arundhati Roy
(c) Pupul Jayakar (d) R.K. Narayan

81. Government of India decided to celebrate the birthday of ..... as "Parakram Diwas" every year
(a) Deen Dayal Upadhyay
(b) Subhash Chandra Bose
(c) Swami Vivekanand
(d) Vir Sawarakar

82. **Which of the following plantations helps in the prevention of soil erosion in desert?**
(a) Shelter belts (b) Strip cropping
(c) Agro forest (d) Contour ploughing

83. **Which institute tops the recently released 'QS World University Rankings 2025' ?**
(a) Massachusetts Institute of Technology
(b) Cambridge University
(c) Oxford University
(d) Howard University

84. **What is the position of India in the recently released 'Global Gender Gap Index' ?**
(a) 106^{th} (b) 112^{th}
(c) 123^{rd} (d) 129^{th}

85 **What is the colour code of the dustbin in which non-biodegradable wastes are kept?**
(a) Yellow (b) Blue
(c) Red (d) Green

86. **When a man pushes a wall but fails to displace it, it does ?**
(a) Positive work (b) Negative work
(c) Most positive work (d) No any work

87. **The process of separating cream from the milk used in dairy is called -**
(a) decantation (b) partial distillation
(c) centrifugation (d) crystallization

88. **Cryogenic shows-**
(a) Low temperature (b) high temperature
(c) Low pressure (d) high pressure

89. **What is the frequency of ultrasonic waves?**
(a) 20 Hertz to 20 kHertz
(b) Less than 20 Hertz
(c) More than 20 kHertz
(d) No bandwidth defined

90. **'Malleable' refers to the quality of .....**
(a) Non-metal (b) Metal
(c) Gas (d) Non-metallic compounds

91. **The process of depositing a layer of any desired metal on another material, by means of electricity, is called_____**
(a) Electroplating (b) Electro conductor
(c) Electromagnet (d) Electrode

92. **The Modern Periodic Table is based on _____ of the elements.**
(a) Equivalent Weight (b) Valency
(c) Atomic Mass (d) Atomic Number

93. **Which of the following organelles helps to keep the cell clean by digesting any foreign material as well as worn out cell organelles?**
(a) Golgi apparatus
(b) Lysosome
(c) Mitochondria
(d) Endoplasmic reticulum

94. **Who is considered the 'Father of Modern Genetics'?**
(a) Charles Darwin (b) Gregor Mendel
(c) Alexander Fleming (d) Otto Hahn

95. **Which of the following organisms can reproduce by regeneration and budding?**
(a) Yeast (b) Plasmodium
(c) Hydra (d) Planaria

96. **Blood pressure is the force:**
(a) Inside the artery during ventricular diastole
(b) Inside the artery during ventricular systole
(c) Inside the veins
(d) That blood exerts against the wall of a vessel

97. **Which of the following is NOT a part of the human eye?**
(a) Iris (b) Ciliary muscles
(c) Cornea (d) Cochlea

98. **Which of the following is not used for storage in Computer Systems?**
(a) Latch (b) Adder
(c) Flip-flop (d) Register

99. **Which of the following is an example of a binary number system?**
(a) 100101 (b) ABCDE
(c) 89056 (d) 009

100. **National Green Tribunal is a –**
(a) Fast track court
(b) Non-gazette organization
(c) Central government department
(d) Private company

SOLUTION : PRACTICE SET- 7

ANSWER KEY

1. (d)	11. (c)	21. (a)	31. (d)	41. (a)	51. (d)	61.(a)	71. (c)	81. (b)	91. (a)
2. (a)	12. (b)	22. (c)	32. (b)	42. (a)	52. (a)	62. (d)	72. (d)	82. (a)	92. (d)
3. (b)	13.(d)	23. (b)	33.(a)	43. (b)	53. (a)	63. (d)	73. (a)	83. (a)	93. (b)
4.(a)	14. (c)	24. (b)	34. (c)	44. (a)	54. (c)	64. (a)	74. (d)	84.(d)	94. (b)
5. (d)	15. (b)	25. (b)	35. (d)	45. (c)	55. (d)	65. (d)	75. (b)	85. (b)	95.(c)
6. (d)	16. (d)	26. (d)	36. (b)	46. (b)	56.(d)	66. (a)	76. (c)	86. (d)	96.(d)
7. (b)	17. (a)	27. (c)	37. (d)	47. (d)	57. (c)	67. (b)	77. (b)	87. (c)	97.(d)
8. (c)	18. (d)	28. (c)	38. (a)	48. (b)	58. (d)	68. (c)	78. (a)	88. (a)	98. (b)
9. (b)	19. (c)	29. (c)	39. (a)	49. (c)	59. (b)	69.(c)	79. (c)	89.(c)	99. (a)
10. (d)	20. (b)	30. (b)	40. (a)	50. (d)	60. (b)	70. (c)	80. (c)	90. (b)	100. (a)

SOLUTION

1. (d)

Prime numbers greater than 5 but smaller than 18 = 7, 11,13, 17

According to the question-

$$=\frac{7+11+13+17}{3}$$

$$=\frac{48}{3}=16=(4)^2$$

Hence, required number = 4

2. (a)

Let the number be = x

According to the question,

$3x^2 - x \times 4 = x + 50$

$3x^2 - 4x - x - 50 = 0$

$3x^2 - 5x - 50 = 0$

$3x^2 - 15x + 10x - 50 = 0$

$3x(x-5) + 10(x-5) = 0$

$(x-5)(3x+10) = 0$

$x - 5 = 0$

$x = 5$

3. (b)

$$\frac{2}{3}=0.666$$

$$\frac{1}{6}=0.166$$

$$\frac{1}{5}=0.200 \Rightarrow \frac{3}{7}=0.428$$

The descending order = 0.666>0.428>0.200>0.166

$$\frac{2}{3}>\frac{3}{7}>\frac{1}{5}>\frac{1}{6}$$

$$\Rightarrow \frac{2}{3},\frac{3}{7},\frac{1}{5},\frac{1}{6}$$

4.(a)

$$0.06\overline{54}$$

$$=\frac{654-6}{9900}=\frac{648}{9900}=\frac{18}{275}$$

5. (d)

$$\frac{3}{15}+\frac{13}{14}-\frac{19}{21}+\frac{31}{35}-\frac{23}{30}$$

(LCM of 15, 14, 21, 35 and 30 is 210)

$$=\frac{42+195-190+186-161}{210}$$

$$\Rightarrow \frac{423-351}{210}$$

$$\Rightarrow \frac{72}{210}=\frac{12}{35}$$

Hence, the required value is $\frac{12}{35}$.

6. (d)

Let numerator = a

denominator = a + 5

According to the question,

$$\frac{a-2}{a+5+2}=\frac{2}{5}$$

$5a - 10 = 2a + 14$

$3a = 24 \Rightarrow a = 8$

$$\therefore \text{ Original fraction } =\frac{a}{a+5}=\frac{8}{13}$$

7. (b)

The smallest number = LCM of 2, 3, 4, 5 and 6 = 60,

According to the question-

$(60x+1)$, is divisible by 7.

$\therefore$ Taking x = 5

Required number = $60 \times 5 + 1 = 301$

8. (c)

According to the question,

The number of chocolates, biscuits and ice creams is 24, 36 and 60 respectively.

So, the maximum number of classmates = HCF of 24, 36 and 60

$24 = 2\times2\times2\times3$

$36 = 2\times2\times3\times3$

$60 = 2\times2\times3\times5$

H.C.F. $= 2\times2\times3 = 12$

9. (b)

Let the two numbers be 6 x and 5x.

and product of LCM and HCF = 6,750

$\because$ 1st number × 2nd number = LCM × HCF

$6x \times 5x = 6,750$

$30x^2 = 6,750$

$x^2 = \frac{6,750}{30}$

$x^2 = 225$

$\boxed{x = 15}$

1st number = $6x = 6 \times 15 = 90$,

2nd number = $5x = 5 \times 15 = 75$

Hence, Sum of both numbers = 90 + 75 = 165

10. (d)

The bells will ring together again = LCM of 16, 24, 36 and 42.

2	16, 24, 36, 42
2	8, 12, 18, 21
2	4, 6, 9, 21
2	2, 3, 9, 21
3	1, 3, 9, 21
3	1, 1, 3, 7
7	1, 1, 1, 7
	1, 1, 1, 1

LCM = $2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 7 = 1008$

Hence, after 1008 minutes they will ring together.

11. (c)

$a : b = 3 : 5,\ c : b = 3 : 2,\ c : d = 5 : 6$

$\Rightarrow \quad b : c = 2 : 3$

$\therefore a : d = \frac{a}{b} \times \frac{b}{c} \times \frac{c}{d}$

$= \frac{3}{5} \times \frac{2}{3} \times \frac{5}{6} = \frac{1}{3}$

12. (b)

According to the question,

$\Rightarrow 49 : x :: x : 81$

$\frac{49}{x} = \frac{x}{81} \Rightarrow x^2 = 49 \times 81$

$x = 63$

And $64 : y :: y : 169$

$\frac{64}{y} = \frac{y}{169} \Rightarrow y^2 = 64 \times 169$

$y = 104$

$\therefore 2x + 3y \Rightarrow 2 \times 63 + 3 \times 104 \Rightarrow 126 + 312 \Rightarrow \boxed{438}$

13.(d)

Let the total marks of examination = x

According to the question,

$$x \times \frac{65}{100} + 20 = x \times \frac{80}{100} - x \times \frac{5}{100}$$

$$\frac{75x}{100} - \frac{65x}{100} = 20$$

$$\frac{10x}{100} = 20$$

$$x = 200$$

Hence, total marks of exmination = 200

14. (c)

Given,

15% of A : 25% of B : : 8 : 11

$\Rightarrow \quad \frac{A \times 15\%}{B \times 25\%} = \frac{8}{11}$

$\frac{3A}{5B} = \frac{8}{11}$

$\Rightarrow \quad 33A = 40\ B$

$\therefore \quad \boxed{A : B = 40 : 33}$

15. (b)

Circumference of a circle $= 2\pi r$

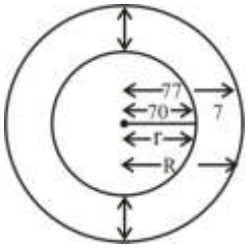
$2\pi r = 440$

$2 \times \frac{22}{7} \times r = 440$

$r = \frac{440 \times 7}{2 \times 22}$

r = 70 m

Let r be the radius of the circle and the radius of the circle with circular path is R.



Area of circular track $= \pi\left(R^2 - r^2\right)$

$= \pi\left[(77)^2 - (70)^2\right]$

$= \pi[5929 - 4900]$

$= \pi \times 1029$

$= \frac{22}{7} \times 1029$

= 3234 square meter

16. (d)

Let sides be 2x cm, 3x cm. and 5x cm then Total surface area of cuboid

$= 2(lb + bh + hl)$

$2(lb + bh + hl) = 6200$

$2(2x \times 3x + 5x \times 3x + 5x \times 2x) = 6200$

$2\ (6x^2 + 15x^2 + 10x^2) = 6200$

$31x^2 = 3100$

$x^2 = 100 \Rightarrow \boxed{x = 10 \text{ cm}}$

So dimensions or sides of cuboid—

$2x = 2 \times 10 = 20$cm

$3x = 3 \times 10 = 30$ cm

$5x = 5 \times 10 = 50$ cm

17. (a)

One day work of (Ramu+Somu) = $\frac{1}{10}$

One day work of (Somu+Dhamu) = $\frac{1}{12}$

One day work of (Dhamu+Ramu) = $\frac{1}{15}$

One day work of 2 (Ramu+Somu+Dhamu)

$= \left(\frac{1}{10} + \frac{1}{12} + \frac{1}{15}\right)$

$= \frac{6+5+4}{60}$

$$= \frac{15}{60} = \frac{1}{4}$$

One day work of (Ramu+Somu+Dhamu)

$$= \frac{1}{4\times 2} = \frac{1}{8}$$

$\because \frac{1}{8}$ of the work done by (Ramu+Somu+Dhamu) in one day.

Hence, total time taken by (Ramu+Somu+Dhamu) to complete the work in 8 days.

18. (d)

Let Sandra will complete that work in x days and Mayuri will complete that work in y days

One day work of both $= \frac{1}{x} + \frac{1}{y} = \frac{1}{45}$

$$\frac{1}{y} = \frac{1}{45} - \frac{1}{x} \Rightarrow \frac{x-45}{45x}$$

1 day work of Sandra $= \frac{1}{x}$ part

1 day work of Mayuri $= \frac{x-45}{45x}$

According to the question,

$$\frac{15x}{x-45} + \frac{2x}{3} = 104$$

$$45x + 2x^2 - 90x = 312(x-45)$$

$$2x^2 - 357x + 14040 = 0$$

$$(2x-117)(x-120) = 0$$

$$x = \frac{117}{2} \text{ or } 120$$

$\because$ Sandra worked slow so $x = 120$

$\therefore$ Sandra will complete that work in 120 days.

19. (c)

4/5 of the total time taken by train = 2 hours

Total time taken by the train $= \frac{5}{4}\times 2 = \frac{5}{2}$ hours

Total time to cover a certain distance of 360 km in 4 hours

$$4 - \frac{5}{2} = \frac{8-5}{2} = \frac{3}{2} \text{ hours}$$

Time taken by air to cover a distance of 360 km = 2 hours

$\therefore$ Distance covered in 3/2 hours $= \frac{360}{2}\times\frac{3}{2} = 90\times 3$

$= 270$ km

Hence the total distance travelled by air = 270 km

20. (b)

Let the length of train = x m.

Speed of train = 76 km/h

$$= 76\times\frac{5}{18} \text{ m/s}$$

According to the question,

$$\frac{x+450}{76\times\frac{5}{18}} = 27 \qquad \left[\text{Time} = \frac{\text{Distance}}{\text{Speed}}\right]$$

$$x + 450 = 27\times 76\times\frac{5}{18} = 570$$

$$x = 570 - 450$$

$$\boxed{x = 120 \text{ m}}$$

21. (a)

Let the amount given to second person at 10% interest = ₹ x

Then the amount given to the first person at 5% interest rate = ₹(600 – x)

simple interest = ₹ 40

According to the question,

$$\Rightarrow \left(x\times\frac{10}{100}\times 1\right) + \left\{(600-x)\times\frac{5}{100}\times 1\right\} = 40$$

$$\Rightarrow \frac{x}{10} + \left\{(600-x)\times\frac{1}{20}\right\} = 40$$

$$\Rightarrow \frac{x}{10} + \left\{30 - \frac{x}{20}\right\} = 40$$

$$\Rightarrow \frac{x}{20} = 40 - 30$$

$$x = ₹\ 200$$

Amount given to the first person = 600 – x

= 600 – 200 = ₹400

22. (c)

Let principal = ₹ P, Rate = 10%, t = 1 Year

As per the question,

$$400 = \frac{P\times r\times t}{100}$$

$$400 = \frac{P\times 10\times 1}{100}$$

$$P = ₹\ 4000$$

Again R = 10%, t = 2 Half yearly

Amount $= P\left(1+\frac{r}{2\times 100}\right)^2$

$$\Rightarrow P\left(1+\frac{r}{2\times 100}\right)^2$$

$$\Rightarrow 4000\left(1+\frac{10}{200}\right)^2$$

$$\Rightarrow 4000\left(\frac{21}{20}\right)^2$$

$$\Rightarrow 4000\times\frac{21}{20}\times\frac{21}{20}$$

$\Rightarrow$ ₹ 4410

Compound interest = Amount − Principal

Compound interest = 4410 – 4000 = ₹410

23. (b)

Let the cost price of book $= ₹x$

$$\text{Selling price} = x \times \frac{110}{100}$$

$$= ₹\frac{11}{10}x$$

According to the question,

$$\frac{11x}{10} + 20 = x\frac{115}{100}$$

$$\frac{11x}{10} + 20 = \frac{23}{20}x$$

$$\frac{23x}{20} - \frac{11x}{10} = 20$$

$$\frac{23x - 22x}{20} = 20$$

$$\boxed{x = ₹400}$$

Hence, cost price of book is ₹400.

24. (b)

$$\text{Profit } \% = \left(2x + \frac{x^2}{100}\right)\%$$

$$= 2 \times 7 + \frac{(7)^2}{100}$$

$$= 14 + \frac{49}{100} = 14 + 0.49 = 14.49\%$$

25. (b)

Given,

$a^{2x} = b,\ b^{2y} = c,\ c^{2z} = a$ then $xyz = ?$

Where,

$a = c^{2z}$

$a = (b^{2y})^{2z}$

$a = (b)^{4yz}$

$a = (a^{2x})^{4yz}$

$a = (a)^{8xyz}$

$a^1 = a^{8xyz}$

$8xyz = 1$

$$\boxed{xyz = \frac{1}{8}}$$

26. (d)

$(x-2)^2 - 36 = 0\ x \in N$

$x^2 + 4 - 4x - 36 = 0$

$x^2 - 4x - 32 = 0$

$x^2 - 8x + 4x - 32 = 0$

$x(x-8) + 4(x-8) = 0$

$(x-8)(x+4)$

$x = 8, -4$ but according to the question $x \in N$ so value of x will be 8.

27. (c)

$\tan\alpha = 3 - 2\sqrt{2}$

then, $\tan\alpha - \cot\alpha = ?$

$$= \tan\alpha - \frac{1}{\tan\alpha}$$

$$= \left(3 - 2\sqrt{2}\right) - \frac{1}{3 - 2\sqrt{2}}$$

$$= \left(3 - 2\sqrt{2}\right) - \frac{\left(3 + 2\sqrt{2}\right)}{\left(3 - 2\sqrt{2}\right)\left(3 + 2\sqrt{2}\right)}$$

$$= \left(3 - 2\sqrt{2}\right) - \frac{\left(3 + 2\sqrt{2}\right)}{9 - 8}$$

$$= \left(3 - 2\sqrt{2}\right) - \frac{\left(3 + 2\sqrt{2}\right)}{1}$$

$$= 3 - 2\sqrt{2} - 3 - 2\sqrt{2}$$

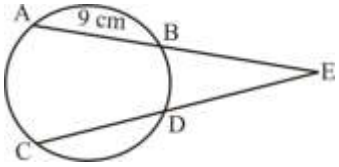
$$= -4\sqrt{2}$$

28. (c)

Given,

AB = 9 cm, AE = 12 cm.

ED = 4 cm.



$\therefore$ $BE = AE - AB$

$= 12 - 9 = 3$ cm.

$\because$ $BE \times AE = ED \times CE$

$3 \times 12 = 4 \times CE$

$CE = 9$ cm

$\therefore$ $CD = CE - ED$

$= 9 - 4$

$= 5$ cm.

29. (c)

Given data-

11, 16, 33, 15, 51, 18, 71, 75, 22, 17

In ascending order-

11, 15, 16, 17, 18, 22, 33, 51, 71, 75 n = 10 (even)

Where n is even

$$\text{Median} = \frac{\frac{n^{th}}{2}\text{ term} + \left(\frac{n}{2}+1\right)^{th}\text{ term}}{2}$$

$$= \frac{\frac{10^{th}}{2}\text{ term} + \left(\frac{10}{2}+1\right)^{th}\text{ term}}{2}$$

$$= \frac{5^{th}\text{ term} + 6^{th}\text{ term}}{2} = \frac{18+22}{2}$$

$$= \frac{40}{2} = \boxed{20}$$

30. (b)

The total number of handshakes $= {}^{20}C_2$

$$= \frac{20!}{2!\times(20-2)!} \qquad \left\{\because {}^{n}C_r = \frac{n!}{r!(n-r)!}\right\}$$

$$= \frac{20!}{2!\times 18!}$$

$$= \frac{20\times 19\times 18!}{2\times 18!}$$

$=190$

31. (d)

Just as, a dog is related to protect in the same way a horse is related to ride.

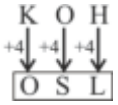
32. (b)

Mile is same as foot, inch and yard because these are units of length.

33.(a)

Such as,

Similarly,

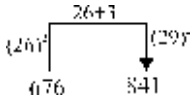


and,

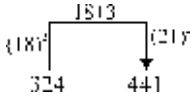
Hence, KOH is coded as OSL.

34. (c)

Just as,



Similarly ,



Hence, the missing number will be $(21)^2 = 441$.

35. (d)

According to the question,

P	→ 8	S	→ 4
A	→ 3	C	→ 9
I	→ 5	O	→ 0
N	→ 2 ,	R	→ 6
T	→ 7	E	→ 1

On using the given code

R → 6
E → 1
C → 9
E → 1
N → 2
T → 7

Hence, RECENT = 619127

36. (b)

Just as,

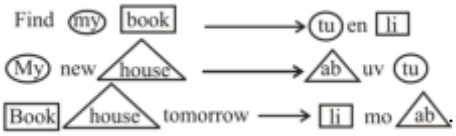
M	+13 →	Z
A	+13 →	N
H	+13 →	U
A	+13 →	N
R	+13 →	E
A	+13 →	N
J	+13 →	W
A	+13 →	N

Similarly,

R	+13 →	E
A	+13 →	N
I	+13 →	V
N	+13 →	A
D	+13 →	Q
R	+13 →	E
O	+13 →	B
P	+13 →	C

37. (d)

Given-



Hence, it is clear from above that 'new tomorrow' is coded as is mo uv.

38. (a)

Just as,

Surat is a hot place → a hot is place Surat

And,

water vapour to air here → to air vapour here water

Similarly,

Shimla is a hill place → A hill is place Shimla.

39. (a)

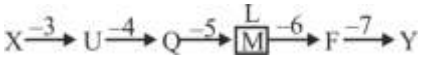
Judiciary, Legislature and Executive are the parts of Indian polity while the army is different from them.

40. (a)

All the remaining figure are rotating clockwise while figure D is rotating anti-clockwise.

41. (a)

The given series will be as follows–



Hence the wrong term = M

42. (a)

Just as,

$10 \times 8 = 80$ And, $9 \times 7 = 63$

$80 = 80$ $63 = 63$

Same as,

$8 \times 6 = 4\ ?$

$48 = 4\ ?$

$\boxed{?=8}$

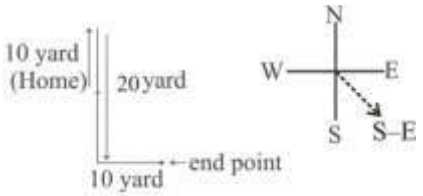
43. (b)

Answer figure (2) will complete the pattern of the question figure.

Hence, option (b) is correct.

44. (a)

Arun's walking sequence is as follows-



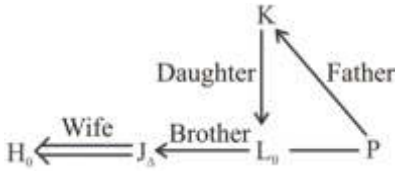
Hence, Arun is facing South-East direction of his original position.

45. (c)

On drawing blood relation diagram according to the question,

From option (c) -

H@J$L%K&P



Hence, it clear that H's husband's father is K or K is father-in-law of H.

46. (b)

Given, 4 C 9 R 7 E 3 W 23 = ?

R → ×

C → +

E → ÷

W → –

On making changes according to the given rule,

$= 4 + 9 \times 7 \div 3 - 23$

$= 4 + 9 \times \frac{7}{3} - 23$

$= 4 + 21 - 23 = 2$

47. (d)

Garlic, Ginger and Chilly are different from one another.

Hence, option (d) is correct.

48. (b)

It is clear from the given diagram that the number 3 is present in only one shape.

49. (c)

Girls of the Maitri House = P and Q

Girls of the Gargi House = R, U, V and W

Short girls = U and W

Tall girls = P, Q, R and V

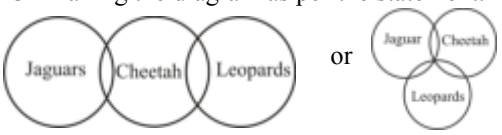
Number of girls who are wearing cap = P, R and U

Number of girls who is not wearing cap = Q, V and W

Hence it is clear that 'V' of the Gargi House is tall girl who is not wearing cap.

50. (d)

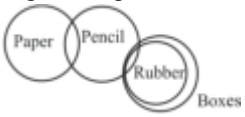
On making the diagram as per the statement.



It is clear from the Venn-diagram that either conclusion I or II follows.

51. (d)

On making the diagram as per the statement-



From the above diagram neither conclusion I nor II follows.

52. (a)

Indian Education lacks quality due to low funds. India is allocating additional funds to the education sector which will improve the quality of education in India. Hence, conclusion (I) logically follows from the given statement.

53. (a)

Event A is the effect and event B is its immediate and principal cause because Suraj died on his way to office this is not a immediate cause.

54. (c)

From the given statement it is clear that neither assumption 1 and nor 2 is implicit.

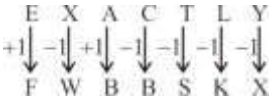
55. (d)

From the statements I and II–

Thus, statement I and II both are not sufficient to answer the given question.

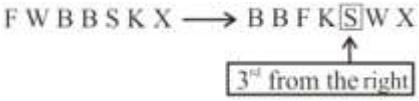
56.(d)

According to the question,



[Vowels = +1
Consonants = −1]

Now, arranging in alphabetical order,



Hence, it is clear from above that 3rd letter from the right end will be S.

57. (c)

(I) $9 \rightarrow 6 = 28$

$\left(\frac{9 \times 6}{2}\right) + 1$

$= 28$

(II) $7 \rightarrow 4 = 15$

$\left(\frac{7 \times 4}{2}\right) + 1$

$= 15$

(II) $3 \rightarrow 8 = 13$

$\left(\frac{3 \times 8}{2}\right) + 1$

$= 13$

(IV) $3 \rightarrow 6 = ?$

$\left(\frac{3 \times 6}{2}\right) + 1$

$= \boxed{10}$

58. (d)

According to the figure,

1	2	3	4
2			
3			
4			

1 + 2 + 3 + 4 = 10

So, total rectangles = 10 × 10 = 100

59. (b)

Number of leap year b/w 1800 and 1900 years (in 100 years) = 24

Number of leap year between 1900 to 2000

= 24 + 1 (2000nd year)

= 25

Hence, number of leap years b/w 1800 to 2000 (including both years) = 24 + 25 = 49

60. (b)

From the given options–

(a) Ratio of female and male in Group C $= \frac{414}{950} = 0.43$

(b) Ratio of female and male in Group B $= \frac{414}{650} = 0.64$

(c) Ratio of female and male in Group S $= \frac{408}{720} = 0.57$

(d) Ratio of female and male in Group R $= \frac{405}{740} = 0.55$

Hence, It is clear that the ratio of Group B is maximum.

61.(a)

In Jainism a Tirthankar is someone who has attained enlightenment liberation that is termed as 'nirvana' in jain texts. Also this highest virtue is termed as "Anantchatustay". The Jainism has 24 Tirthankaras some of them are.

Tirthankara	**Sign**
Lord Rishabhadev	Ox
Lord Mallinath	Jar (kalash)
Lord Neminath	Conch (shankh)
Lord Parsvanath	Snake
Lord Mahaveera	Lion

62. (d)

Ravikirti's Aihole inscription speaks in detail Pulakesin's achievements, particularly how he fought and achieved victory over Harshavardhana.

Harshavaradhana was defeated by Pulakesin II, the king of the Chalukya dynasty.

63. (d)

Muhammad Ibn Battuta (1304-1369) was a Moroccan traveller who left his home at a young age of 21 in the 13th century to travel across the world. He was born in Tangiers, Morocco in 1304 CE in the medieval era in Islamic family. Before he set off for India in 1332-33 AD, he had made pilgrimage trips to Mecca, and had already travelled extensively in Syria, Iraq, Persia, Yemen, Oman and a few trading ports on the coast of East. Point to be noted is that, Ibn Battuta's book of travels called Rihla, written in Arabic, provides extremely rich and interesting details about the social and cultural life in the subcontinent in the fourteenth century. He travelled India during the regim of Mohammad Bin Tughlaq.

64. (a)

Hunter Commission of 1882 was presided by Sir William Hunter. This commission was appointed by Viceroy Lord Rippon (1880-1884) in 1882 AD with objective to look into the complaints of the non-implementation of the Wood's Despatch of 1854. There were 8 Indian members in this commission. Hunter commission was constituted on 3rd April 1882.

65. (d)

Dormant volcano are not extint but have erupted in recent history. The dormant volcanoes may erupt in future. Mauna Kea in Hawaii, Mount Kilimanjaro in Tanzania, Mt.Fuji in Japan etc. are classified as dormant volcano.

66. (a)

The CHASHMA-III Nuclear Power Plant (or CHASNUPP-III), is a large commercial nuclear power plant located in the vicinities of Chashma colony and Kundian in Punjab, Pakistan. It is made by Pakistan with the help of China. Its capacity is about 340 MW.

67. (b)

The Vindhyan range is bounded by the Satpura range on the south and the Aravalis on the northwest. The Vindhya range is a complex, discontinuous chain of mountain ridges, hill ranges, highlands and plateau escarpments in West-Central India. Its name is included in one of the oldest ranges of India.

68. (c)

The Preamble is an introductory statement in a constitution which states the reasons and the guiding values of the constitution. The ideals of justice, liberty, equality, fraternity reflect the objectives of the constitution.

69.(c)

The members of Lok Sabha are elected through Universal Adults Suffrage. The maximum strength of Lok Sabha is 552 in which 530 members are elected from states and 20 members are elected from union territories.

Note: Previously 2 members were nominated from Anglo-Indian Community, but this provision was deleted by 104th Constitutional Amendment Act, 2021.

The current strength of the Lok Sabha is 543 members.

70. (c)

The World Health Organization (WHO) is a specialized agency of the United Nations which directs and co-ordinates and is responsible for international public health. It is headquartered in Geneva, Switzerland and was established on 7 April 1948. Tedros Adhanom Ghebreyesus is currently Director - General of WHO. 7 April is celebrated as World Health day.

71. (c)
Pinaka is a multi-barrel rocket launcher developed by Defence Research and Development Organisation (DRDO). Through this, 12 rockets of 100 kg weight can be launched in 40 seconds.
Trishul is a short range surface to air missile.
Prithvi is a surface to surface ballistic missile.
Dhanush is a naval variant of the Prithvi missile having 500 kg payload.

72. (d)
Eratosthenes, who was a versatile genius, coined the term 'Geography'. He is known as the 'Father of Methodical Geography'. Hecataeus is considered as the 'Father of Geography'. He is known best for measuring the circumference of the earth. He is also the one who calculated the inclination of the Earth's axis to the orbital plane of the earth. He is also the calculator of distance from the Earth to the sun and also invented the leap day.

73. (a)
In the given options, restrictions on large scale industries is the feature of a closed economy while the rest given statements are the features of an open economy.

74. (d)
The great depression is often called a "defining moment" in the twentieth century history of the United States. It was the worst economic period in US history. In the United States the great depression began in the summer of 1929. The downturn became markedly worse in late 1929 and continued untill early 1933. Real output and prices fell precipitously. Between the peak and the trough of the downturn, industrial production in the United States declined 47% and real GDP fell 30%.

75. (b)
The first recipient of the award was chess Grandmaster Viswanathan Anand, who was honoured for the performance in the year 1991-92. Under the Rajiv Gandhi Khel Ratna Award, 1 medal, citation and ₹7.5 lakh were given to the awardee. Prize money has been increased to 25 lakh from year 2020. Winner of Rajiv Gandhi Khel Ratna Award 2020 are following Rohit Sharma, Mariyappan Thangavelu, Monika Batra, Vinesh Phogat and Rani Rampal.
Note- Recently the Rajiv Gandhi Khel Ratna award was renamed as the 'Major Dhyan Chand Khel Ratna'.

76. (c)
The Pashupatinath Temple is a famous and sacred Hindu temple complex that is located on the banks of the Bagmati river, approximately 5 km northeast of Kathmandu, the capital of Nepal. It is inscribed on the UNESCO World Heritage Site's list. It is dedicated to Lord Shiva and was built by Licchavi king Prachanda Dev in the 5th century and later renovated by Malla kings.

77. (b)
The Prime Minister of India, Shri Narendra Modi, inaugurated 'Dharohar Bhawan' – the new headquarters building of the Archaeological Survey of India (ASI) at 24 Tilak Marg in New Delhi. It is under the Ministry of Culture, and was established in the year 1861. It is the premier organization for the archaeological researches and protection of the cultural heritage of the nation.

78. (a)
In West Bengal, the Makar Sankranti is known as Poush Sankranti. It is also known as Uttarayana Maghi or Sankranti, this harvest festival usually takes place-in the month of January. Different name of this festival in different places are-

Uttarayan or Khichadi	–	UP, Gujarat
Makara Chaula	–	Odisha
Dahi Chura/ Til Sakrat	–	Bihar
Suggi	–	Karnataka
Pongal	–	Tamil Nadu

79. (c)
Malyalam writer G. Shankar Kurup (Kerala) was the first winner (1965) of the Jnanpith Award and Bengali writer Ashapurna Devi (West Bengal) was the first female recipient. Jnanpith Award is given for the best literary writing by an Indian citizen in a language listed in eighth schedule of the Constitution of India.

80. (c)
Pupul Jayakar was Indian cultural activist and writer, best known for her work on the revival of traditional and village arts, handlooms. She was awarded with Padma Bhusan in 1967.

81. (b)
The Government of India had declared 23 January as 'PARAKRAM DIWAS' on the occasion of 125th birth anniversary of Netaji Subhash Chandra Bose. Subhash Chandra Bose was born on 23 January, 1897 in Cuttack, Odisha. He was the founder of his party Forward Bloc. Also he graced the position of president of Congress twice.

82. (a)
Shelter belts is a barriers of trees and shrubs that provide protection from wind and storm and lessens erosion. Shelter belts decreases the wind speed 60% to 80% and reduce crop damage.

83. (a)
Massachusetts Institute of Technology (MIT) tops the QS World University Rankings 2025. India's IIT Bombay has been ranked 118th in this ranking.

84.(d)
India has slipped two places to 124th Position in the Global Gender Gap Index 2024. This index is released by the world economic forum. Iceland is at the top of this index.

85. (b)
Non-biodegrable wastes are defined as those waste products which are not decomposed or distroyed natuarally. For example- tyres, plastic products, toxic chemicals etc. Blue colour dustbin is meant for disposal of plastic wrappers and non-biodegradable wastes. Green colour dustbin is used to keep wet and biodegradable wastes. Yellow colour dustbin is used to keep wastes suchas paper and glass bottles.

86. (d)
When a man pushes the wall but fails to displace it, he does absolutely zero work.
Work done (W) = Force × displacement
Here, displacement = 0
$\boxed{W = 0}$

87. (c)

Centrifugal force is a force that arises from the body's inertia and appears to act on a body that is moving in a circular path which is directed away from the centre around which the body is moving.

Example -

(i) A bike making a turn.

(ii) The devices that separate cream from milk work on this principle.

88. (a)

Cryogenics is the study of the production and behaviour of material at very low temperature (≈ -150^{0}C). It is not well defined at what point on the temperature scale refrigeration end and cryogenics begins but scientist assume a gas to be cryogenics if it liquefied at or below –150^{o}C.

89.(c)

Ultrasonic waves are waves above 20000Hertz frequency. Human ears cannot hear this but can hear from some animals like dogs, cats, bats etc. Use of ultrasonic waves are–

1- Signal sending
2- Detecting the depth of the sea
3- Cleaning the components of precious clothes, airplanes and watches
4- In destroying harmful bacteria from inside the milk
5- Treatment of arthritis and detection of brain tumors

90. (b)

Metal denotes the properties of malleablity. This means solid metal ductility. Gold has the most malleable properties.

91. (a)

The process of depositing a layer of any desired metal on another material by means of electricity is called electroplating. This is accomplished using an electroplating apparatus that includes a brine solution, a battery, wires and alligator clips that hold carbon rods attached to the metal to be electroplated and the metal to be layered.

92. (d)

In the modern periodic table the elements have been placed on the basis of their respective atomic number. It contains 18 groups and 7 periods. In any particular group of a periodic table, the number of electrons present in its outermost shell is same with reference to all other elements.

93. (b)

Lysosome helps to keep the cell clean by digesting any external material and also helps to worn out cell organelles. It is mainly responsible for the digestion of macro- molecules, old cell parts and micro-organisms. It is the waste disposal system of the cell. Lysosome is also known as 'Suicidal Bag' of the cell.

94. (b)

The traits that inherit from one generation to another in organisms are called hereditary or genetic traits. The process of passing traits from one generation to another is called heredity. The laws of inheritance were first coined by Gregor Johann Mendel, that is why Mendel is called 'Father of Modern Genetics'. Mendel formulated his laws from experiments performed on garden peas.

95.(c)

- Hydra usually remains attached to submerged vegetation or with any solid object in the water of ponds, lakes and pits etc. It is also occasionally motile. It is the animal of Phylum Cnidaria or Coelenterata.
- Hydra appears tubular and flexible .The hypostome bears an aperture at its apex called mouth which opens into the gastro vascular cavity or enteron.The hypostome is encircled by a circlet of 6-10 tentacles.
- Tentacles help Hydra in locomotion and hunting.

96.(d)

Blood pressure is the force of the blood pushing against the artery walls. The force is made with each heartbeat as blood is pumped from the heart into the blood vessels. This is called systolic blood pressure.

- The components of blood pressure include systolic pressure, which results from ventricular contraction and diastolic pressure which results from ventricular relaxation.

97.(d)

Cornea, Retina, Iris, Pupil, Aqueous humour, Crystalline lens, Ciliary muscles, Optic nerve, Vitreous humour are the parts of the human eye; whereas Cochlea (the coiled portion of the labyrinth), Pinna, Temporal bone, Malleus, Incus, Stapes in oval window, Cochlear nerve, Eustachian tube, Tympanic membrane are the parts of the human ear.

98. (b)

A Register is a collection of flip flops. A flip flop is used to store single bit digital data. Latch is an electronic device which changes its output immediately based on the applied input. It is used to store either 1 or 0 at any specified time. So, latch, flip-flop and register are used for storage in computer devices. While, adder is the component of a computer processor that adds two numbers sent from the processing instructions.

99. (a)

In binary number system, there are only two symbols or possible value i.e 0 and 1. Hence, option (a) is correct.

100. (a)

National Green Tribunal (NGT) is a statutory adjudicatory body like Courts, apart from original jurisdiction side on filing of an application, NGT also has appellate jurisdiction to hear appeal as a Court (Tribunal). National Green Tribunal Act, 2010 is an Act of the Parliament of India which enables creation of a special tribunal to handle the expeditious disposal of the cases pertaining to environmental issues.

PRACTICE SET - 8

1. How many prime numbers are in first 100 natural numbers?
(a) 25 (b) 27
(c) 24 (d) 26

2. A positive number exceed its square root by 30. Find the number.
(a) 16 (b) 36
(c) 25 (d) 49

3. Arrange the following fractions in the ascending order.
$\frac{2}{3}, \frac{4}{8}, \frac{5}{9}$ and $\frac{9}{11}$
(a) $\frac{4}{8} < \frac{5}{9} < \frac{2}{3} < \frac{9}{11}$ (b) $\frac{5}{9} < \frac{2}{3} < \frac{4}{8} < \frac{9}{11}$
(c) $\frac{5}{9} < \frac{2}{3} < \frac{9}{11} < \frac{4}{8}$ (d) $\frac{4}{8} < \frac{5}{9} < \frac{9}{11} < \frac{2}{3}$

4. Which of the following fractions result will not be a recurring decimal?
(a) $\frac{10}{30}$ (b) $\frac{12}{30}$
(c) $\frac{14}{30}$ (d) $\frac{8}{30}$

5. Which of the following fraction will be subtracted from $\frac{3}{4}$ to give the result $\frac{5}{12}$?
(a) $\frac{1}{3}$ (b) $\frac{2}{8}$
(c) $\frac{1}{6}$ (d) $\frac{2}{3}$

6. If 3 is added to the numerator and the denominator of a fraction, it becomes $\frac{10}{11}$. And if 4 is subtracted from the numerator and the denominator, then it becomes $\frac{3}{4}$. What is the fraction?
(a) $\frac{7}{8}$ (b) $\frac{6}{13}$
(c) $\frac{3}{4}$ (d) $\frac{3}{5}$

7. Find the smallest multiple of 14 which when divided by 6, 8 and 12 leaves remainders 4, 6 and 10 respectively
(a) 46 (b) 336
(c) 70 (d) 40

8. 50 pens, 80 pencils and 65 scales were distributed among some students and found that five out of each item were not distributed. Find the number of students.
(a) 5 (b) 20
(c) 15 (d) 10

9. The LCM of two numbers is 20 times their HCF, and the sum of the LCM and the HCF is 504. If the difference of the numbers is 24, then find the sum of the numbers.
(a) 210 (b) 216
(c) 225 (d) 180

10. Three bells ring at intervals of 15, 30 and 45 minutes respectively. At what time will they ring together again, if they rang simultaneously at 8.00 AM?
(a) 8.30 AM (b) 9.30 AM
(c) 9.00 AM (d) 8.45 AM

11. The average of salaries of husband and wife is ₹65,000 and ratio of their salaries is 15:11 respectively. How much is the salary of the wife?
(a) ₹ 32,500 (b) ₹ 75,000
(c) ₹ 27,500 (d) ₹ 55,000

12. What is the compound ratio of 45 : 75, 3 : 5, 51 : 68 and 256 : 81?
(a) $\frac{64}{75}$ (b) $\frac{32}{45}$
(c) $\frac{128}{75}$ (d) $\frac{75}{32}$

13. A student had got few marks from maximum marks probably. These marks were 75% as %. If one more question would be added of one mark in the exam then his obtained marks percentage would have 76%. What were the initial maximum marks of the exam?
(a) 24 (b) 25
(c) 20 (d) 19

14. In the new budget, the price of petrol has risen by 20%. By how much percentage must a motorist reduce consumption of petrol so that his expenditure on it does NOT increase?
(a) $16\frac{1}{2}\%$ (b) $16\frac{3}{4}\%$
(c) $16\frac{4}{5}\%$ (d) $16\frac{2}{3}\%$

15. Find the area of a circular region whose circumference is 22 cm.
(a) 22 sq. cm. (b) 11 sq. cm.
(c) 44 sq. cm. (d) 38.5 sq. cm.

16. What will be the total surface area of that solid cylinder? Whose radius is half of the radius of the circle having an area of 154 square meters and the height is equal to its radius?
(a) 231 m^2 (b) 123 m^2
(c) 312 m^2 (d) 132 m^2

17. P and Q can complete a work in 8 days. Q and R can complete the same work in 12 days. P, Q and R together can complete the same work in 6 days. In how many days P and R together can do that work?
(a) 6 days (b) 8 days
(c) 5 days (d) 4 days

18. Amit alone can complete a piece of work in 15 days and Balbir alone can do the same work in 10 days. If Amit alone works for 3 days after which Balbir joins him, then the work will be finished in how many days?
(a) $\frac{1}{6}$ days (b) $4\frac{4}{5}$ days
(c) $7\frac{4}{5}$ days (d) $\frac{4}{5}$ days

19. Ram covers a certain distance on a toy train. Had the train moved 8 km/h faster, it would have taken 20 min less. If it had moved 4 km/h slower, it would have taken 40 min more. Find the distance.
(a) $\frac{16}{3}$ km (b) $\frac{17}{3}$ km
(c) $\frac{20}{3}$ km (d) $\frac{19}{3}$ km

20. A train crosses a pole in 15 seconds and a 100 metre long platform in 25 seconds. Find the length of the train in metres.
(a) 149 metre (b) 145 metre
(c) 150 metre (d) 155 metre

21. A sum of ₹3680 is invested at 12.5% p.a. simple interest for 6 years. What will be the total amount payable on maturity?
(a) ₹6,420 (b) ₹6,440
(c) ₹6,480 (d) ₹6,460

22. The simple interest on a sum of amount for 2 years at 10% per annum is ₹500. The compound interest on the same sum at the same rate for the same time is:
(a) ₹ 510 (b) ₹ 525
(c) ₹ 520 (d) ₹ 515

23. 40% of the goods are sold at 2% loss while the rest of the goods are sold at 4% profit. If there is a total profit of ₹ 250, then the cost price of goods sold is:
(a) ₹ 5,625 (b) ₹ 6,525
(c) ₹ 9,000 (d) ₹ 15,625

24. Hrithik sells a table at a profit of 37.5%. If he had bought it at 12.5% less and sold it for ₹330 less, he would have gained 10%. The cost price of the table is what percentage less than ₹1000?
(a) 21% (b) 20%
(c) 23% (d) 22%

25. If $a + b + c = 0$, then $(a^3 + b^3 + c^3)^2 = ?$
(a) $3a^2b^2c^2$ (b) $9a^2b^2c^2$
(c) 9abc (d) 27abc

26. If $\alpha \neq \beta$ but $\alpha^2 = 5\alpha - 3, \beta^2 = 5\beta - 3$, then find the equation whose roots are $\frac{\alpha}{\beta}, \frac{\beta}{\alpha}$.
(a) $3x^2 - 19x - 3 = 0$ (b) $3x^2 - 19x + 3 = 0$
(c) $3x^2 + 19x - 3 = 0$ (d) $3x^2 + 19x + 3 = 0$

27. If $1 + \tan\theta = \sqrt{3}$, then $\sqrt{3}\cot\theta - 1 = ?$
(a) $\frac{2\sqrt{3}-1}{2}$ (b) $\frac{2\sqrt{3}+1}{2}$
(c) $\frac{\sqrt{3}-1}{2}$ (d) $\frac{\sqrt{3}+1}{2}$

28. PQ is a diameter of circle whose centre is O. If a point R lies on a circle and ∠RPO is 42°, then find ∠RQP.
(a) 48° (b) 39°
(c) 25° (d) 51°

29. The digits given below are arranged in ascending order. If their median is 10, then find the value of p.
3, 5, 6, 2p +3, 3p +2, 15, 25, 51
(a) 2 (b) 3
(c) 27.5 (d) 38

30. A box contains 2 black, 6 green and 4 yellow balls. If 2 balls are picked up at random, the probability that both are green is:
(a) 1/6 (b) 1/22
(c) 3/11 (d) 5/22

31. Select the option that is related to the third term in the same way as the second term is related to the first term.
Import : Export :: Expenditure :?
(a) Credit (b) Revenue
(c) Budget (d) Economy

32. 'Cold' is related to 'Refrigerator' in the same way as 'Hot' is related to '____'.
(a) Air conditioner (b) Fire
(c) Grinder (d) Oven

33. In the given letter-cluster pairs, the first letter-cluster is related to the second letter-cluster following a certain logic. Study the given pairs carefully, and from the given options, select the pair that follows the same logic.
BLG : DHM
GMQ : IIW
(a) QDR : TZX (b) ULF : WGL
(c) CNH : EJN (d) YPJ : ATP

34. Select the option that is related to the fifth alphanumeric-cluster in the same way as the second alphanumeric-cluster is related to the first alphanumeric-cluster and the fourth alphanumeric-cluster is related to the third alphanumeric-cluster.

HR12: MY36 :: EJ14 : JQ42 :: PB17 : ?

(a) UI51 (b) VE36
(c) VF34 (d) UF32

35. If LOVE is coded as 54, then what will be the code for TEAR?

(a) 43 (b) 45
(c) 46 (d) 44

36. In a certain code language LIQUID is written as PMUYMH then how is SPACE written in that code?

(a) WTBGI (b) WTEGI
(c) TEGIW (d) WEIGH

37. In a certain code language, 'Bird is animal' is written as '# mr so', 'Parrot is Bird' is written as 'so # @', 'is Parrot animal' is written as 'mr @ #'. What is the code for 'animal' in that code language?

(a) @ (b) so
(c) mr (d) #

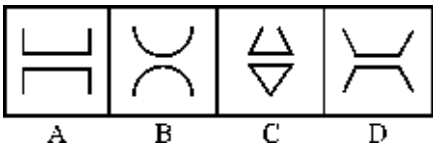
38. If MAT coded as 13 + 1 + 20 and FAN coded as 6 + 1 + 14 then TANKS will be coded as ?

(a) 20 + 11 + 1 + 14 + 19
(b) 20 + 14 + 11 + 1 + 19
(c) 20 + 1 + 14 + 11 + 19
(d) 19 + 1 + 14 + 11 + 20

39. In the given options, select the odd one out?

(a) Plot (b) Dialogue
(c) Script (d) Actor

40. Find the odd one out.



(a) C (b) A
(c) B (d) D

41. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.

ACE, HJL, OQS, ?

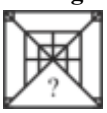
(a) VWX (b) VXZ
(c) ZXV (d) UWY

42. Study the given pattern carefully and select the number that represents the value of x.

36 25 16 9 4
361 x 289 256 225

(a) 336 (b) 298
(c) 316 (d) 324

43. Select the option that can replace the (?) symbol in the following figure.



(a)  (b) 
(c)  (d) 

44. Nishant walks 2 km towards West. At crossroad he turned left and reached a grocery store. In which direction is grocery store from Nishant's initial position?

(a) South-East (b) North-West
(c) North-East (d) South-West

45. Hari is the father-in-law of Ram and husband of Kanchan. Kanchan is the mother of her only daughter Suman. If Sarita is the Daughter of Suman, then what is the relationship between Sarita and Ram?

(a) Niece and maternal uncle
(b) Daughter and Father
(c) Nephew and maternal uncle
(d) Sister and Brother

46. If '+' means '×', '×' means '÷', '÷' means '–', and '–' means '+', then what will be the value of the given expression?

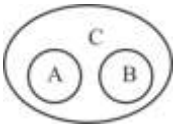
93 – 91 × 7 + 8 ÷ 3

(a) 89 (b) 194
(c) 198 (d) 201

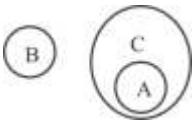
47. Which of the following diagrams correctly represents the relationship between the given classes?

(A) Length (B) Breadth
(C) Amplitude

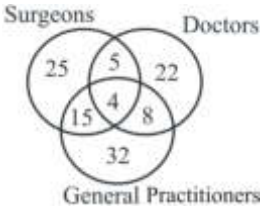
(a) 

(b) 

(c) 

(d) 

48. From the given Venn diagram, find the number of doctors who are surgeons but not general practitioners.



(a) 5 (b) 8
(c) 9 (d) 4

49. **Study the given information carefully and answer the question that follows. The following eligibility criteria are required to be fulfilled by the candidates for the prescirbed recruitment process for the post of Assistant Teacher (Social Science) for secondary classes:**

(i) He/she should be a graduate in Geography, History, Economics, Political Science and Public Administration (Any two subjects).

(ii) He/she must have passed B. Ed degree in first class.

(iii) He/She should have 8 years teaching experience at primary level or 3 years teaching experience at secondary level.

(iv) He should have good command over Hindi and English.

Information about a candidate is given. On the basis of the given information, you have to decide under which criteria that candidate is eligible for selection. Please note that a person may be eligible under more than one criteria. you do not have to guess anything other than the information given in the question.

Manisha has completed her graduation with History and Economics subjects. He has 10 years teaching experience at pre-primary level. He is very proficient in speaking English as well as Hindi.

(a) Qualifies/eligible under iii and iv only
(b) Eligible under i and iv only
(c) Eligible under i and ii only
(d) Eligible under ii and iv only

50. **Three statements are followed by three conclusions numbered I, II and III. Assuming the statements to be true, even if they do not confirm to real world knowledge, decide which of the given conclusions/possibilities can be true on the basis of the statements.**

Statements :

1. Some students are males.
2. Some males are sincere.
3. All sincere are honest.

Conclusions :

I. Some honest are males.
II. All males are students is a possibility.
III. Some sincere are not students.

(a) Only conclusions II is true
(b) Only conclusion III is true
(c) Only conclusion I and II are true
(d) Only conclusion I is true

51. **Statement :**

All countries are districts.
Some village are not districts.

Conclusion :

1. All countries are village.
2. Some countries are village.
3. Some villages are not countries.
4. Some countries are not villages.

(a) No Conclusion follows
(b) Only 2 and 4 follows
(c) Only 2 and 3 follows
(d) All the conclusion follows

52. **Read the given statement and conclusions carefully. Assuming that the information given in the statement is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statement.**

Statement:

Aged persons should avoid vigorous exercises

Conclusions:

(A) Exercises are not essential for youngsters
(B) Vigorous exercises can cause damage to tendons

(a) Neither conclusions A nor B follows
(b) Both conclusions A and B follow
(c) Only conclusion A follows
(d) Only conclusion B follows

53. **Select the option that holds true regarding the given statements.**

Statements:

1. The soldiers loaded their guns and marched towards the battle ground
2. The families of soldiers are praying for the safety of the soldiers who are in the battle ground

(a) Statement 1 is the effect and statement 2 is its immediate and principal cause
(b) Statement 2 is the effect and statement 1 is its immediate and principal cause
(c) Both the statements are independent of each other
(d) Both the statements are effects of some independent causes

54. **Consider the given statement and decide which of the given assumptions is/are implicit in the statement.**

Statement:

A wealthy person has a higher chance of having diabetes.

Assumptions:

I. Most of causes of death among wealthy persons are due to diabetes.
II. Poor persons do not have diabetes.

(a) Both, assumptions (I) and (II) are implicit.
(b) Only assumptions (II) is implicit.
(c) Only assumptions (I) is implicit.
(d) Neither assumption (I) nor (II) is implicit.

55. **Question:**

What is the relation of X with Y?

Statement:

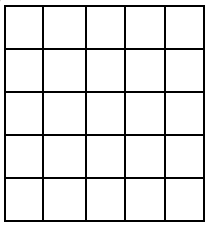
1. Y has two sister U and V.
2. Mother of X is sister of U's father.

(a) Only 1 is sufficient while other alone is not sufficient
(b) Both 1 and 2 together are sufficient
(c) Either statement 1 alone or 2 alone is sufficient
(d) Only 2 is sufficient while first alone is not sufficient

56. The position of how many letters will remain unchanged if each of the letters in the word COMPUTE is arranged in alphabetical order?
(a) TWO (b) One
(c) None (d) Three

57. If 8 + 5 = 1340 is true, then find the value of 4+6.
(a) 1024 (b) 1304
(c) 1414 (d) 1012

58. How many squares are there in the given figure?



(a) 20 (b) 55
(c) 30 (d) 45

59. At 6:51 pm, what will be the measure of the smaller angle between the hour-hand and the minute-hand in the clock?
(a) 100.5° (b) 101°
(c) 100° (d) 101.5°

60. Details of expenses made by a company (in millions) under different heads of expenditure are given in the following table. Study the table and answer the question that follows.

Years	Head of Expenditure				
	Transport	Admin	Salary	Other	Taxes
2014	452	167	340	56	47
2015	569	174	398	62	56
2016	659	189	409	73	61
2017	706	193	456	77	63
2018	783	203	479	81	69

The total expenditure made on the payment of Admin in 2018 was approximately what percentage of the total expenditure made on all heads for that year ?
(a) 1257% (b) 1.257%
(c) 125.7% (d) 12.57%

61. The concept of Triratna is related to ____.
(a) Sikhism
(b) Islam
(c) Buddhism
(d) Zoroastrianism (Parsiya)

62. Who among the following during the reign of Harsvardhan came to India?
(a) Fa-hien (b) Alberuni
(c) Itsing (d) Hiuen Tsang

63. A records is given of his administrative achievements in Futuhat-e-Firozshahi of ____
(a) Gulbadan Begum's
(b) Abul Fazal's
(c) Ziyauddin Barani's
(d) Firozshah Tughalaq's

64. Which Bengali newspaper was founded and edited by Raja Ram Mohan Roy?
(a) Kesari (b) Sambad Kaumudi
(c) Maratha (d) Yugantar

65. The water cycle of the earth is driven by:-
(a) Air (b) Moon
(c) Sun (d) Earth

66. Which of the following methods prevents or reduces wind erosion of soil in open areas?
(a) Using pots to grow vegetables at home
(b) Covering up open areas with tiles or cement
(c) Following crop rotation in agriculture
(d) Using trees or large shrubs as fences for a garden

67. Which one of the following is not a local name used for the Western Ghats?
(a) Anaimalai Hills of Kerala
(b) Nilgiri Hills of Karnataka
(c) Cardamom hills of Tamil Nadu
(d) Sahyadri Hills of Maharashtra

68. Which of the following does not indicate the meaning of the word 'Republic' mentioned in the preamble?
(a) The head of the state is elected directly or indirectly for a certain period.
(b) Political sovereignty lies in the people and not in one person.
(c) All government offices are open to every citizen without any discrimination even in the absence of any privileged class.
(d) At the highest post of the country where the head of state is a hereditary king.

69. Which Article of the Constitution of India provides that there shall be a Council of Ministers with the Prime Minister as its head to aid and advice the President, who shall exercise his/her functions in accordance to the advice ?
(a) Article 79 (1) (b) Article 72 (1)
(c) Article 74 (1) (d) Article 73 (1)

70. Select the option that shows the correct match of an organization and its headquarters.
(a) WHO– Paris
(b) GATT– Geneva
(c) INTERPOL– Washington D.C.
(d) ESRO– Brussels

71. The Defence Reearch and Development Organisation (DRDO) was established in:
(a) 1947 (b) 1991
(c) 1958 (d) 1950

72. **In which country the headquarters of International Rice Research Institute (IRRI) is located?**
(a) Malaysia (b) Philippines
(c) China (d) Japan

73. **Cargo services are a part of the _____ activities of the service sector.**
(a) Quaternary (b) Tertiary
(c) Primary (d) Transport

74. **In Financial field, FCCB stands for:**
(a) Foreign Currency Commercial Bond
(b) Foreign Currency Convertible Banks
(c) Foreign Currency Convertible Bond
(d) Foreign Currency Corporate Bonds

75. **What is the name of the first woman who become the head of a paramilitary force?**
(a) Divya Ajith
(b) Archana Ramasundaram
(c) Punita Arora
(d) Ashwini Pawar

76. **Which of the following was built by ancient Incas city of petra?**
(a) Petra city (b) Hagia Sophia
(c) Machu Pichhu (d) Arcopolis

77. **National Environmental Engineering Research Institute (NEERI) is located at:**
(a) Indore (b) Pune
(c) Nainital (d) Nagpur

78. **The hornbill festival is a famous tribal festival. It is celebrated in which of the following North-Eastern states of India?**
(a) Arunanchal Pradesh (b) Assam
(c) Nagaland (d) Mizoram

79. **The highest decoration for valour (during wartime) given to the Indian uniformed soldiers is _____.**
(a) Vir Chakra (b) Shaurya Chakra
(c) Mahavir Chakra (d) Param Vir Chakra

80. **Who wrote about the injustices of the caste system in his book 'Gulamgiri' (1871)?**
(a) Kashi Baba
(b) Dr. BR Ambedkar
(c) EV Ramaswamy Naicker
(d) Jyotirao Govindrao Phule

81. **In whose memory was the government of India declared June 29 as statistics day each year?**
(a) Radhakamal Mukherjee
(b) Dhananjay Ramchandra Gadgil
(c) Shakuntala Devi
(d) Prasanta Chandra Mahalonabis

82. **Tundra vegetation is found in the:**
(a) Middle plain region (b) Himalayan region
(c) Western Ghats (d) Eastern Ghats

83. **Which edition of India-Japan maritime exercise 'JIMEX-24' started recently ?**
(a) 9^{th} (b) 8^{th}
(c) 10^{th} (d) 11^{th}

84. **Whom did India defeat to win the World Cup title in the final of the ICC T20 World Cup in June, 2024 ?**
(a) England
(b) Australia
(c) South Africa
(d) Pakistan

85. **Which of the following is an eco-friendly practice?**
(a) Disposing dry leaves in pits under soil
(b) Disposal of biodegradable wastes in ponds
(c) Disposing waste plastics by dumping in pits under soil
(d) Use of chemical fertilizers to increase crop productivity

86. **The ability of an object to do the work energy contained in an object is depend on the-**
(a) Mass and volume of object
(b) Motion of object in a certain direction
(c) State and condition of object
(d) The magnitude and the direction of the object

87. **Which one of the following is not true about Kepler's rules for planetary bodies?**
(a) The orbit of a planet is an elliptical with the Sun at one of the two foci.
(b) A line segment connecting a planet and the sun makes an equal area outside during equal intervals of time.
(c) The square of its orbital period is proportional to the cube of the semi-principal axis of its orbit.
(d) The orbital period depends on the mass of the planet.

88. **The heat conduction in a cubic object does not depend on –**
(a) Density of material
(b) Material dimensions
(c) Friction
(d) Electronic configuration

89. **Which of the following statements regarding sound waves is not correct?**
(a) It travels at a speed of 330–350 m / s.
(b) These are mechanical waves.
(c) They do not require any type of medium to travel.
(d) It cannot travel long distances.

90. **Which of the following solutions do NOT conduct electricity?**
(a) Acid and Base
(b) Alcohol and Glucose
(c) Alcohol and Acid
(d) Glucose and Base

91. Which of these substances is not secreted in the stomach as an ingredient of gastric acid?
(a) potassium chloride (b) sulphuric acid
(c) hydrochloric acid (d) sodium chloride

92. Are the minimum reactive elements of the periodic table.
(a) transition metal (b) alkaline soil metal
(c) noble gases (d) alkaline metals

93. Plant cell walls are composed of:
(a) Cytosol (b) Cytoplasm
(c) Cellulose (d) Glucose

94. A species that cannot be found after a prolonged search in its area of habitations is said to be _____species.
(a) Endangered (b) Rare
(c) Extinct (d) Vulnerable

95. Which of the following systems is NOT found in nematodes?
(a) Digestive system
(b) Excretory system
(c) Respiratory system
(d) Reproductive system

96. Human blood platelets release ..... which helps in blood clotting.
(a) Prothrombin (b) Fibrin
(c) Fructose (d) Sucrose

97. Which of the following is true?
(a) The image formed on the retina is inverted.
(b) The image formed on the retina is twice the original image.
(c) The shape of the image formed on the retina is similar to the object.
(d) The reflection formed on the retina is a semicircle.

98. In recognition technology OMR is used, what does M stand for?
(a) Manipulator (b) Mirroring
(c) Magnetic (d) Mark

99. Operating system of a computer is an example of:
(a) Hardware
(b) System software
(c) Application software
(d) Application platefrom

100. Forest planting is a way to reduce the accumulation of carbon-dioxide in the atmosphere because -
(a) Carbon sinks are made from trees
(b) Trees absorb carbon dioxide while inhaling
(c) Trees provide beneficial products for humans
(d) Trees release oxygen.

SOLUTION : PRACTICE SET- 8

ANSWER KEY

1. (a)	11. (d)	21. (b)	31. (b)	41. (b)	51. (a)	61. (c)	71. (c)	81. (d)	91. (b)
2. (b)	12. (a)	22. (b)	32. (d)	42. (d)	52. (a)	62. (d)	72. (b)	82. (b)	92. (c)
3. (a)	13. (a)	23. (d)	33.(c)	43.. (b)	53. (b)	63. (d)	73. (b)	83. (b)	93. (c)
4. (b)	14. (d)	24. (b)	34. (a)	44. (d)	54. (d)	64. (b)	74. (c)	84. (c)	94. (c)
5. (a)	15. (d)	25. (b)	35. (d)	45. (b)	55. (b)	65. (c)	75. (b)	85. (a)	95. (c)
6. (a)	16. (a)	26. (b)	36. (b)	46. (b)	56. (d)	66. (d)	76. (c)	86. (c)	96. (a)
7. (c)	17. (b)	27. (d)	37. (c)	47. (b)	57. (a)	67. (c)	77. (d)	87. (d)	97. (a)
8. (c)	18. (c)	28. (a)	38. (c)	48. (a)	58. (b)	68. (d)	78. (c)	88.(c)	98. (d)
9. (b)	19. (a)	29. (b)	39. (d)	49. (b)	59. (a)	69. (c)	79. (d)	89. (c)	99. (b)
10. (b)	20. (c)	30. (d)	40. (a)	50. (c)	60. (d)	70. (b)	80. (d)	90. (b)	100.(a)

SOLUTION

1. (a)
Prime numbers in first 100 natural numbers =
2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97
Therefore, total such numbers are 25.

2. (b)
Let the number be x, then-

$$x = \sqrt{x} + 30$$

$$x - 30 = \sqrt{x}$$

On squaring in both side-

$$(x-30)^2 = \left(\sqrt{x}\right)^2$$

$$x^2 + 900 - 60x = x$$

$$x^2 - 60x - x + 900 = 0$$

$$x^2 - 61x + 900 = 0$$

$$x^2 - 36x - 25x + 900 = 0$$

$$x(x-36) - 25(x-36) = 0$$

$$(x-36)(x-25) = 0$$

$$x - 36 = 0 \text{ or } x - 25 = 0$$

$$x = 36 \text{ or } x = 25$$

25 is not more than its square root, which does not follow the condition.
Hence, the required number will be x = 36.

3. (a)
From question,

$\frac{2}{3}, \frac{4}{8}, \frac{5}{9}$ and $\frac{9}{11}$
$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
$0.67 \quad 0.50 \quad 0.55 \quad 0.81$

(Ascending order),

$0.50 \quad 0.55 \quad 0.67 \quad 0.81$
$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
$\frac{4}{8} < \frac{5}{9} < \frac{2}{3} < \frac{9}{11}$

4. (b)
From options,

(a) $\frac{10}{30} = \frac{1}{3} = 0.\bar{3}$

(b) $\frac{12}{30} = \frac{4}{10} = \frac{2}{5} = 0.4$

(c) $\frac{14}{30} = \frac{7}{15} = 0.4\bar{6}$

(d) $\frac{8}{30} = \frac{4}{15} = 0.2\bar{6}$

Hence, it is clear that option (b) is not in recurring decimal.

5. (a)

Let the fraction be $\frac{1}{x}$,

According to the question,

$$\frac{3}{4} - \frac{1}{x} = \frac{5}{12}$$
$$-\frac{1}{x} = \frac{5}{12} - \frac{3}{4}$$
$$-\frac{1}{x} = \frac{20-36}{48}$$
$$-\frac{1}{x} = \frac{-16}{48}$$
$$\frac{1}{x} = \frac{1}{3}$$

Hence, the required fraction is $\frac{1}{3}$.

6. (a)

Let the fraction is $\frac{x}{y}$

According to the question,

$$\frac{x+3}{y+3} = \frac{10}{11}$$
$$\Rightarrow 11x + 33 = 10y + 30$$
$$\Rightarrow 11x - 10y = -3 \text{.....(i)}$$

Again, $\frac{x-4}{y-4} = \frac{3}{4}$

$$\Rightarrow 4x - 16 = 3y - 12$$
$$\Rightarrow 4x - 3y = 4 \text{ .....(ii)}$$

From equation (i) and (ii)–

$x = 7$ and $y = 8$

Hence, the required fraction is $\frac{7}{8}$.

7. (c)

$6 - 4 = 2$
$8 - 6 = 2$
$12 - 10 = 2$

LCM of 6, 8, 12 = 24

According to question,

$$\frac{24x - 2}{14}$$

On putting $x = 3$

$$= \frac{72-2}{14} = \frac{70}{14}$$

Hence the required multiple of 14 is 70.

8. (c)

According to the question,

$50 - 5 = 45$
$80 - 5 = 75$
$65 - 5 = 60$

So, the required number of students = HCF of 45, 75 and 60.

$45 = 3 \times 3 \times 5$

$75 = 3 \times 5 \times 5$

$60 = 2 \times 2 \times 3 \times 5$

So, HCF = $3 \times 5 = 15$

9. (b)

According to the question,

$L = 20\,H$ —— (i)

and, $L + H = 504$ ——(ii)

$H(a - b) = 24$ ——(iii)

From equation (iii) $a - b = 1$

$20H + H = 504 \Rightarrow H = 24$

equation (iii) and $(a - b) = 1$

$\because L = Hab$

$\therefore Hab = 20H$ [from equation (i)]

$ab = 20$

$(a + b)^2 = (a - b)^2 + 4ab$

$= 1 + 80 = 81$

$\Rightarrow (a + b) = 9$

Hence, Sum of numbers $= H(a + b)$

$= 24 \times 9 = 216$

10. (b)

All the three bells will ring together again = LCM of 15, 30 and 45

On finding the LCM by common division method,

2	15,	30,	45
3	15,	15,	45
3	5,	5,	15
5	5,	5,	5
	1,	1,	1,

LCM = $2 \times 3 \times 3 \times 5 = 90$ min

So, the required time = 8:00 + 90 min = 9:30 AM

11. (d)

Let the salary of husband = 15x

and the salary of wife = 11x

According to the question,

$$\frac{15x+11x}{2}=65,000$$

$$26x = 65000 \times 2$$

$$x=\frac{65000\times 2}{26}$$

$$x = 5,000$$

Hence, the salary of wife $= 11x = 11 \times 5000$

$= ₹55,000$

12. (a)

45 : 75, 3 : 5, 51 : 68, 256 : 81

$$\text{Compound ratio}=\frac{\text{Product of 1}^{st}\text{ term}}{\text{Product of 2}^{nd}\text{ term}}$$

$$=\frac{45\times 3\times 51\times 256}{75\times 5\times 68\times 81}=\frac{3\times 1\times 51\times 64}{5\times 5\times 17\times 27}$$

$$=\frac{3\times 3\times 64}{5\times 5\times 27}=\frac{64}{75}$$

13. (a)

Let the maximum marks = x

And the student had got y marks.

According to the first condition,

$$\frac{y}{x}=\frac{75}{100}$$

$$y=\frac{3x}{4}------(I)$$

According to the second condition,

$$\frac{y+1}{x+1}=\frac{76}{100}$$

$$\frac{\frac{3x}{4}+1}{x+1}=\frac{76}{100}$$ {From eqn. (I)}

$$\frac{3x+4}{x+1}=\frac{76}{25}$$

$$75x + 100 = 76x + 76$$

$$x = 24$$

Hence, the maximum marks is 24.

14. (d)

Let the motor driver reduce the consumption of petrol, so that his expenditure on petrol does not increase.

$$\therefore \quad x=\frac{R}{100+R}\times 100$$

$$=\frac{20}{100+20}\times 100 \quad \{\because \text{Given, R = 20\%}\}$$

$$=\frac{20}{120}\times 100$$

$$=16\frac{2}{3}\%$$

15. (d)

Circumference of a circle $= 2\pi r$

From the question–

$$2\pi r = 22$$

$$r=\frac{22}{2\times\pi}$$

$$r=\frac{22\times 7}{2\times 22}\Rightarrow \boxed{r=\frac{7}{2}}$$

$\therefore$ Area of circle $= \pi r^2$

$$=\frac{22}{7}\times\left(\frac{7}{2}\right)^2$$

$$=\frac{22}{7}\times\frac{7}{2}\times\frac{7}{2}$$

$$=\frac{77}{2}=38.5 \text{ square cm.}$$

16. (a)

Area of circle $= 154\ m^2$

$$\pi r^2 = 154$$

$$r^2 = 154\times\frac{7}{22}=7\times 7$$

$$r = 7$$

As per the question,

Height of cylinder $= 7$ m

Radius of cylinder $= \frac{7}{2}$ m

Total surface area of cylinder $= 2\pi r\,(h + r)$

$$=2\times\frac{22}{7}\times\frac{7}{2}\left(7+\frac{7}{2}\right)$$

$$=22\times\frac{21}{2}=231 m^2$$

17. (b)

Work done by (P + Q) in 1 day $=\frac{1}{8}$ part

Work done by (Q + R) in 1 day $=\frac{1}{12}$ part

Work done by (P + Q + R) is 1 day $=\frac{1}{6}$ part

Work done by R in 1 day $=\frac{1}{6}-\frac{1}{8}$

$$=\frac{4-3}{24}=\frac{1}{24}$$

Work done by P in 1 day $=\frac{1}{6}-\frac{1}{12}$

$$=\frac{4-2}{24}=\frac{2}{24}=\frac{1}{12}\text{ part}$$

Work done by (P + R) in 1 day $=\frac{1}{24}+\frac{1}{12}$

$$=\frac{1+2}{24}=\frac{3}{24}=\frac{1}{8}\text{ part}$$

Hence, P and R together can do that work in 8 days.

18. (c)

Let- the work will be finished in x days.

Amit's one day work = $\frac{1}{15}$ unit

Balbir's one day work = $\frac{1}{10}$ unit

According to the question,

$$\frac{x}{15}+\frac{x-3}{10}=1$$

$$2x + 3x - 9 = 30$$

$$5x = 39$$

$$x = \frac{39}{5} = 7\frac{4}{5} \text{ days}$$

19. (a)

Let the distance = n km

If speed of train v km/h and time be t hour.

$(v + 8)$ $\left(t-\frac{1}{3}\right)$

$(v - 4)$ $(t+2/3)$

When distance is constant

$s_1t_1 = s_2t_2$

$$(v+8)(t-1/3)=(v-4)(t+2/3)$$

$$-v/3+8t-8/3=2v/3-4t-8/3$$

$$v=12t$$

$$t=\frac{v}{12}-----(i)$$

$$\frac{n}{v-4}-\frac{n}{v+8}=1$$

$$12n = v^2 + 4v - 32$$

$$12vt = v^2 + 4v - 32$$

$$v^2 = v^2 + 4v - 32$$

$v = 8$ km

Distance (n) = v×t

$$8\times\frac{8}{12}=\frac{16}{3}\text{km}$$

20. (c)

Let the length of the train = x m.

Speed of train while crossing the pole = $\frac{x}{15}$ m./sec.

Again, speed of train while crossing 100 metre long platform = $\frac{100+x}{25}$ m./sec.

According to the question,

$$\frac{x}{15}=\frac{100+x}{25}$$

$\Rightarrow$ $25x = 1500 + 15x$

$\Rightarrow$ $10x = 1500 \Rightarrow x = 150$m

Hence the length of train = 150 m

21. (b)

$$\text{Amount (A)} = P+\frac{PRT}{100}$$

$$= P\left(1+\frac{RT}{100}\right)$$

$$= 3680\left(1+\frac{12.5\times6}{100}\right)$$

$$= 3680\times\frac{175}{100} = ₹6440$$

22. (b)

Let principal amount = ₹ P

Rate= 10% annually

Time = 2 years

According to the question,

$$500=\frac{P\times10\times2}{100}$$

P = ₹2500

$$\text{Compound interest} = 2500\left[\left(1+\frac{10}{100}\right)^2-1\right]$$

$$=2500\left[\frac{11}{10}\times\frac{11}{10}-1\right]$$

$$=2500\left[\frac{121-100}{100}\right]$$

$$=2500\times\frac{21}{100}$$

$$= ₹\ 525$$

23. (d)

Let the cost price of total goods = 100x

According to the question,

$$\text{Total selling price} = \frac{40x\times(100-2)}{100}+\frac{60x(100+4)}{100}$$

$$\Rightarrow \quad \frac{40x\times98+60x\times104}{100}=\frac{3920x+6240x}{100}$$

$$\Rightarrow \quad \frac{10160x}{100}=101.6x$$

Profit = 101.6x – 100x = 1.6x

1.6x = 250

$$x=\frac{250}{1.6}$$

Now the cost price of goods = $\frac{250}{1.6}\times100 = ₹\ 15625$

24. (b)

Let cost price (CP) of the table = ₹x

$$\text{Selling Price (SP) of the table} = \frac{x \times 137.5}{100}$$

$$= ₹\ \frac{11x}{8}$$

According to the question,

$$\text{Cost price of item on buying 12.5 \% less} = \frac{x \times 87.5}{100}$$

$$= ₹\frac{7x}{8}$$

$$\text{New selling price of the table} = \left(\frac{11x}{8} - 330\right)$$

Again, according to the question,

Profit = SP – CP

$$\left(\frac{11x}{8} - 330\right) - \frac{7x}{8} = \frac{7x}{8} \times \frac{10}{100}$$

$$\frac{11x - 2640}{8} = \frac{7x}{8} + \frac{7x}{80}$$

$$\frac{11x - 2640}{8} = \frac{70x + 7x}{80}$$

$$110x - 26400 = 70x + 7x$$

$$33x = 26400$$

$$x = ₹\ 800$$

Hence,

$$\text{Required \%} = \frac{1000 - 800}{1000} \times 100 = 20\%$$

25. (b)

According to the formula−

$$a^3+b^3+c^3-3abc = (a + b + c)(a^2+b^2+c^2-ab-bc-ca)$$

$\because$ Given− $(a + b + c) = 0$

$\therefore$ $a^3 + b^3 + c^3 - 3abc = 0\ (a^2 + b^2 + c^2 - ab - bc - ca)$

$$a^3 + b^3 + c^3 - 3abc = 0$$

$$a^3 + b^3 + c^3 = 3abc$$

Squaring on both side−

$$(a^3 + b^3 + c^3)^2 = (3abc)^2$$

$$\boxed{\left(a^3 + b^3 + c^3\right)^2 = 9a^2b^2c^2}$$

26. (b)

Given-

$$\alpha \neq \beta$$

$$\alpha^2 = 5\alpha - 3, \qquad \beta^2 = 5\beta - 3$$

$$\alpha^2 - 5\alpha + 3 = 0 \qquad \beta^2 - 5\beta + 3 = 0$$

$$\alpha = \frac{-(-5) \pm \sqrt{(-5)^2 - 4 \times 1 \times 3}}{2}$$

$$\beta = \frac{\left(+5 \pm \sqrt{(-5)^2 - 4 \times 1 \times 3}\right)}{2}$$

$$\alpha = \frac{+5 + \sqrt{25-12}}{2}, \quad \beta = \frac{+5 - \sqrt{25-12}}{2}$$

$$\boxed{\alpha = \frac{5 + \sqrt{13}}{2}} \qquad \boxed{\beta = \frac{5 - \sqrt{13}}{2}}$$

Formula of quadratic equation -

x^2 − (sum of roots) x + product of roots = 0

$$x^2 - \left(\frac{\alpha}{\beta} + \frac{\beta}{\alpha}\right)x + \frac{\alpha}{\beta} \times \frac{\beta}{\alpha} = 0$$

$$x^2 - \left(\frac{\alpha^2 + \beta^2}{\alpha\beta}\right)x + 1 = 0$$

$$x^2 - \left[\frac{\left(\frac{5+\sqrt{13}}{2}\right)^2 + \left(\frac{5-\sqrt{13}}{2}\right)^2}{\left(\frac{5+\sqrt{13}}{2}\right)\left(\frac{5-\sqrt{13}}{2}\right)}\right]x + 1 = 0$$

$$x^2 - \frac{76}{25-13}x + 1 = 0$$

$$x^2 - \frac{76}{12}x + 1 = 0$$

$$12x^2 - 76x + 12 = 0$$

$$\Rightarrow \boxed{3x^2 - 19x + 3 = 0}$$

27. (d)

$$1 + \tan\theta = \sqrt{3}$$

$$\tan\theta = \sqrt{3} - 1$$

$$\frac{1}{\cot\theta} = \sqrt{3} - 1$$

$$\cot\theta = \frac{1}{\sqrt{3} - 1}$$

On multiplying the numerator and denominator by $\left(\sqrt{3} + 1\right)$,

$$\cot\theta = \frac{\sqrt{3} + 1}{\left(\sqrt{3} - 1\right)\left(\sqrt{3} + 1\right)}$$

$$\cot\theta = \frac{\sqrt{3} + 1}{2}$$

$$\sqrt{3}\cot\theta - 1$$

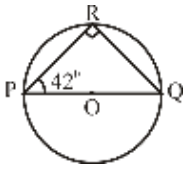
$$= \sqrt{3} \times \frac{\sqrt{3} + 1}{2} - 1 \qquad \text{(On putting the value of cot}\theta\text{)}$$

$$= \frac{3 + \sqrt{3} - 2}{2}$$

$$= \frac{\sqrt{3} + 1}{2}$$

28. (a)

According to the question,



Given, $\angle RPO = 42°$

$\because$ Angle subtended in a semicircle is a right angle.

Hence, $\angle PRQ = 90°$

In Δ PQR,

$\angle PRQ+\angle RQP+\angle QPR = 180°$

$90°+\angle RQP+42° = 180°$

$\angle RQP = 180° - 132°$

$\therefore \angle RQP = 48°$

29. (b)

When the number of terms is even then

$$\text{Median} = \frac{\left(\frac{n}{2}\right)^{th}\text{ term} + \left(\frac{n}{2}+1\right)^{th}\text{ term}}{2}$$

Where n = number of term.

here n = 8 and median = 10 (Given)

$$10 = \frac{\left(\frac{8}{2}\right)^{th}\text{ term} + \left(\frac{8}{2}+1\right)^{th}\text{ term}}{2}$$

$$10 = \frac{4^{th}\text{ term} + 5^{th}\text{ term}}{2}$$

$$10 = \frac{2p+3+3p+2}{2}$$

$5p = 20 - 5 = 15$

$p = \frac{15}{5} = 3$

30. (d)

Total balls $= 2 + 6 + 4 = 12$

$$\text{Probability of green balls} = \frac{{}^{6}c_{2}}{{}^{12}c_{2}} = \frac{\frac{6\times5}{2\times1}}{\frac{12\times11}{2\times1}}$$

$$= \frac{30}{12\times11}$$

$$= \frac{5}{22}$$

31. (b)

Just as, imports are related to exports. Similarly, expenditure is related to revenue.

32. (d)

Just as, a refrigerator is used to cool a thing, in the same way oven is used to heat something.

33.(c)

Just as,

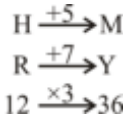
Similarly,

and,

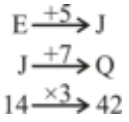
Hence, option (c) is correct.

34. (a)

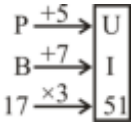
Just as,



and,



Same as,



35. (d)

Just as,

LOVE = 12 + 15 +22 +5 =54

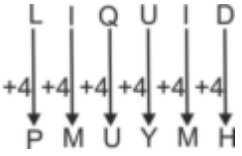
(Sum of alphabetical order)

Similarly,

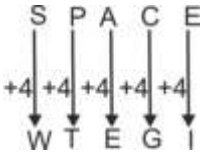
TEAR = 20+5+1+18 = 44

36. (b)

Just as,

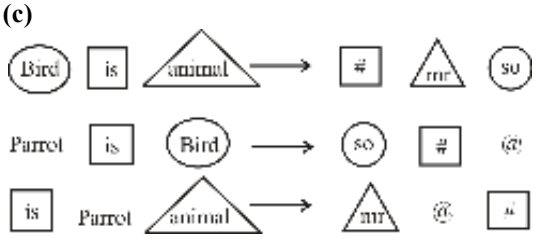


Similarly,



Hence option (b) is correct.

37. (c)



Hence, it is clear that animal is coded as 'mr'.

38. (c)

MAT = 13 + 1 + 20

FAN = 6 + 1 + 14

Here the letters are added by writing the serial value in their alphabet.

$\therefore$ TANKS = 20 + 1 + 14 + 11 + 19

39. (d)

Actor is odd, because Plot, Dialogue and Script are represented by Actor.

40. (a)

Except figure C, All in lower figure can be obtained by rotating the top figure 180°. Hence, option (a) is correct.

41. (b)

The given series is-

$$A \xrightarrow{+7} H \xrightarrow{+7} O \xrightarrow{+7} \boxed{V}$$
$$C \xrightarrow{+7} J \xrightarrow{+7} Q \xrightarrow{+7} X$$
$$E \xrightarrow{+7} L \xrightarrow{+7} S \xrightarrow{+7} Z$$

42. (d)

Just as,

$$\begin{matrix} 36, & 25, & 16, & 9, & 4 \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ 6^2, & 5^2, & 4^2, & 3^2, & 2^2 \end{matrix}$$

Similarly,

$$\begin{matrix} 361, & \boxed{324,} & 289, & 256, & 225 \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ 19^2, & 18^2, & 17^2, & 16^2, & 15^2 \end{matrix}$$

Hence, x = 324.

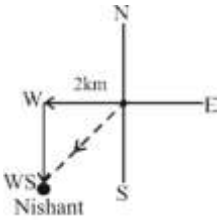
43.. (b)

In the given question figure, the answer figure given in option (b) will complete the question figure.

So option (b) is correct.

44. (d)

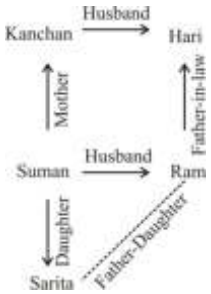
Nishant positing is as follows:



Hence, Grocery store is in South-West direction.

45. (b)

On drawing blood relation diagram according to the question,



Hence, it is clear from above diagram that Sarita and Ram is related as daughter and Father.

46. (b)

Given expression-

$$93 - 91 \times 7 + 8 \div 3$$

$+ \rightarrow \times$

$\times \rightarrow \div$

$\div \rightarrow -$

$- \rightarrow +$

According to the question on changing the mathematical symbols-

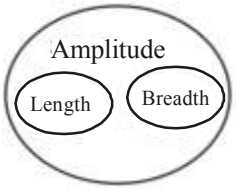
$93 + 91 \div 7 \times 8 - 3 = 93 + 13 \times 8 - 3$

$= 93 + 104 - 3$

$= 197 - 3 = 194$

47. (b)

Length and Breadth both are characteristics of Amplitude.



Hence, option (b) is correct.

48. (a)

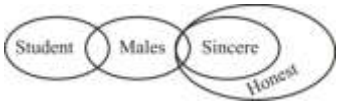
It is clear from Venn diagram that the number of doctors (5) who are surgeons but not general practitioners.

49. (b)

After reading the given information, it is clear that the candidate will need information (i) and information (iv) to be selected. Hence option (b) is correct.

50. (c)

According to the Statement :–



Conclusion :–

(i) ✓

(ii) ✓

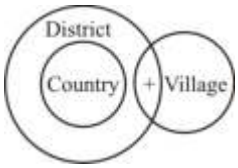
(iii) ✗

It is clear from above diagram that only conclusion I and II are true.

Hence, option (c) is correct.

51. (a)

On making the diagram as per the statement.



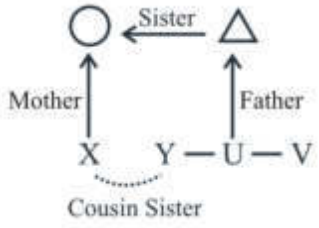
It is clear from the Venn-diagram that none of them logically follows the statement.

52. (a)
Neither conclusion A nor B follows from the given statement because no information about youth and tendons is given in the statement.

53. (b)
It is clear from the above statement that statement 2 is the effect and statement 1 is the immediate and main cause.

54. (d)
According to the statement, neither assumption (I) nor (II) is implicit.

55. (b)
From statement (1) and (2), we have-



X will be the cousin sister of Y. Hence, both statements are sufficient.

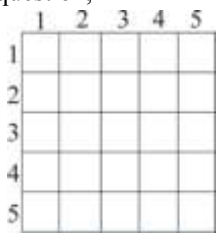
56. (d)
According to the question,
On arranging the given letters in alphabetical orders, we have,

C	O	M	P	U	T	E	⟶	C	E	M	O	P	T	U
1	2	3	4	5	6	7		1	2	3	4	5	6	7

Hence, It is clear from above that three letter position remains unchanged.

57. (a)
Just as,
8+5 = 13
8×5 = 40
Similarly,
4+6 = 10
4×6 = 24
Hence, 4+6 = 1024

58. (b)
According to the question,



Rule of square = Row × column
Squares made from 1-1 squares = 5×5 = 25
Squares made from 2-2 squares = 4×4 = 16
Squares made from 3-3 squares = 3×3 = 9
Squares made from 4-4 squares = 2×2 = 4
Squares made from 5-5 squares = 1
Total no. of squares = 25+16+9+4+1=55

59. (a)
Angle between the needle of hour and minute-

$$\theta = \frac{60 \times H \sim 11 \times M}{2}$$

Where, H = hour, M = minute, ~ = difference

$$\theta = \frac{60 \times 6 \sim 11 \times 51}{2}$$

$$\theta = \frac{360 \sim 561}{2} = \frac{201}{2} = 100.5°$$

Hence, the required angle θ = 100.5°

60. (d)
From the given table–
Total expenditure on Admin in the year 2018 = 203 million
Total expenditure on all heads in the year 2018
= 783+203+479+81+69
= 1615 million

$$\text{Required percentage} = \frac{203}{1615} \times 100 = 12.57\%$$

61. (c)
In Buddhism, the Triratna comprises the Buddha, the Dharma (doctrine, or teaching), and the Sangha (the monastic order). It is significant that, the Triratna is a Buddhist symbol and it is also called Threefold Refuge.
Note- This question has been dropped/rejected by the RRB.

62. (d)
Hiuen Tsang was a Chinese Buddhist Monk who travelled over land from China to India during the reign of king Harshavardhana to obtain knowledge of Buddhist scriptures. Fa-hien came to India during the reign of Chandragupta II. Alberuni came to India with Mahmud of Ghazni in 1017.

63. (d)
Futuhat-e-Firozshahi has a records of administrative achievements of Firozshah Tughlaq. Firoz Shah Tughlaq was the cousin of Muhammad bin Tughlaq. His fiscal policy was governed by Shariat which allows the king to collect only 4 taxes that are as (i) Kharaj-It was a land revenue.
(ii) Zakat- It was collected by religious institution.
(iii) Jizya- It is tax on non-Muslims in an Islamic country.
(iv) Haq-e-Sharb- It is irrigation tax or water tax.

- He founded several cities including Jaunpur, Firozpur, Firozabad, Hissar and Fatehabad. He died in September 1388 AD and he was burried in Hauzkhas area in Delhi.

64. (b)

Raja Ram Mohan Roy started the first Bengali language weekly newspaper and the first newspaper in an Indian language, called "Sambad Kaumudi" in 1821. The weekly newspaper advocated reading habits, the importance of discussion as well as the need for education for all. He also started another newspaper, in Persian, that was called the Mirat-ul-Akhbar. Raja Ram Mohan Roy was one of the founders of the Brahmo Sabha, the precursor of the Brahmo Samaj, which was a social-religious reform movement in the Indian subcontinent.

65. (c)

Earth's water cycle is driven by the sun. It is also known as the hydrological cycle. Most of earth's water is in the oceans, rivers and lakes. The sun which drives the water cycle, heats water in the oceans rivers and lakes. Some amount of water evaporate as vapors into the air. Rising vapors cool and condense into cloud and cloud particles grow and fallout of the sky as precipitation. Most precipitation falls back into the oceans or onto land, where it flows over the ground as surface runoff. A portion of run off enters rivers and continues towards the ocean. Thus such cycle is fromed, and repeating itself again and again.

66. (d)

Wind Erosion is the natural process of transportation and deposition of soil by the wind.

Using trees or large shrubs as fences for a garden is an effective method to prevent or reduce wind erosion of the soil in open areas.

67. (c)

The Western Ghats is a mountain range that covers the states of Karnataka, Goa, Maharashtra, Gujarat, Kerala, and Tamil Nadu.

The Eastern Ghats are a discontinuous range of mountains along India's eastern coast. The Eastern Ghats pass through Odisha, Andhra Pradesh to Tamil Nadu in the south passing some parts of Karnataka as well as Telangana.

Cardamom Hills is a, mountainous area in south-eastern Kerala state, it is not in Tamil Nadu.

68. (d)

Republic indicates that, any person from the general public can occupy the highest post of the country. In option (d) the word republic does not indicate its meaning. A 'Republic' is a state in which supreme power is held by the people and their elected representatives. It has an elected head of the state rather than a monarch i.e. there is absence of hereditary element. Rest of the options are correct regarding 'Republic'.

69. (c)

According to Article 74(1) of Indian Constitution, there shall be a Council of Ministers with the Prime Minister as the head to aid and advise the President who shall, in the exercise of his functions, act in accordance with such advice. Provided that the President may require the council of ministers to reconsider such advice, either generally or otherwise, and the President shall act in accordance with the advice rendered after such reconsideration. Specially after the 42nd and 44th Constitutional Amendments it has become compulsory to the President to accept the advice of the Council of ministers.

70. (b)

Organization	**Headquarters**	**Establi -shed**
World Health Organization (WHO)	Geneva, Switzerland	1948
General Agreement on Tariffs and Trade (GATT)	Geneva, Switzerland	1948
The International Criminal Police Organization (INTERPOL)	Lyon, France	1923
European Space Research Organisation (ESRO)	Paris, France	1964

71. (c)

Defence Research and Development Organisation (DRDO) was established in 1958 charged with military's research and development. It was formed in 1958 by the merging of the Technical Development Establishment. The Chief and Director General of DRDO is the scientific advisor of the Defence Minister. As of now, Dr. G Satheesh Reddy is the Chief of DRDO. The organisation is headquartered in New Delhi.

72. (b)

Institute	**Headquarters**
International Rice Research Institute	Philippines (Los Banos)
Indian Agricultural Research Institute	New Delhi
Sugarcane Breeding Institute	Coimbatore (Tamilnadu)
National Dairy Research Institute	Karnal (Haryana)

73. (b)

There are 3 main sectors based on the activities carried out. The sectors can be classified as:

- Primary
- Secondary
- Tertiary sector.

Tertiary sector helps in the development of secondary and primary sectors. Tertiary sector supports the production process, the activities of the tertiary sector, by themselves, do not produce goods. Instead of goods, the tertiary sector provides different kinds of services. Hence the tertiary sector is also known as the Service Sector.Telecommunication, Hospitality, Industry, Tourism, Mass media, Healthcare/ hospitals, Pharmacy, Waste disposal, Consulting, Retail sales, Banking, Cargo services etc are the examples.

74. (c)

FCCB stands for Foreign Currency Convertible Bond. It is a type of convertible bond that is issued in a currency different than the issuer's domestic currency. In other words, the issuing company raises money in the form of foreign currency. It is a blend of debt and equity instrument. It carries regular coupon and principal payments, and also gives the bondholder the option to convert them into stock for foreign currency convertible bond.

75. (b)

Archana Ramasundaram also spelt as Archana Ramasundar is the first woman to become the head of the paramilitary force. Archana Ramasundaram is the director general of the Armed forces of India. Prior to this she was the director of the National Crime Records Bureau.

76. (c)

Machu Picchu was built by ancient Incas city of petra Machu Picchu is a UNESCO World Heritage Site declared by UNESCO in 1983. It is a 15th century Inca citadel located in the Eastern cordillera of southern Peru.

77. (d)

The CSIR-National Environmental Engineering Research Institute (CSIR-NEERI) is a research institute created and funded by the Government of India. It was established in Nagpur in 1958 with a focus on water supply, sewage disposal, communicable diseases, and to some extent on industrial pollution and occupational diseases found common in post-independent India. It is a pioneer laboratory in the field of environmental science and engineering and part of the Council of Scientific and Industrial Research (CSIR). It has five zonal laboratories in Chennai, Delhi, Hyderabad, Kolkata, and Mumbai. NEERI falls under the Ministry of Science and Technology (India) of the central government.

78. (c)

Hornbill festival is celebrated every year between December 1 and 10 in Nagaland. This festival showcases the rich cultural heritage and tradition of the Nagas on one platform at Naga Heritage Village Kisama in Kohima district. All the tribes of Nagaland take part in this festival. The festival is named after Hornbill, the globally respected bird and which is displayed in folklore in most of the state's tribes.

79. (d)

The Param Vir Chakra (PVC) is India's highest military decoration, awarded for displaying distinguished acts of valour during wartime.

It was introduced by the government on 26th January 1950. Major Somnath Sharma was the first recipient of the Param Vir Chakra (PVC).

Mahavir Chakra: It is the second-highest military decoration in India, after the Param Vir Chakra. It is awarded for acts of conspicuous gallantry in the presence of the enemy whether on land, at sea or in the air. It was introduced by the government on 26th January 1950.

Vir Chakra: It is an Indian wartime military bravery award presented for acts of conspicuous gallantry in the presence of the enemy on the battlefield and is the third in precedence in wartime gallantry awards and comes after the Param Vir Chakra and Mahavir Chakra. It was established by the President of India on 26 January 1950. All these are in effect since 15 August 1947.

Shaurya Chakra: The Shaurya Chakra is awarded for gallantry otherwise than in the face of the enemy. It was instituted in 1952.

80. (d)

Book named "Ghulamgiri(1871)" was written by Jyotirao Govindrao Phule.The basic theme of the book is the injustice of the caste system as gulamgiri means slavery.

81. (d)

Prasanta Chandra Mahalanobis was an Indian scientist and statistician. He is best known for the Mahalanobis distance a statistical measure and for being one of the members of the first planning commission of free India.

82. (b)

Tundra vegetation is found in the Himalayan region. This type of forest is found in the higher altitudes especially the mountains. The region has an intense climate with cold waves and less sunlight. The plants like sledges, grasses etc. are thrive.

83. (b)

The 8th edition of Japan India naritime exercise JIMEX-24, was held in Yokosuka, Japan. The Indian Navy's indigenous stealth frigate INS Shivalik took part in it. The aim of this exercise is to reaffirm the commitment to naritime security in the Indo-Pacific region.

84. (c)

India won the T-20 World Cup title for the second time by defeating South Africa by 7 runs in the final of ICC T20 World Cup played on 29 June 2024 in Bridgetown (Barbados), West Indies. A total of 20 teams participated in this tournament. The World Cup was jointly hasted by the US and the West Indies.

85. (a)

Disposing off dry leaves in pits under soil is an eco-friendly practice. In this process, dry leaves, fruits and vegetable peels, bio degradable domestic wastes are dumped in the pit which turns into manure after a particular time. This manure is used to provide nutrients to the plants.

86. (c)

The ability of an object to do the work or the energy contained in an object depends on the condition and state of the object.

87. (d)

Kepler's 1st law, all the planets revolve around the sun in elliptical orbits having the sun at one of the foci.

Kepler's 2nd law, states that the areal velocity of a planet revolving around the sun in elliptical orbit remains constant which implies the angular momentum of a planet remains constant.

Kepler's 3rd law, the square of the time period of revolution of a planet around the sun in an elliptical orbit is directly proportional to the cube of its semi-principal axis.

$$T^2 \propto a^3$$

88.(c)

The rate of heat transfer by conduction depends on the temperature difference, the size of area and thermal properties. But the heat conduction does not depend on the friction.

89. (c)

Sound wave –

- It travels in the form of longitudinal waves.
- It requires a medium (solid, liquid and gas) for propagation.
- It travels through air with a speed of 332 m/s at 0^0C.

90. (b)

Glucose and alcohol are not ionic compounds but they are covalent because electrons are shared instead of transferred between two atoms. Further more, for the conduction of electricity the solution must have free ions present. In the case of alcohol and glucose, no free ions are there, so the only presence of H^+ is not sufficient. Hence, alcohol and glucose do not conduct electricity.

91. (b)

Sulphuric acid is an intense inorganic acid, it is a dark, colorless substance, soluble with water, its chemical formula is H_2SO_4. It is used in the treatment of petroleum in making many types of explosives, in making colors and medicines, and in accumulative batteries etc. sulphuric acid is not secroted in the stomach as an ingredient of gastric acid.

92. (c)

The least reactive element of the periodic table is noble gas. Zero groups elements are chemically inert. For this reason, these elements are called inert gases or noble gases. Such as Neon (Ne), Argon (Ar), Krypton (Kr), Xenon (Xe) and Radon (Rn) etc. Due to the rare receipt of these gases, they are also called 'rare gases'.

93. (c)

Plant cell wall is composed of cellulose. Cellulose is a structural carbohydrate and is considered a complex sugar because it is used in both protection and structure.

94. (c)

A species that cannot be found after a prolonged search in its area of habitations is said to be extinct species.

The IUCN Red List Categories define the extinction risk of species assessed. Nine categories extend from NE (Not Evaluated) to EX (Extinct) are:- Not Evaluated, Data Deficient, Least Concern, Near Threatened, Vulnerable, Endangered, Critically Endangered, Extinct in the Wild and Extinct.

95. (c)

Nematodes are the worms of the large phylum Nematoda, such as a roundworm or threadworm. They are mostly aquatic, free living or parasitic. They have digestive system, excretory system, reproductive system but no respiratory or circulatory systems found.

96. (a)

Human blood platelets release prothrombin which helps blood clotting. Vitamin K also assists in blood clotting.

97. (a)

The image formed on the retina is inverted and real. The real and inverted image formed on the retina is carried to the brain by the optic nerve in the form of electrical signals. The brain interprets these signals and processes the information such that we see the objects erect.

98. (d)

The full form of OMR is Optical Mark Recognition. OMR acknowledges human-created marks on a specially printed paper or journal used in experiments, surveys, and so on. A piece of information from the documents can be read using the OMR reader.

99. (b)

An Operating System (OS) is an interface between a computer user and computer hardware. It is also called system software. The first version of Windows, released in 1985, was simply a GUI offered as an extension of Microsoft's existing disk Operating System, or MS-DOS.

100.(a)

Forest planting is a way to reduce the accumulation of carbon-dioxide in the atmosphere because Carbon sinks are made from trees. Afforestation is useful to reduce the accumulation of carbon dioxide in the atmosphere, because it acts as a carbon sink.

PRACTICE SET - 9

1. From 3/4 of a number P, Ramakrishna subtracts 2/3 of another number Q and obtain 5/8 as the difference. What is the answer Ramakrishna should obtain if he subtracts eight times of Q from nine times of P?
   (a) $\frac{15}{2}$ (b) $\frac{25}{4}$
   (c) $\frac{20}{3}$ (d) $\frac{25}{3}$
2. How many factors of $2^7 \times 3^4 \times 5^3 \times 7$ are even ?
   (a) 40 (b) 280
   (c) 320 (d) 84
3. In which of the following options are the fractions arranged in ascending order?
   (a) $\frac{9}{11}, \frac{6}{7}, \frac{5}{6}, \frac{2}{5}, \frac{3}{8}$ (b) $\frac{6}{7}, \frac{5}{6}, \frac{9}{11}, \frac{2}{5}, \frac{3}{8}$
   (c) $\frac{2}{5}, \frac{6}{7}, \frac{9}{11}, \frac{3}{8}, \frac{5}{6}$ (d) $\frac{3}{8}, \frac{2}{5}, \frac{9}{11}, \frac{5}{6}, \frac{6}{7}$
4. Express $\frac{7}{11}$ in the form of decimal.
   (a) $0.\overline{623}$ (b) $0.\overline{633}$
   (c) $0.\overline{63}$ (d) $0.\overline{62}$
5. The difference between two fractions is $\frac{5}{6}$. The smaller one is $\frac{3}{4}$. Find the other.
   (a) $\frac{1}{12}$ (b) $\frac{19}{24}$
   (c) $\frac{19}{12}$ (d) $\frac{8}{10}$
6. If 2 is added to the square of a positive fraction the value $4\frac{1}{4}$ is obtained. Find the fraction.
   (a) $2\frac{3}{4}$ (b) $1\frac{1}{4}$
   (c) $2\frac{1}{4}$ (d) $1\frac{1}{2}$
7. Find the largest four-digit number which when divided by 7, 9 and 11 leaves a remainder of 5 in each case.
   (a) 9707 (b) 9467
   (c) 9236 (d) 9763
8. What is the HCF of 36, 72 and 126?
   (a) 18 (b) 36
   (c) 9 (d) 12
9. Consider two numbers whose LCM + HCF = 504, and LCM – HCF = 456. If one of these two numbers is 96, find the other number.
   (a) 100 (b) 130
   (c) 120 (d) 126
10. The smallest four-digit number that is exactly divisible by each of 24, 40 and 56 is :
    (a) 1080 (b) 1680
    (c) 1260 (d) 1170
11. If a = 2b/3, b = 2c/3, and c = 2d / 3 what is the ratio of b and d ?
    (a) 8/9 (b) 4/9
    (c) 4/3 (d) 5/27
12. Which of the following should be added to each of the four numbers 4, 8, 12, 22 to make then proportional?
    (a) $\frac{4}{3}$ (b) $\frac{3}{4}$
    (c) $\frac{8}{3}$ (d) $\frac{5}{6}$
13. From the salary of Hari, 15% is deducted as house rent, 20% of the remaining amount is spent on children's education and 10% of the remaining balance is his medical expenses, Finally, he is left with ₹42,840. Find his total salary.
    (a) ₹ 65,000 (b) ₹ 75,000
    (c) ₹ 72,000 (d) ₹ 70,000
14. The numbers x and y are such that x : y = 4 : 5. If x is more than z by 20%, then y will be more than z by.
    (a) 40% (b) 30%
    (c) 50% (d) 60%
15. The perimeter of a square is equal to the perimeter of a rectangle of length 56 cm and breadth 42 cm. Find the perimeter of a semicircle (in cm) whose diameter is equal to the side of the square (Use $\pi = \frac{22}{7}$)
    (a) 182 (b) 224
    (c) 198 (d) 126
16. The capacitance of a cylindrical tank is 20790 m^3. If its radius is 10.5 m, find its depth.
    (a) 60 m (b) 120 m
    (c) 30 m (d) 75 m
17. A and B can do a work in 40 days, B and C can do the same work in 56 days, while C and A together can do the same work in 70 days. How many days will C take to complete the work alone?
    (a) 210 (b) 175
    (c) 245 (d) 280
18. A can do a work in 8 days, while B takes 10 days to complete the same work. They started working together but A left the work 1 day before the work completed. Then how many days A worked?
    (a) 3.5 (b) 4
    (c) 2 (d) 3

19. A person reaches his office 1 minute before at a speed of 42 km/h, while that person traveling at a speed of 36 km/h reaches the office with a delay of 3 minutes. How much distance does a person travel (in km)?
(a) 12.9 (b) 16.8
(c) 15.4 (d) 18.2

20. A 250 metre long cargo trains speed is 33 km/hr. A 200 metre long mail train is moving on a parallel track in the same direction with a speed of 60 km/hr which chases the cargo train and leaves back the cargo train after some time. In how much time, minute the mail train left back the cargo train completely?
(a) 1 minute (b) 1.5 minute
(c) 3 minute (d) 2 minute

21. At a certain rate of simple interest per annum a sum of money amount to $\frac{13}{8}$ of itself in 10 years. What is the rate of simple interest per annum?
(a) 5% (b) 7.5%
(c) 7.25% (d) 6.25%

22. Find the simple interest on a sum at the rate of 12.5% for 2 years, if the compound interest on the same sum for the same period at the same rate is ₹510?
(a) ₹480 (b) ₹500
(c) ₹408 (d) ₹420

23. By selling an item, Madan earned a profit equal to the 1/4th of its cost price. If he would sell it for ₹ 375, then what was the cost price?
(a) ₹312.50 (b) ₹350
(c) ₹300 (d) ₹281.75

24. A vendor bought bananas at the rate of 6 for ₹10 and sold them at the rate of 4 for ₹6. What is the percentage gain or loss?
(a) 20% (b) 10%
(c) 90% (d) 30%

25. Select the value which is in the following expression will replace '?' If a+b+c = 0 then $a^3 + b^3 + c^3 = ? \times abc$
(a) 1 (b) 4
(c) 3 (d) 2

26. If $2x^2 - 9x - 18 < 0$, then which of the following specifies all the possible values of 'x'.
(a) $x < -\frac{3}{2}$ x (b) $-\frac{3}{2} < x < 6$
(c) $x < 6$ (d) $0 < x < 12$

27. If $\cot 3\theta \cot 6\theta = 1$ then the value of $\tan 15\theta$:
(a) $-\frac{1}{\sqrt{3}}$ (b) $-\sqrt{3}$
(c) 0 (d) $3\sqrt{3}$

28. From a point Q, the length of the tangent to a circle is 21cm and the distance of Q from the centre 'O' of the circle is 29cm. Find the radius of the circle.
(a) 20 cm (b) 8 cm
(c) 50 cm (d) 30 cm

29. Find the median of the all prime number from 1 to 55.
(a) 22 (b) 20
(c) 21 (d) 19

30. If 9 students are standing on a circular path, then the probability that 2 of them are always standing together is:
(a) $\frac{2}{7}$ (b) $\frac{1}{3}$
(c) $\frac{1}{4}$ (d) $\frac{7}{8}$

31. Select the option that is related to the third term in the same way as the second term is related to the first term.
Author : Pen :: Surgeon : ?
(a) Cut (b) Scalpel
(c) Stitch (d) Operation

32. 'Minute' is related to 'Hour' in the same way as 'Inch' is related to '_____'.
(a) Measure (b) Foot
(c) Centigrade (d) Metre

33. In the given letter-cluster pairs, the first letter-cluster is related to the second letter-cluster following a certain logic. Study the given pairs carefully and from the given options, select the pair that follows the same logic.
HP : MS
DL : IO
(a) GE : LI (b) AL : FO
(c) GR : KT (d) HT : KY

34. Select the option that is related to the third expression in the same way as the second expression is related to the first expression.
L × V : 12 × 22 :: Q × Z : ?
(a) 18 × 10 (b) 12 × 14
(c) 17 × 26 (d) 11 × 15

35. If ACE = 35, AGED = 91 then CARE = ?
(a) 359 (b) 323
(c) 288 (d) 358

36. In a certain language
GJL TUO CBM stands for 'It is car'
QAZ GJL KJH stands for 'He is Ram'
CBM KJH OIU stands for 'Ram has car'
In that language, which of the following stands for 'It'?
(a) TUO (b) CBM
(c) KJH (d) QAZ

37. In a certain code language, 'NDRWCK' is written as 'GUGPTZ'. What is the code for 'MTSFHJ' in that code language
(a) FOPWWW (b) FOPXXX
(c) FKHZZZ (d) FKHYYY

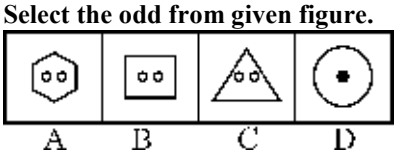
38. **Four abbreviations have been given out of which three are a like in same manner and one is different. Select the odd one.**

(a) NTPC (b) CRPF
(c) BHEL (d) SAIL

39. **Among the four words given, three are alike in some manner and one is different. Select the odd one.**

(a) Companion (b) Rival
(c) Colleague (d) Partner

40. **Select the odd from given figure.**



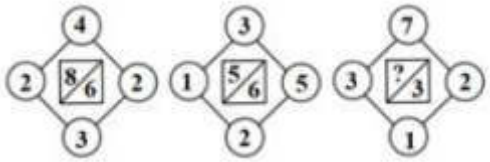
(a) D (b) C
(c) B (d) A

41. **Select the alphanumeric clusters from among the given option that can replace the question mark (?) in the following series.**

z1, x4, v9, t16, ?

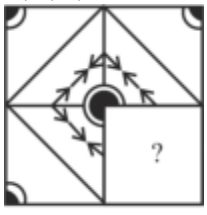
(a) s24 (b) v25
(c) r25 (d) t26

42. **Study the given pattern carefully and select the number from among the given option that can replace the question mark (?) in it.**

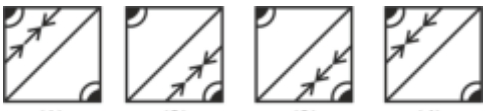


(a) 14 (b) 11
(c) 5 (d) 7

43. **Complete the Figure X from the given alternatives 1, 2, 3, 4**



(X)



(1) (2) (3) (4)

(a) 1 (b) 2
(c) 3 (d) 4

44. **Nayan walks 1 km to East. He turned right at a crossroad and walked 500 meters to reach the hospital. In which direction is hospital from the initial position of Nayan?**

(a) North-East (b) North-West
(c) South-East (d) South-West

45. **Geet and Anshuman are the children of Aditya's Mother's brother. Roop has only one brother-Manjeet and no sister. Ayushman is the son of Rajkumar. Ayushman is the Manjeet's father. Roop's husband and Manjeet's wife have no siblings. If Aditya is Roop's son, how is Manjeet related to Geet?**

(a) Father (b) Uncle
(c) Husband (d) Mother's brother

46. **If '+' means division,'÷' means subtraction, '–' means multiplication, and '×' means addition, then what is the value of the given expression?**

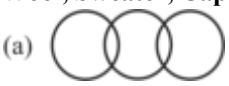
175 –10 + 2 × 165 ÷ 25 + 5 = ?

(a) 1015 (b) 1025
(c) 1035 (d) 1045

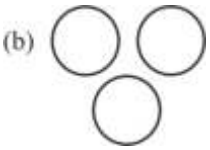
47. **Choose the most suitable Venn diagram for the following words-**

Wool, Sweater, Cap

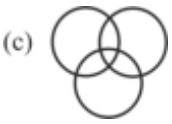
(a)



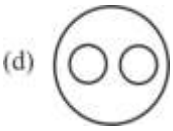
(b)



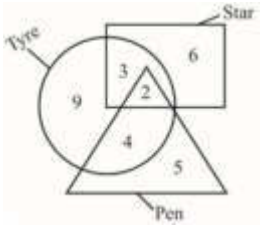
(c)



(d)



48. **How many Stars are both Tyres and Pen?**



(a) 3 (b) 6
(c) 4 (d) 2

49. **Study the given information carefully and then answer the given question. Following are the eligibility criteria to become a member of a library :**

(i) **The applicant should be able to pay a one-time membership fee of Rs. 10,000 and contribute two books worth Rs. 500.**

(ii) **If the applicant donates books worth a total of Rs. 5000, then he/she is given a discount of up to 50% in one-time membership fee.**

(iii) **For school students, membership fee is waived up to the age of 18 years.**

(iv) If in-service teachers of the schools help 20 students to become members of the library, they need to pay only Rs. 2000.

(v) Membership of the library is free of cost for serving defense personnel and their dependents. Data/Information about a person is given. On the basis of the given information, you have to decide under what criteria that person is eligible for membership. Please note that a person may be eligible under more than one criteria. You do not have to a given in the question guess anything other than the information.

MS. D is a teacher in a school. She is ready to contribute 20 books worth ₹5000 and help 18 students get library memberships as well as pay a membership Fee of ₹2000.

(a) Only eligible under (iv)
(b) Only eligible under (iii)
(c) Not eligible
(d) Only eligible under (iii) and (iv)

50. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:
Some mangoes are oranges.
All oranges are grapes.
Conclusions:
I. All grapes are oranges.
II. All mangoes are grapes.
(a) Only conclusion I follows
(b) Only conclusion II follows
(c) Neither conclusion I nor II follows
(d) Both conclusions I and II follow

51. Statements:
Some images are answer.
Some answers are video.
All the videos are poems.
Conclusions:
1. Some videos are answer.
2. Some poems are images.
3. All the images are poems.
4. Some poems are answers.
(a) Only (1) and (2) (b) Only (1) and (4)
(c) Only (1) and (3) (d) Only (2) and (4)

52. Statement:
The tourism spots should be given additional security
Conclusions:
I. Terrorists always choose the place to destruct the larger scale.
II. Terrorist act cannot be stopped.
(a) Neither I nor II follows
(b) Both I and II follow
(c) Only conclusion II follows
(d) Only conclusion I follows

53. Read the given statements, labelled Assertion (A) and Reason (R), and select the most appropriate options with respect to them.

Statements:
'A': Carbon dioxide is not always a pollutant
'R': Plants require carbon monoxide for growth that they get from carbon dioxide
(a) Both statements A and R are true but R is not the correct explanation of A
(b) Both statements A and R are true but R is the correct explanation of A
(c) Both statements A and R are false
(d) Statement A is true but statement R is false

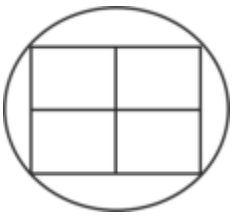
54. Argument:
Organic fertilizers should be used instead of chemical fertilizers for more yield.
Assumption:
1. Chemical fertilizer is harmful for both human and land.
2. Organic fertilizer provides more yield as compared to chemical fertilizers.
(a) Both assumptions I and II follows
(b) Only assumption II follows
(c) Neither I nor II follows
(d) Only assumption I follows

55. Question:
How many daughters does Z have?
Statement:
1. X and Y are the daughters of W.
2. V is brother of X and son of Z.
(a) Both 1 and 2 together are sufficient
(b) Only 2 is sufficient while first alone is not sufficient
(c) Either 1 alone or 2 alone is sufficient
(d) Only 1 is sufficient while other alone is not sufficient

56. From among the given options, select the word which cannot be formed using the letters of the given word.
DAUGHTER
(a) DATE (b) HURT
(c) TOUGH (d) GET

57. Letters of a word are jumbled and each letter has been given a unique number. Select the combination of numbers from among the given options, so that the letters arranged accordingly will form the meaningful word.
R A M S T
1 2 3 4 5
(a) 32514 (b) 13245
(c) 43215 (d) 25431

58. Count the number of squares in the figure:



(a) 4 (b) 5
(c) 6 (d) 3

59. What will be the smaller of the two angles made by the hour-hand and the minute-hand at 9:22 pm?

(a) 149^0 (b) 150^0
(c) 138^0 (d) 150.5^0

60. The operating cost of a company is given below.

	2016	2017
Debt interest	25%	25%
Salary	50%	55%
Tax	25%	20%

Total money spent on operations in 2016 is 120 lakhs and total money spent in 2017 is 150 lakhs. How much was the salary higher in 2017 than in 2016 ?

(a) Rs. 20 lakhs (b) Rs. 10 lakhs
(c) Rs. 22.5 lakhs (d) Rs. 5 lakhs

61. The famous Buddhist structure, Dhamekh Stupa was originally constructed during —— dynasty.

(a) Nanda (b) Shunga
(c) Kanva (d) Mauryan

62. Nalanda University is widely recognised as one of the ancient world's great universities and an important Buddhist centre of academic excellence.
Which Indian ruler founded it?

(a) Harshavardhan
(b) Chandragupta Maurya
(c) Kumargupta I
(d) Ashok

63. Which of the following minarets is memorial built by Muhammad Quli Qutub Shah in memory of plague abolition?

(a) Alai Minar (b) Char Minar
(c) Fateh Burj (d) Qutub Minar

64. When was Revolt of 1857 finally suppressed by British?

(a) 1859 (b) 1860
(c) 1861 (d) 1857

65. Which of the following symbols is a correct representation for air mass above a hot and dry desert region?

(a) mP (b) cP
(c) cT (d) cA

66. Which of the following is the largest Glacier in the world ?

(a) Siachen Glacier
(b) Lambert-Fisher Glacier
(c) Greenland ice sheet
(d) Perito Moreno Glacier

67. Western Ghats and Eastern Ghats meet at _____ hills.

(a) Shivalik (b) Nilgiri
(c) Amarkantak (d) Maikal

68. In which year Goa was given the option to merge with Maharashtra?

(a) 1963 (b) 1967
(c) 1959 (d) 1958

69. Education is a function of which ministry of Government of India?

(a) Ministry of education
(b) Home Ministry
(c) Health and Family Welfare
(d) Finance

70. Word Trade Organization was constituted under _____ agreement on January 1, 1995.

(a) Asean free trade agreement
(b) Trans-pacific partnership
(c) Marrakesh Agreement
(d) Comprehensive Economic partnership

71. Which one among the following is NOT a land-based ballistic missile?

(a) Dhanush (b) Prithvi
(c) Saurya (d) Agni

72. Clearance of snow in high altitude areas is undertaken by :

(a) Public Works Department
(b) Snow Authority of India
(c) Inland Waterways Authority
(d) The Border Road Organisation

73. Which of the following terms define the Real National Income?

(a) GDP at current amount
(b) GDP at constant price
(c) GDP at average price
(d) GDP at factors price

74. In economics, what does 'Budget Surplus' mean?

(a) When the revenue collected is negligible as compared to the expenditure
(b) When the amount spent is equal to the revenue collected
(c) When the expenditure exceeds income
(d) When the revenue collected exceeds the required expenditure

75. Who is awarded with the Whitley Gold Award in May 2024 ?

(a) Dr. Purnima Devi
(b) Dr. Sharad Verma
(c) Dr. Abha Mishra
(d) Dr. Kalpana Datt

76. Hampi was declared a World Heritage Site by:
(a) UNO (b) IMF
(c) WHO (d) UNESCO

77. Where is Salar Jung Museum located?
(a) Kolkata (b) Ahmedabad
(c) Delhi (d) Hyderabad

78. Kenduli Fair is celebrated in:
(a) Uttar Pradesh (b) Madhya Pradesh
(c) West Bengal (d) Rajasthan

79. Which award is given to the workers for their outstanding performance, innovation ability, productivity and indigenization contribution by exceptional courage and mental readiness in the field of performance?
(a) Krish award
(b) Shram Award
(c) Padma Award
(d) Dronacharya Award

80. Which one of the following books is NOT authored by Amartya Sen?
(a) Poverty and Famines
(b) On Economic Inequality
(c) Poverty of India
(d) Resources, values, and development

81. When is World Water Day celebrated?
(a) 21 March (b) 23 March
(c) 22 March (d) 20 March

82. Gir dry deciduous forest are found in…… .
(a) Goa (b) Gujarat
(c) Maharashtra (d) Chhattisgarh

83. Where was the 38th National Games held in the year 2024 ?
(a) Gujrat
(b) Hariyana
(c) Karnataka
(d) Uttarakhand

84. Who was awarded Saraswati Samman 2023 in March 2024 ?
(a) Prabha Verma
(b) Pavuluri Subba Rao
(c) Greeshma Kuthar
(d) Shiv Shankari

85 Which of the following mainly causes the depletion of the ozone layer?
(a) Volcanic eruptions (b) Aviation fuels
(c) Chlorofluorocarbons (d) Radioactive rays

86. If a man do 'W' work in 't' time, then his power 'P' will be-
(a) t-W (b) t×W
(c) W/t (d) t/W

87. Read the given statements (Assertion and Reason) carefully and select the most appropriate option with respect to them.
Assertion (a) : Trees grow against gravity
Reason (R) : Nature defines gravitational law
(a) Both A and R are true and R is the correct explanation of A
(b) A is true but R is false
(c) Both A and R are false
(d) Both A and R are true and R is not the correct explanation of A

88. Below is a statement (A) and a reason (R)-
(A): Left a small gap between tracks
(R): Iron spread in summer.
(a) (A) is true but (R) is false
(b) (A) is false but (R) is true
(c) Both (A) and (R) is true and (R) is the correct explanation of (A)
(d) Both (A) and (R) is true and (R) is the not correct explanation of (A)

89. Sonar is a device that uses ultrasonic waves to measure the distance, direction and speed of object_____.
(a) On land (b) In air
(c) In space (d) Underwater

90. Homogenous mixture of a solute and a solvent is called:
(a) Suspension (b) Solution
(c) Electrolyte (d) Emulsion

91. What is the chemical formula of common salt?
(a) HC*l* (b) NaC*l*
(c) KOH (d) NaOH

92. 'Heavy water' is a term related to which of the following?
(a) Hydro-electric power plants
(b) Pharmaceutical industry
(c) Nuclear power generation plants
(d) Fertilizer industry

93. Chlorophyll contains which of the following elements?
(a) Aluminium (b) Calcium
(c) Magnesium (d) Iron

94. Who gave the term 'Homo sapiens'?
(a) C. Linnaeus (b) Darwin
(c) Miller (d) G.J. Mendel

95. Leech belongs to which phylum?
(a) Annelida (b) Platyhelminthes
(c) Mollusca (d) Protochordata

96. Which of the following statements is INCORRECT?
(a) Blood protects the body from disease
(b) Blood carries carbon dioxide from the body cells to the lungs
(c) Blood helps in sensory inputs
(d) Blood carries oxygen from the lungs to the other parts of the body

97. The amount of light entering the eye is controlled by:
(a) Pupil (b) Cornea
(c) Retina (d) Sclera

98. **Which key is used for selecting command in windows keyboard?**
(a) Tab (b) Enter
(c) End (d) Space bar

99. **When a computer virus attaches itself to another computer program, it is known as ——.**
(a) Risky program (b) Trojan horse
(c) Host program (d) Backward Program

100. **Which of the following, like the Chipko Movement, aims to protect forests in the Uttara Kannada district ?**
(a) Appiko Movement
(b) Narmada Bachao Andolan
(c) Al Baydha Project
(d) Delhi Chalo Movement

SOLUTION : PRACTICE SET- 9

ANSWER KEY

1. (a)	11. (b)	21. (d)	31. (b)	41. (c)	51.(b)	61. (d)	71. (a)	81. (c)	91. (b)
2. (b)	12. (a)	22. (a)	32. (b)	42. (a)	52. (d)	62. (c)	72. (d)	82.(b)	92. (c)
3. (d)	13. (d)	23. (c)	33. (b)	43. (d)	53. (d)	63. (b)	73.(b)	83. (d)	93. (c)
4. (c)	14. (c)	24. (b)	34. (c)	44. (c)	54. (b)	64. (a)	74. (d)	84. (a)	94.(a)
5. (c)	15. (d)	25. (c)	35. (a)	45. (a)	55. (a)	65. (c)	75. (a)	85 (c)	95. (a)
6. (d)	16. (a)	26. (b)	36. (a)	46. (c)	56. (c)	66 (b)	76. (d)	86. (c)	96. (c)
7. (a)	17. (d)	27. (a)	37. (d)	47. (a)	57. (c)	67. (b)	77. (d)	87. (b)	97. (a)
8. (a)	18. (b)	28. (a)	38. (b)	48. (d)	58. (b)	68. (b)	78. (c)	88. (c)	98. (b)
9. (c)	19. (b)	29. (c)	39. (b)	49. (c)	59. (a)	69. (a)	79. (b)	89. (d)	99. (b)
10. (b)	20. (a)	30. (c)	40. (a)	50. (c)	60. (c)	70. (c)	80. (c)	90. (b)	100. (a)

SOLUTION

1. (a)
According to the question,

$$P \times \frac{3}{4} - Q \times \frac{2}{3} = \frac{5}{8}$$

$$\Rightarrow \frac{3P}{4} - \frac{2Q}{3} = \frac{5}{8} \Rightarrow \frac{9P - 8Q}{12} = \frac{5}{8}$$

$$\Rightarrow 9P - 8Q = \left(\frac{5}{8}\right) \times 12 \Rightarrow 9P - 8Q = \frac{60}{8}$$

$$\therefore \; 9P - 8Q = \frac{15}{2}$$

2. (b)
$2^7 \times 3^4 \times 5^3 \times 7$ Number of factors.
$= (7 + 1)(4 + 1)(3 + 1)(1 + 1)$
$= 8 \times 5 \times 4 \times 2$
$= 320$
$\therefore$ Number of even factors = 320 – total no. of odd factors.
$= 320 - \{(4 + 1)(3 + 1)(1 + 1)\}$
$= 320 - \{5 \times 4 \times 2\}$
$= 320 - 40$
$= 280$

3. (d)
From option (d),

$$\frac{3}{8} = 0.375, \quad \frac{2}{5} = 0.40$$

$$\frac{9}{11} = 0.8182, \quad \frac{5}{9} = 0.8334$$

$$\frac{6}{7} = 0.857$$

Ascending order $= \frac{3}{8} < \frac{2}{5} < \frac{9}{11} < \frac{5}{6} < \frac{6}{7}$

4. (c)
The decimal of $\frac{7}{11}$

$$11\overline{)70}\,0.6363$$
$$66$$
$$40$$
$$33$$
$$70$$
$$66$$
$$40$$
$$33$$
$$7$$

Hence, in 0.6363, two digits of the number (6 and 3) are repeating itself.

5. (c)
Let the other fraction be x.
According to the question,

$$x - \frac{3}{4} = \frac{5}{6}$$

$$\Rightarrow x = \frac{5}{6} + \frac{3}{4}$$

$$x = \frac{38}{24} = \frac{19}{12}$$

Hence, the other fraction is $\frac{19}{12}$.

6. (d)

Let the fraction is x.

According to the question,

$$x^2+2=4\frac{1}{4}$$

$$x^2+2=\frac{17}{4}$$

$$4x^2+8=17$$

$$4x^2=17-8$$

$$4x^2=9,\ x^2=\frac{9}{4}$$

$$x=\frac{3}{2}=1\frac{1}{2}$$

7. (a)

From question,

L.C.M. of 7, 9 and 11 = 693

The largest four-digit number = 9999

$$693)9999(14$$
$$\frac{693}{3069}$$
$$\frac{2772}{297}$$

Required Number = 9999 – 297+ 5 = 9707

8. (a)

On finding the HCF by factorization method,

$36 = 2 \times 2 \times 3 \times 3$

$72 = 2 \times 2 \times 2 \times 3 \times 3$

$126 = 2 \times 3 \times 3 \times 7$

So, the required HCF = 2 × 3 × 3 = 18

9. (c)

Given that

$$LCM + HCF = 504 \quad .....(I)$$
$$\underline{LCM - HCF = 456} \quad .....(II)$$
$$2LCM = 960$$
$$\boxed{LCM = 480}$$

From equation (I)

$$HCF = 504 - 480$$
$$\boxed{HCF = 24}$$

We know that

LCM × HCF = First number × Second number

480 × 24 = 96 × second number

$$\text{Second number} = \frac{480\times 2}{8}$$
$$= 120$$

10. (b)

Factorization of 24, 40 and 56

$24 = 2\times2\times2\times3$

$40 = 2\times2\times2\times5$

$56 = 2\times2\times2\times7$

LCM = $2\times2\times2\times3\times5\times7 = 840$

Hence the smallest number of four digit = 2×840

= 1680

11. (b)

Given

$$a=\frac{2b}{3}, b=\frac{2c}{3}, c=\frac{2d}{3}$$

$$\Rightarrow \frac{a}{b}=\frac{2}{3}, \frac{b}{c}=\frac{2}{3}, \frac{c}{d}=\frac{2}{3}$$

$$\Rightarrow \frac{a}{b}=\frac{8}{12}, \frac{b}{c}=\frac{12}{18}, \frac{c}{d}=\frac{18}{27}$$

$$\Rightarrow a : b : c : d = 8 : 12 : 18 : 27$$

$$\therefore \frac{b}{d}=\frac{12}{27} \qquad \Rightarrow \boxed{\frac{b}{d}=\frac{4}{9}}$$

12. (a)

Let the number be added is k.

Then,

$$4 + k : 8 + k :: 12 + k : 22 + k$$

$$\frac{4+k}{8+k}=\frac{12+k}{22+k}$$

$$88 + 4k + 22k + k^2 = 96 + 12k + 8k + k^2$$

$$88 + 26k = 96 + 20k$$

$$6k = 8$$

$$k=\frac{8}{6}=\frac{4}{3}$$

So $k=\frac{4}{3}$ should be added to each number.

13. (d)

Let the salary of Hari = ₹ x

$$\text{House rent} = \frac{x\times 15}{100} = ₹\ 0.15x$$

$$\text{Children's education} = (x-0.15x)\times\frac{20}{100}$$

$$= ₹\ 0.17x$$

$$\text{Medical expenses} = (x-0.15x-0.17x)\times\frac{10}{100}$$

$$= ₹\ 0.068x$$

According to the question,

$$x-(0.15x+0.17x+0.068x)=42840$$

$$x-0.388x=42840$$

$$0.612x=42840$$

$$x=\frac{42840}{0.612}$$

$$\boxed{x = ₹\ 70,000}$$

Hence the total salary of Hari will be ₹ 70,000

14. (c)

Given –

$x : y = 4 : 5$

According to the question,

$$x = z \times \frac{120}{100}$$

$x : z = 6 : 5$

Or $z : x = 5 : 6$

And $x : y = 4 : 5$

With the help of above ratio,

$\therefore z : x : y = 20 : 24 : 30$

Hence, the percentage of y greater than z.

$$= \frac{y-z}{z} \times 100\% = \frac{10}{20} \times 100$$

$= 50\%$

15. (d)

Perimeter of square = Perimeter of rectangle

$4 \times \text{side} = 2(l+b)$

$4 \times \text{side} = 2(56+42)$

$4 \times \text{side} = 2 \times 98$

$4 \times \text{side} = 196$

$4 \times \text{side} = 196$

$\text{side} = 49$

$$\text{radius of semicircle} = \frac{49}{2}$$

$$\text{Perimeter of semicircle} = \pi r + 2r$$

$$= \frac{22}{7} \times \frac{49}{2} + 49$$

$= 77+49 = 126$ cm

16. (a)

Capacitance of cylindrical tank $= 20790\ m^3$

So, $\pi r^2 h = 20790$

$$\frac{22}{7} \times (10.5)^2 \times h = 20790$$

$$\frac{22}{7} \times 10.5 \times 10.5 \times h = 20790$$

$$\frac{22}{7} \times \frac{105}{10} \times \frac{105}{10} \times h = 20790$$

$$\frac{22 \times 21 \times 21}{7 \times 2 \times 2} \times h = 20790$$

$$\frac{11 \times 63}{2} \times h = 20790$$

$$h = \frac{20790 \times 2}{11 \times 63}$$

$h = 60$ m

So depth $= 60$ m

17. (d)

One day work of A and B $= \frac{1}{40}$ part ..... (1)

One day work of B and C $= \frac{1}{56}$ part .....(2)

One day work of C and A $= \frac{1}{70}$ part .....(3)

To adding equation (1), (2) and (3),

$$2(A+B+C) = \frac{1}{40} + \frac{1}{56} + \frac{1}{70} = \frac{7+5+4}{280} = \frac{16}{280}$$

$$(A+B+C) = \frac{16}{2 \times 280} = \frac{8}{280} = \frac{1}{35} .....(4)$$

From equation (4) and equation (1),

$$\text{One day work of C} = \frac{1}{35} - \frac{1}{40} = \frac{8-7}{280} = \frac{1}{280} \text{ part}$$

So, time taken by C to complete the work = 280 days

18. (b)

$$\text{Work done by A in 1 day} = \frac{1}{8} \text{ part}$$

$$\text{Work done by B in 1 day} = \frac{1}{10} \text{ part}$$

$$\text{Work done by (A + B) in 1 day} = \frac{1}{8} + \frac{1}{10} = \frac{9}{40} \text{ part}$$

Let both A and B worked together for x days.

According to the question,

$$\frac{9x}{40} + \frac{1}{10} = 1$$

$$\Rightarrow \frac{9x}{40} = 1 - \frac{1}{10}$$

$$\Rightarrow x = \frac{9}{10} \times \frac{40}{9}$$

$x = 4$ days

So, A worked for 4 days.

19. (b)

Let the time taken by man to reach the office = t hours

According to the question,-

$$42 \times \left(t - \frac{1}{60}\right) = 36 \times \left(t + \frac{3}{60}\right)$$

$$\Rightarrow 42t - \frac{42}{60} = 36t + \frac{108}{60}$$

$$42t - 36t = \frac{108}{60} + \frac{42}{60}$$

$$6t = \frac{15}{6}$$

$$t = \frac{5}{12}$$

Distance = Speed × Time

$$= 36 \times \left(\frac{5}{12} + \frac{3}{60}\right)$$

$$= 36 \times \frac{28}{60} = \frac{6 \times 28}{10} = \frac{168}{10}$$

Distance $= 16.8$ km

20. (a)

Speed of cargo train = 33 km/h

Speed of mail train = 60 km/h

Relative speed = 60–33 = 27 km/h

$$\therefore \quad (60-33)\times\frac{5}{18}=\frac{250+200}{T}$$

$$27\times\frac{5}{18}=\frac{450}{T}$$

$$\frac{3\times5}{2}=\frac{450}{T}$$

$$\frac{15}{2}=\frac{450}{T}$$

$$T = 60 \text{ seconds}$$

$$= 1 \text{ minute}$$

21. (d)

Given,

Time (T) = 10 years

Rate (R) = ?

Then,

According to the question,

$$(N-1)\times 100 = R\times T$$

$$\left(\frac{13}{8}-1\right)\times100 = R\times10$$

$$\frac{5}{8}\times100 = R\times10$$

$$\frac{50}{8} = R$$

Rate (R) = 6.25%

22. (a)

Compound interest = Amount – Principal

$$510 = P\left[1+\frac{R}{100}\right]^T - P$$

$$510 = P\left[1+\frac{12.5}{100}\right]^2 - P$$

$$510 = P\left[\frac{1125}{1000}\right]^2 - P$$

$$510 = P\left[\frac{9}{8}\right]^2 - P \quad = P\left[\frac{81-64}{64}\right]$$

$$510 = \frac{P\times17}{64}$$

$$P = \frac{510\times64}{17}$$

$$P = ₹1920$$

$$\text{Simple interest} = \frac{P\times R\times T}{100}$$

$$\text{Simple interest} = \frac{1920\times12.5\times2}{100}$$

$$\text{Simple interest} = \frac{1920\times25}{100}$$

Simple interest = ₹480

23. (c)

Let Cost price = ₹ x

According to the question,

$$\text{Profit} = \frac{x}{4}$$

Profit = Selling price - Cost price

$$\frac{x}{4} = 375 - x$$

$$x+\frac{x}{4} = 375$$

$$\frac{5x}{4} = 375$$

$$x = 375\times\frac{4}{5}$$

$$x = 75\times4$$

$$x = ₹\ 300$$

Hence, Cost price will be ₹300.

24. (b)

Cost price of 6 bananas = ₹10

$$\text{Cost of 1 banana} = ₹\frac{10}{6}$$

Selling price of 4 bananas = ₹6

$$\text{Selling price of 1 banana} = ₹\frac{6}{4}$$

Profit/Loss = Selling price – Cost price

$$= \frac{6}{4}-\frac{10}{6}=\frac{18-20}{12}=\frac{-2}{12}$$

$$= -\frac{1}{6} \qquad \{\because (-)\text{sign denotes loss}\}$$

$$\therefore \text{Loss\%} = \frac{\frac{1}{6}}{\frac{10}{6}}\times100 = \frac{1}{6}\times\frac{6}{10}\times100 = 10\%$$

25. (c)

We know that

$a^3 + b^3 + c^3 - 3abc = (a+b+c)(a^2+b^2+c^2-ab-bc-ca)$ ---(i)

Given-

$$a + b + c = 0$$

$$a^3 + b^3 + c^3 = ? \times abc$$

$$\frac{a^3+b^3+c^3}{abc} = ? \qquad \text{---(ii)}$$

Putting a + b + c = 0 in equation (i)

$$a^3 + b^3 + c^3 - 3abc = 0$$

$$a^3 + b^3 + c^3 = 3abc \qquad \text{---(iii)}$$

From equation (ii) and (iii)

$$\frac{3abc}{abc} = 3$$

26. (b)

$$2x^2 - 9x - 18 < 0$$
$$\Rightarrow 2x^2 - (12-3)x - 18 < 0$$
$$\Rightarrow 2x^2 - 12x + 3x - 18 < 0$$
$$\Rightarrow 2x(x-6) + 3(x-6) < 0$$
$$\Rightarrow (x-6)(2x+3) < 0$$

Then
$$x - 6 < 0$$
$$\boxed{x < 6} \text{.....(i)}$$
$$2x + 3 < 0$$
$$\boxed{x > \frac{-3}{2}} \text{.....(ii)}$$

From equation (i) and (ii),

$$-\frac{3}{2} < x < 6$$

27. (a)

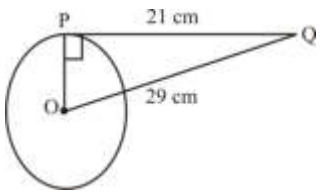
$\cot 3\theta \cdot \cot 6\theta = 1$

$$\cot 3\theta = \frac{1}{\cot 6\theta}$$
$$\cot 3\theta = \tan 6\theta \qquad \left[\because \frac{1}{\cot\theta} = \tan\theta\right]$$
$$\cot 3\theta = \cot(90° - 6\theta)$$
$$3\theta = 90° - 6\theta$$
$$9\theta = 90°$$
$$\theta = 10°$$

Then, $\tan 15\theta = \tan 15 \times 10° = \tan 150° = -\frac{1}{\sqrt{3}}$

28. (a)

According to the question,



Given,

PQ = 21cm

OQ = 29 cm

OP = ?

$$OP = \sqrt{(OQ)^2 - (PQ)^2}$$
$$= \sqrt{(29)^2 - (21)^2}$$
$$= \sqrt{841 - 441}$$
$$= \sqrt{400}$$
$$= 20 \text{ cm}$$

Hence, the radius of the circle (OP)= 20 cm

29. (c)

According to the questions

All prime number from 1 to 55 = 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53

n = 16 (even)

$$\therefore \text{ median} = \frac{\left(\frac{n}{2}\right)^{th} \text{ term} + \left(\frac{n}{2}+1\right)^{th} \text{ term}}{2}$$
$$= \frac{\left(\frac{16}{2}\right)^{th} \text{ term} + \left(\frac{16}{2}+1\right)^{th} \text{ term}}{2}$$
$$= \frac{8\text{th term} + 9\text{th term}}{2} \qquad = \frac{19+23}{2}$$
$$= \frac{42}{2}$$
$$= 21$$

So median of all prime numbers between 1 to 55 = 21

30. (c)

As per the question,

Take 2 particular people as 1 unit

Then total outcomes (s) = (9-1)! = 8!

Hence,

Total number of events = 7! × 2!

$$\text{Required probability} = \frac{7! \times 2!}{8!} = \frac{7! \times 2}{8 \times 7!} = \frac{2}{8} = \frac{1}{4}$$

31. (b)

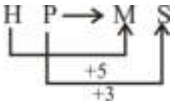
Just as, a Author write with a pen. Similarly surgeons use a scalpel for operation.

32. (b)

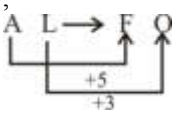
Just as, 'Minute' is related to 'Hour'. Similarly 'Inch' is related to 'Foot'.

33. (b)

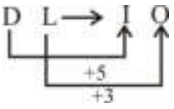
Just as,



Similarly,



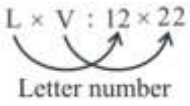
and,



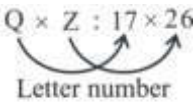
Hence, option (b) is correct answer.

34. (c)

Just as,



Same as,



So, ? = 17 × 26

35. (a)

Just as,

$$\underset{\downarrow}{A}\ \underset{\downarrow}{C}\ \underset{\downarrow}{E}$$
$$(1)^2 + (3)^2 + (5)^2 = 35$$

And,

$$\underset{\downarrow}{A}\ \underset{\downarrow}{G}\ \underset{\downarrow}{E}\ \underset{\downarrow}{D}$$
$$(1)^2 + (7)^2 + (5)^2 + (4)^2 = 91$$

Same as,

$$\underset{\downarrow}{C}\ \underset{\downarrow}{A}\ \underset{\downarrow}{R}\ \underset{\downarrow}{E}$$
$$(3)^2 + (1)^2 + (18)^2 + (5)^2 = \boxed{359}$$

Hence, CARE = 359

36. (a)

GJL TUO CBM → 'It is car'

QAZ GJL KJH → 'He is Ram'

CBM KJH OIU → 'Ram has car'

Therefore, the meaning of 'It' will be 'TUO'.

37. (d)

Just as,			In the same way,		
N	$\xrightarrow{-7}$	G	M	$\xrightarrow{-7}$	F
D	$\xrightarrow{-9}$	U	T	$\xrightarrow{-9}$	K
R	$\xrightarrow{-11}$	G	S	$\xrightarrow{-11}$	H
W	$\xrightarrow{-7}$	P	F	$\xrightarrow{-7}$	Y
C	$\xrightarrow{-9}$	T	H	$\xrightarrow{-9}$	Y
K	$\xrightarrow{-11}$	Z	J	$\xrightarrow{-11}$	Y

38. (b)

CRPF is a police force where as NTPC, BHEL and SAIL are Maharatna companies. Therefore, option (b) is odd one out.

39. (b)

In the given words Companion, Colleague and Partner are synonyms whereas Rivals are opposite.

Hence, required answer is option (b).

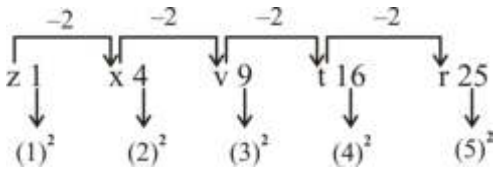
40. (a)

Except figure D, all the other figures have two small circles in the middle while figure D has a black dot.

Hence, option (a) is correct.

41. (c)

The given series is as follows–



Therefore, $\boxed{? = r25}$

42. (a)

Just as, $4\times2\times3\times2 = 8\times6$

$48 = 48$

and, $3\times5\times2\times1 = 5\times6$

$30 = 30$

Similarly,

$$7\times2\times3\times1 = ? \times 3$$
$$42 = ?\times3$$
$$\frac{42}{3} = ?$$
$$\boxed{? = 14}$$

Hence, 14 will be come in place of question mark.

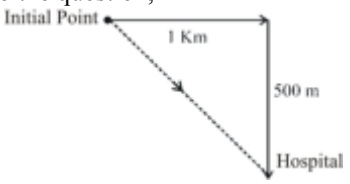
43. (d)

In the given option, figure (4) will come in place of the question mark.

So, option (d) is correct.

44. (c)

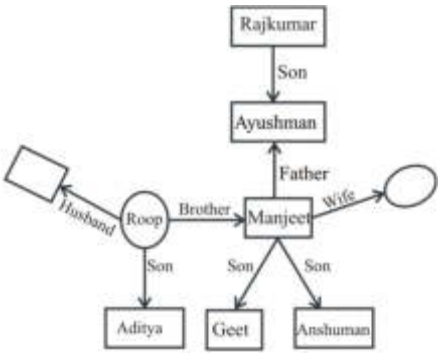
According to the question,



From the diagram, it is clear that hospital is in the South-East direction from Nayan's starting point.

45. (a)

On drawing blood relation diagram according to the question,



Hence, it is clear from above diagram that Manjeet is father of Geet.

46. (c)

Given,

$$175 - 10 + 2 \times 165 \div 25 + 5 = ?$$

$+ \rightarrow \div$

$\div \rightarrow -$

$- \rightarrow \times$

$\times \rightarrow +$

On changing the sign,

$= 175 \times 10 \div 2 + 165 - 25 \div 5$

$= 175 \times 5 + 165 - 5$

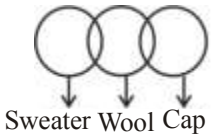
$= 875 + 165 - 5$

$= 1040 - 5$

$= 1035$

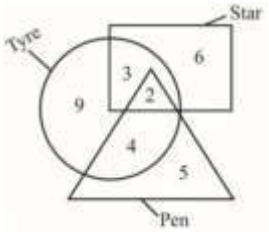
47. (a)

Some Cap and Sweater is made by Wool.



Hence, option (a) is correct.

48. (d)



From the above diagram it is clear that there are 2 Stars which are both Tyres and Pens.

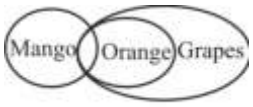
49. (c)

The given information about Miss D does not satisfy to criteria of the question. So, she does not has eligibility to became a member of library.

Hence, option (c) is correct.

50. (c)

According to the question, Venn diagram is as follows,



Conclusion:-

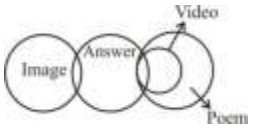
(I) (×)

(II) (×)

Hence, Neither conclusion I nor II follows.

51.(b)

On making the diagram as per the statement.



Hence, it is clear from the diagram that only conclusion 1 and 4 logically follows the statement.

52. (d)

According to the statement, only conclusion I follows. Because terrorists always choose a place to do mass destruction. So, the places like tourist destinations should be provided additional security.

53. (d)

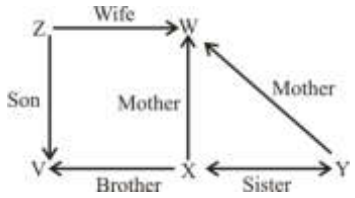
According to the given statement, statement A is true but statement R is false.

54. (b)

Use of organic fertilizer instead of chemical fertilizers for agricultural work provides more yield Hence only assumption 2 follows the statement.

55. (a)

From statement 1 and 2, we have-



It is clear from figure, statements 1 and 2 together are sufficient to answer the question.

56. (c)

The word TOUGH can't be formed from letter DAUGHTER because it doesn't contains the letter 'O'.

57. (c)

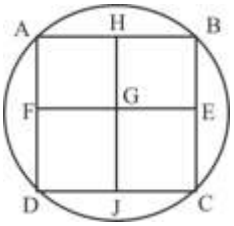
According to the question-

R	A	M	S	T
1	2	3	4	5

On arranging alphabets, for the meaningful word the word is –

S	M	A	R	T
4	3	2	1	5

58. (b)



Total number of squares in the given figure = AFGH, HGEB, GJCE, FDJG and ABCD = 5

59. (a)

The angle between hour-hand and minute-hand at 9:22

$$= \frac{60\times H - 11\times M}{2} \quad \{H = \text{hour}, M = \text{minute}\}$$

$$= \frac{60\times 9 - 11\times 22}{2}$$

$$= \frac{540 - 242}{2}$$

$$= \frac{298}{2} = 149^0$$

60. (c)

Expenditure on salaries in 2016 = $120\times\frac{50}{100} = 60$ lakhs rupees

Expenditure on salaries in 2017 = $150\times\frac{55}{100} = 82.5$ lakh rupees

Increase in salary in 2017 compared to 2016 = 82.5-60 = 22.5 lakh rupees

61. (d)

Dhamekh Stupa is one of the most famous Buddhist stupas located in Sarnath near Varanasi in Uttar Pradesh, India. Originally built in 249 BCE during the reign of King Ashoka of the Mauryan Dynasty, this massive and prominent structure has over time gone through several expansions and additions. This solid cylindrical shaped Stupa made up of red bricks and stone.

Chinese Buddhist monk, scholar, translator and traveller Xuanzang visited Sarnath in 640 CE during which time he recorded the height of the Stupa to be around 91 m and mentioned presence of 1500 priests in the colony.

62. (c)

Nalanda University is considered as an important center among the great ancient Universities of the world. It was established in the Nalanda district of Bihar state by the ruler of Gupta dynasty, Kumargupta I. At the time of Hiuen Tsang, the Vice-Chancellor of Nalanda University was Shilbhadra. Nalanda University was destroyed in 1193 AD by the Turkish General Bakhtiyar Khalji.

63. (b)

The Charminar (four minarets) was constructed in 1591 AD, is a monument and mosque located in Hyderabad, Telangana. It is an example of Indian - Islamic Architecture. The fifth ruler of Qutub Shahi dynasty, Muhammad Quli Qutub Shah built Charminar after shifting his capital from Golkonda to the newly formed city of Hyderabad. The Charminar was built to commemorate the eradication of plague, that was prevalent at that time.

64. (a)

The Revolt of 1857 was the first expression of organized resistance against the British East India Company. This Revolt of 1857 lasted for more than a year. It was suppressed by the mid of 1858. On 8 July 1858, fourteen months after the outbreak at Meerut, peace was finally proclaimed by Lord Canning. Point to be noted is that, Tatya Tope, the leader associated with 1857 rebellion, was captured by a feudatory of Scindia in April 1859 and the British hanged him.

65. (c)

A hot dry air mass that originates over deserted regions is denoted by cT (Continental Tropical) air mass, generally formed over the desert South West and northern Mexico during summer.

An air mass is a large body of air with horizontal dimensions of several hundred to a couple of thousand miles, within which temperatures and moisture at the surface of air are uniform.

Meteorologists define air masses with designation like maritime or continental. There are mainly 5 types of air masses Maritime Tropical (mT), Continental-Tropical (cT), Continental- Polar (cP), Continental-Arctic (cA), Maritime Polar (mP).

66 (b)

Lambert Glacier, Antarctica, is the largest glacier in the world. Siachen glacier is the second largest non-polar glacier in Asia.

67. (b)

The meeting point of the Eastern Ghats and the Western Ghats is the Nilgiri plateau. The western ghats of India play an important role in the distribution of the monsoon rainfall. Anaimudi is the highest peak which is located on the Anaimalai Hills of the Western Ghats. The eastern ghats have lower in elevation than that of the western ghats. The highest peak of Eastern Ghats is the Jindhagada peak. Doddabetta is the highest mountain in the Nilgiri Mountains at 2,637 metres.

68. (b)

The Goa Opinion Poll was conducted on 16 January 1967, during the tenure of Smt. Indira Gandhi. This was the first opinion poll against Goa's accession to Maharashtra. The people of Goa voted against the merger and Goa continued to be a Union Territory. Subsequently, in 1987 Goa became a full-fledged state within the Indian Union.

69. (a)

Education is under the Ministry of education of the Government of India. The ministry is responsible for the development of human resources in India. Ministry of Education has been functioning since 26 September 1985. Now the ministry of Human Resource Development known as 'The Ministry of Education' Dharmendra Pradhan is the current head of the Ministry of Education.

70. (c)

WTO is an international organization set up in 1995 by a replacing the General Agreement on Trade and Tariffs (GATT) under the Marrakesh Agreement. It is the only global International organization dealing with the International trade between nations.

71. (a)

Dhanush missile is an Indian short-range, ship-launched ballistic missile (SLBM). It is the third variant of the Prithvi missile family, which includes the Prithvi I, Prithvi II, and the Prithvi Air Defence interceptor. It has a range of 350 km and is capable of carrying a conventional as well as nuclear payload of more than 500 kg. It can hit both land and sea-based targets. It is liquid fueled, capable of carrying nuclear or conventional payloads.

72. (d)

Snow clearance in high altitude area is done by Border Road Organisation (BRO). The BRO was established on 7 May, 1960 to build and manage the road network in the border areas of India. Its headquarters is in New Delhi. It was founded by Jawaharlal Nehru.

Departments	Founding year	Headquarters
Public Works Department (U.P)	1923	Lucknow
Conservation Authority of India	2006	New Delhi
Inland Waterways Authority	1986	Noida (U.P)

73. (b)

Real National income is also known as national income at constant price (adjusted for Inflation). The most frequently used measure of national income is Gross Domestic Product. The GDP measures the monitory measures of all final goods and services, produced within the geographical boundaries of a country during a specific period of time.

74. (d)

Budget surplus is defined as when the revenue collected exceeds the required expenditure. On other hand, Budget Deficit is defined as when expenditures are greater than Revenues.

75. (a)

In May 2024, Dr. Purnima Devi Burman, a wildlife biologist from Assam state, was awarded the 'Whitley Fund for Nature' Whitley Gold Award. This Award is the highest honour given by the U.K. based Whitley Fund for Nature for outstanding contribution to conservation efforts.

76. (d)

Hampi was declared as a World Heritage Site by UNESCO, in 1986. It was the capital of Vijayanagara Empire in the 14th century. It was prosperous, wealthy and grand city near the Tungabhadra River, in Karnataka. It was the world's second largest medieval era city after Beijing.

77. (d)

The Salar Jung Museum is an art museum located at Dar-ul-shifa, on the southern bank of the Musi River in the city of Hyderabad, Telangana, India. It has a collection of sculptures, paintings, carvings, textiles, carpets and furniture from Japan, China, Burma, Nepal, Persia, Egypt, Europe and North America. It is one of the largest museums in the world.

78. (c)

Kenduli Mela is one of those traditional celebrations that celebrates the unique musical art of Baul Community, a group of mystic minstrels in Bengal. This fair is organized in Kenduli City of Birbhum district, the native land of Bauls. The mela begins with Makar Sankranti on 14 January and ends on 16 January. On the last day of Pausha month of Hindu calendar, large number of pilgrims assemble in Kenduli to have a dip at the Sagar Island beach on the estuary of Bhagirathi river.

79. (b)

The Prime Minister's Shram Award were instituted in 1975 by the Government of India. This national award is conferred on workers for outstanding contributions that improve productivity, innovation and indigenization, resulting in saving foreign exchange. This award is given in four (Shram Ratna, Shram Bhushan, Shram virangana and Shram SHREE/Devi) Categories.

80. (c)

Books	Author
Poverty and Famines	Amartya Sen
Poverty of India	Dadabhai Naoroji
On Economic Inequality	Amartya Sen
Resources, values and development	Amartya Sen

81. (c)

World Water Day, is celebrated on 22 March every year since 1993. It was proposed in the UN in 1992 in its Agenda 21' in Rio de Janeiro. The day highlights importance of freshwater.

82.(b)

The dry deciduous forest are found in Gir, Gujarat. Gir Forest National Park is a Wildlife Sanctuary in Gujarat, Western India. It was established to protect Asiatic lions, who frequent the fenced off Devalia Safari Park, along with leopards and antelopes.

83. (d)

The 38^{th} National Games, 2024 will be organized in the state of Uttarakhand. The 37^{th} National Games were held in Goa in the year 2023.

84. (a)

The 33rd Saraswati Samman given by K.K. Birla Foundation has been given to Kerala's famous Malayalam and English language writer Prabha Varma for her work 'Raudra Satvikam'.

85 (c)

The ozone layer is located in the stratosphere and traps most of the ultraviolet rays before it reaches earth's surface. The substances which are being phased out under the Vienna Convention (1985) and Montreal Protocol (1987) are CFC_S, hydrochlorofluorocarbons ($HCFC_S$), carbon chlorofluorocarbons tetrachloride (CCl_4) and methyl bromide (CH_3Br). Chlorofluorocarbons (CFC_S) mainly causes the depletion of the ozone layer. The objective of the Vienna Convention is to reduce the emission of substances that deplete the ozone layer. World Ozone Day is observed on September 16, every year.

86. (c)

The rate of doing work is called power.

$$\text{Power} = \frac{\text{work}}{\text{time}}$$

$$P = \frac{W}{t}$$

Work, power and energy all are scalar quantities.

SI unit of Power is Watt (W)

$$1 \text{ watt} = \frac{1 \text{ Joule}}{1 \text{ Second}}$$

87. (b)

Trees grow against gravity. The reason behind it is termed as Geotropism. It is a coordinated process of differential growth by a plant in response to gravity pulling on it. If the growth is in the direction of gravity then it is positive geotropism and if it is in the opposite direction of gravity then it is considered as negative geotropism. Nature does not defines gravitational law. Hence A is true but R is false.

88. (c)

Both (A) and (R) is true and (R) is the correct explanation of (A).

The gap is left between the tracks to provide a space for the iron metal to expand and contract during the summer and winter season due to the change in the temperatures. If the gap is not left in between then the tracks will bend more and cause derailing of the trains.

89. (d)

The device which uses ultrasonic waves to measure the distance, direction and speed of underwater objects is known as SONAR. SONAR stands for Sound Navigation and Ranging. It is helpful for exploring and mapping the ocean because sound waves travel faster in water than that in air.

90. (b)

The homogenous mixture of solute and solvent is called a solution. The substance, which is dissolved, is called a solute. The substance in which the solute is dissolved is called a solvent.

91. (b)

Chemical Name	**Chemical formula**
Sodium Chloride (Common salt)	NaCl
Sodium Hydroxide	NaOH
Sodium thiosulphate (Hypo)	$Na_2S_2O_3.5H_2O$

92. (c)

Heavy water (D_2O), also known as Deuterium oxide, is the isotope of hydrogen which contains two atoms of Deuterium (D) and one atom of oxygen. Its density is more than normal water. Heavy water is used as a moderator in nuclear reactors of the neuclear power generation plant.

93. (c)

Chlorophyll molecule consists of a central magnesium atom surrounded by a nitrogen-containing structure called a porphyrin ring, attached to the ring is a long carbon- hydrogen side chain, known as a phytol chain. Chlorophyll, any member of the most important class of pigments involved in photosynthesis, the process by which light energy is converted to chemical energy through the synthesis of organic compounds.

94.(a)

The term 'Homo-sapiens' (Scientific name of modern Human beings) was coined by Swedish botanist and taxonomist Carolus Linnaeus.

Common Names	**Scientific Names**
Human beings	Homo sapiens
Cat	Felis catus
Mustard	Brassica campestris
Rice	Oryza sativa
Wheat	Triticum aestivum
Mango	Mangifera indica

95. (a)

Annelida is the phylum that includes earthworm and leech. Body of these organisms are metamerically segmented and hence the name Annelida.

96. (c)

Blood brings oxygen and nutrients to all the parts of the body so they can keep working. Blood carries carbon dioxide and other waste materials to the lungs, kidneys and digestive system to be removed from the body. Blood fights infections and also carries hormones around the body.

97. (a)

The amount of light entering the eye is controlled by pupil. The iris opens and closes to control the amount of light entering the eye through the pupil. The pupil is the opening in the center of the iris where light enters the eye.

98. (b)

Enter key is used for selecting command in windows keyboard. The list of commands and options in the software is in the tool bar.

99. (b)

A Trojan horse, or Trojan, is a type of malicious code or software that looks legitimate but can take control of your computer. A Trojan is designed to damage, disrupt, steal, or in general inflict some other harmful action on your data or network.

100. (a)

After getting inspiration from the 'Chipko Movement', a parallel movement was started in North Kannada district of Karnataka in September, 1983. Men and Women in Salkani started hugging trees to prevent their cutting and later it came to known as Appiko Movement. Panduranga Hegde was a prominent leader of this movement.

PRACTICE SET - 10

1. A 91 cm long wire is cut into two pieces so that the length of one piece is three-fourth of the other. Find the length of the shorter piece.
(a) 36.23 m (b) 39 cm
(c) 42.17 cm (d) 38 cm

2. How many multiples of $2^8 \times 3^2 \times 5^3 \times 7^5$ are even numbers?
(a) 288 (b) 168
(c) 576 (d) 464

3. Select the option that gives the fractions $\frac{2}{5}, \frac{1}{3}, \frac{3}{5}, \frac{1}{4}, \frac{7}{10}, \frac{5}{8}$ in ascending order :
(a) $\frac{1}{4}, \frac{1}{3}, \frac{2}{5}, \frac{3}{5}, \frac{5}{8}, \frac{7}{10}$ (b) $\frac{7}{10}, \frac{5}{8}, \frac{3}{5}, \frac{2}{5}, \frac{1}{3}, \frac{1}{4}$
(c) $\frac{1}{4}, \frac{1}{3}, \frac{3}{5}, \frac{2}{5}, \frac{5}{8}, \frac{7}{10}$ (d) $\frac{1}{3}, \frac{1}{4}, \frac{2}{5}, \frac{3}{5}, \frac{5}{8}, \frac{7}{10}$

4. If $0.\overline{41}$ is expressed as the vulgar fraction $\frac{41}{999.....9(\text{n times})}$. Find n.
(a) 1 (b) 3
(c) 4 (d) 2

5. The square root of a positive fraction, when added to 1, is $3\frac{1}{4}$. Find the fraction.
(a) $2\frac{1}{4}$ (b) $6\frac{1}{4}$
(c) $5\frac{1}{16}$ (d) $3\frac{1}{16}$

6. Find the divisor of $\frac{1}{5-2\sqrt{3}}$.
(a) $\frac{(5-2\sqrt{3})}{12}$ (b) $\frac{5+2\sqrt{3}}{13}$
(c) $\frac{5-2\sqrt{3}}{13}$ (d) $\frac{5+2\sqrt{3}}{12}$

7. Find the smallest number from which, if 6 is reduced then, it is completely divisible by 12, 15, 20 and 27.
(a) 542 (b) 540
(c) 546 (d) 500

8. Let x be the greatest number which divides 7072, 8505 and 9925 leaving remainders 22, 45 and 55 respectively. Find the sum of the digit of x.
(a) 6 (b) 5
(c) 7 (d) 8

9. The LCM of two numbers is 26 times their HCF. The sum of the HCF and LCM is 729. If one number is 81, find the other.
(a) 231 (b) 234
(c) 233 (d) 232

10. In finding the greatest common factor (HCF) of two numbers by division method. The quotients are 1, 5 and 2 respectively, and the last divisor is 15. Find the least common multiple (LCM) of the numbers.
(a) 2130 (b) 3045
(c) 2115 (d) 2145

11. A sum of ₹4,800 is divided between A, B and C such that the ratio of the share of A to the combined share of B and C is 3 : 5 and C receives 5/7 of what A and B together receive. The difference (in ₹) of A's share and B's share is :
(a) 900 (b) 800
(c) 1,000 (d) 850

12. Find the value of k in $\frac{26}{21} : \frac{24}{9} :: k : \frac{14}{13}$.
(a) $\frac{1}{3}$ (b) 2
(c) $\frac{1}{2}$ (d) 3

13. Arun's income is 150% of Bala's income. Chandu's income is 120% of Arun's income. If the total income of Arun, Bala and Chandu is ₹ 86000, then find Chandu's income.
(a) ₹ 36000 (b) ₹ 32000
(c) ₹ 30000 (d) ₹ 34000

14. Shyam's marks are 25% more than Divya's marks. How many % of Divya's marks are less than Shyam's marks?
(a) 20% (b) 15%
(c) 10% (d) 40%

15. The area of a square is 36 cm^2. Find the area of the square formed by joining the mid-points of its sides:
(a) 20 cm^2 (b) 28 cm^2
(c) 25 cm^2 (d) 18 cm^2

16. The area of the base of a conical tomb is 616 m^2 and its height is 48 m. What is the cost of plastering in curved surface area at ₹ 150 per m^2? (Take $\pi = \frac{22}{7}$)
(a) ₹ 3,60,000 (b) ₹ 3,15,000
(c) ₹ 3,00,000 (d) ₹ 3,30,000

17. A, B and C can complete a work in 81 days. A and B together can complete the same work in 97.2 days. B and C together can complete the same work in 162 days. In how many days can B complete the work alone?
(a) 225 (b) 234
(c) 243 (d) 261

18. A and B can complete a work together in 12 days while A alone can do it in 15 days. They start working together but A leaves 10 days before the completion of the work. For how many days did A and B work together?
(a) 9 (b) 11
(c) 8 (d) 10

19. Vishnu covers the same distance at a speed of 10 km/h, 30 km/h and 8 km/h and takes a total of 15.5 minutes to complete journey, then find the total distance travelled by him.
(a) 1 (b) 3
(c) 4 (d) 2

20. Two trains 131 m and 89 m long are moving in opposite direction one at the speed of 42 km/h, the other at a speed of 30 km/h. In what time will they be completely clear of each other from the moment they meet?
(a) 10 s (b) 11 s
(c) 20 s (d) 18 s

21. Vikas took a loan of ₹1,200 on simple interest that is equal to as many years as the rate of interest. If he paid ₹768 as interest at the end of the loan period, then what was the rate of interest?
(a) 8.5% (b) 73.8%
(c) 8.0% (d) 7.5%

22. A certain sum of money earns an interest of ₹2000 at a rate of 10% per annum simple interest in 2 years. If the compound interest accrues annually on this amount, what will be the effective rate of interest?
(a) 10.25 (b) 10.50
(c) 10.75 (d) 10.15

23. 2/3 part of an item sold at a profit of 6% and the remaining part was sold at a loss of 3%. If the total profit is ₹ 540, then what was the total cost of the item?
(a) ₹17, 000 (b) ₹18, 000
(c) ₹16, 500 (d) ₹18, 500

24. A man buys 20 articles for ₹16 and sells them at the rate of ₹1.50 per article. What is his gain in percentage?
(a) 87.5% (b) 86.5%
(c) 85.5% (d) 84.5%

25. If $2x(x+y+z) = 250$, $2y(x+y+z) = 100$, $2z(x+y+z) = 100$ then find the value of $(3x + 6y + 15z)$.
(a) 110 (b) 95
(c) 85 (d) 69

26. If $x(x+y+z) = 30$, $y(x+y+z) = 64$, $z(x+y+z) = 50$ then find the value of $2(x+y+z)$ Where $x,y,z > 0$.
(a) 22 (b) 26
(c) 24 (d) 20

27. If $\sin x - 3\cos x = \sqrt{3}\cos x$, then find the value of $\cot x$.
(a) $3-\sqrt{3}$ (b) $3+\sqrt{3}$
(c) $\sqrt{3}$ (d) $\frac{3-\sqrt{3}}{6}$

28. Two circles touch each other externally at point X. PQ is simple common tangent touching both circles at P and Q point. If the radius of circles are R and r, find the value of PQ^2.
(a) 4Rr (b) 2πRr
(c) $\frac{3}{2}$ Rr (d) 2Rr

29. What will be the median of the given number.
2, 3, 4, 3, 0, 5, 1, 1, 3, 2
(a) 0 (b) 3
(c) 2.5 (d) 2.4

30. There are 20 balls in a bag which are numbered 1, 2, 3.....20. Find the probability that the number marked on the ball taken out of the bag is divisible by 3 or 5.
(a) $\frac{1}{10}$ (b) $\frac{9}{20}$
(c) $\frac{2}{5}$ (d) $\frac{1}{2}$

31. Select the option in which the words share the same relationship as that shared by the given pair of words
Rhino : Horn
(a) Elephant : Tusk (b) Cow : Calf
(c) Dog : Bark (d) Donkey : Bray

32. 'Waiter' is related to 'Restaurant' in the same way as 'Worker' is related to '_____'.
(a) School (b) Factory
(c) House (d) Shop

33. Select the option that is related to the fifth letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster and the fourth letter-cluster is related to the third letter-cluster.
PATN : APNT :: MODE : OMED :: JUST : ?
(a) UJTS (b) TUJS
(c) JTUS (d) SUJT

34. Select the term that can replace the question mark (?) in the following analogy.
STYLE : 81 : ARRIVAL :: CRACK : 36 : ?
(a) SMELL (b) RIDE
(c) ROSE (d) STREAM

35. In a certain code language, RAIN is written as 4678 and WET is written as 135, How will ENTER be written as in that languages?
(a) 35384 (b) 38534
(c) 38543 (d) 35834

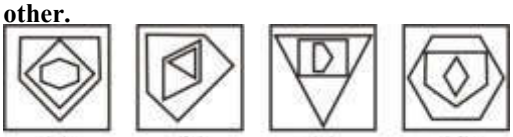
36. **In a certain code language, '95' means 'estimated time', '469' means 'space and time' and '65' means 'estimated space'. Which of the following numbers mean 'space' in that language?**
(a) 6 (b) 4
(c) 9 (d) 5

37. **In a certain code language, PROBLEM is written as PSMEHJG. How will SPRINGS be written as in that language?**
(a) SQPLJLM (b) SQTLJLS
(c) SQPLJLS (d) SOPLJLS

38. **Three pairs are similar in one way and one pair is different from following four pair of terms. Which one is different from other three?**
(a) Captain : Team
(b) Boss : Gang
(c) Prime Minister : Cabinet
(d) Artist : Troupe

39. **Four words have been given, out of which three are alike in some manner and one is different. Select the odd one.**
(a) Students (b) Principal
(c) Dean (d) Director

40. **Select the figure that different from there other.**



(a) (b) (c) (d)

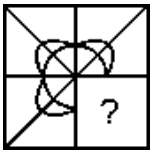
41. **Select the alphanumeric-clusters from among the given options that can replace the question mark (?) in the following series.**
2D, 3I, 4P, ?
(a) 5Z (b) 5Y
(c) 5X (d) 5W

42. **What will come in the place of question mark.**

13	54	?
7	45	32
27	144	68

(a) 4 (b) 6
(c) 36 (d) 42

43.



Select the correct figure for blanks space given above.

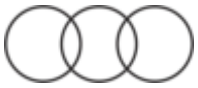
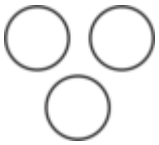
(a) 
(b) 
(c) 
(d) 

44. **Aadhya walks 500 m towards North and turns left and walks 250 m. In which directions is she with respect to her initial position.**
(a) North-West (b) South-East
(c) North-East (d) South-West

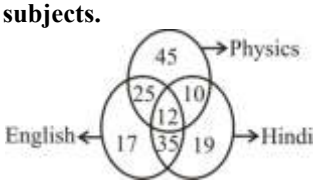
45. **Fatima and Abdul are siblings. Fatima's father Aziz is the only son of his parents. Ansari is the paternal grandfather of Abdul. Sarah is the daughter-in-law of Ansari. How is Sarah related to Aziz?**
(a) Sister (b) Mother
(c) Wife (d) Aunt

46. **If Addition means Division, Subtraction means Multiplication, Multiplication means Addition and Division means Subtraction, then what will be the value of $13 - 2 \times 4 \div 9 + 3$?**
(a) 27 (b) 19
(c) 30 (d) 33

47. **Choose the most suitable Venn diagram for the following words-**
Amphibians, Tortoise, Rabbit

(a) 
(b) 
(c) 
(d) 

48. **The given Venn diagram shows the number of students who got distinction in three subject among 350 students. Find the percentage of students who got distinction in only two subjects.**



(a) 25% (b) 20%
(c) 18.5% (d) 32%

49. **Sophia and Rohan play Badminton and Football. Dinesh and Rahul play Cricket and Volleyball. Rohan and Naveen play Hockey and Cricket. Who does NOT play Cricket?**
(a) Naveen (b) Rohan
(c) Dinesh (d) Sophia

50. **Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.**
Statements:
(a) Some boxes are bags.
(b) All pouches are bags.
Conclusions:
I. Some bags are boxes.
II. Some pouches are boxes.

(a) Both conclusions I and II follow
(b) Only conclusion I follows
(c) Neither conclusion I nor II follows
(d) Only conclusion II follows

51. **Statement :**
- **Some beds are rivers.**
- **All rivers are mats.**

Conclusions :
1. All mats are rivers.
2. Some beds are mats.
(a) Neither conclusion 1 nor 2 follows
(b) Either conclusion 1 or 2 follows
(c) Only conclusion 1 follows
(d) Only conclusion 2 follows

52. **Statement:**
Y told his friend, "My children enjoy playing in our garden."
Conlcusion
i. There is a garden in Y's house
ii. Y has children
(a) Only conclusion I logicals
(b) Both conclusion logical
(c) Only conclusion II logical
(d) Neither conclusion I nor conclusion II logical

53. **Read the given statements, labelled Assertion (A) and Reason (R) and select the most appropriate option with respect to them.**
A. Deforestation is undesirable because of its heavy impact on soil erosion.
R. Erosion of soil from the surface due to heavy and intense precipitation is accelerated due to the cutting of trees on a mass scale.
(a) Both statements 'A' and 'R' are true but 'R' is the correct explanation of 'A'
(b) Statement 'A' is true but statement 'R' is false
(c) Both statements 'A' and 'R' are false
(d) Both statements 'A' and 'R' are true but 'R' is not the correct explanation of 'A

54. **Statement:**
A mother told his daughter, "Break down on Junk food is one of the reasons for obesity:
Assumption:
I. Junk food leads to obesity.
II. Reeta and Geeta are mother and daughter.
(a) Only assumption I implicit
(b) Both assumption I and II are not implicit
(c) Only assumption II implicit
(d) Both assumption I and II implicit

55. **Question:**
X is brother of Y, Z is mother of Y. Then what is the relation of Y with X?
Statement:
1. Z has only 1 son and one daughter.
2. X is the only son of Z who has 2 children.
(a) Only 1 is sufficient while other alone is not sufficient
(b) Only 2 is sufficient while first alone is not sufficient
(c) Either 1 alone or 2 alone is sufficient
(d) Both 1 and 2 together are sufficient

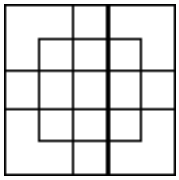
56. **The given table shows the number of students in a hostel speaking different languages:**

Languages	Hindi	English	Marathi	Tamil	Bengali	Total
Number of Students	25	22	12	9	4	72

Which language is spoken by atleast 1 out of 3 students residing in the hostel?
(a) English (b) Marathi
(c) Hindi (d) Tamil

57. **There are 100 questions in which each right answer has 1 mark credit. Out of 100 questions 30, 50 and 20 questions are easy, medium and difficult respectively. The questions paper covers five abilities with an equal number of questions and similar distribution of difficulty levels for each ability. Sachin has excellent knowledge in three abilities but in the other two abilities he can solve only easy questions. If the evaluator deducts 0.33 marks for each wrong answer and Sachin attempts all questions which of the following would be his expected score?**
(a) 62.60 (b) 62.49
(c) 62.76 (d) 62.98

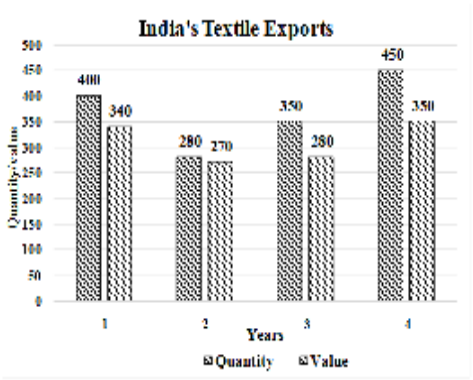
58. **Count the number of squares in the figure:**



(a) 18 (b) 25
(c) 27 (d) 19

59. **What time will it be in 58 minutes from now, if the time is 1 : 20 pm ?**
(a) 2:10 pm (b) 2:15 pm
(c) 2:00 pm (d) 2:18 pm

60. **The following bar graph shows the quantity (in number of containers) and value (in Rupee crores) of India's textile exports for 4 years. Based on the graph answer the question given below.**
quantity - value, India's textile export.
In which year the value per container was minimum?



(a) 2nd year (b) 1st year
(c) 3rd year (d) 4th year

61. Where is Borobudur Buddhist Temple located?
(a) Nepal (b) Sri Lanka
(c) Indonesia (d) Malaysia

62. The Virupaksha temple at Hampi is dedicated to:
(a) Lord Shiva (b) Lord Ganesha
(c) Lord Vishnu (d) Lord Brahma

63. Ajmer is associated with the Sufi saint:
(a) Khwaja Nizamuddin Auliya
(b) Khwaja Moinuddin Chishti
(c) Baba Farid
(d) Bandanawaz Gisudaraz

64. In which of the following Satyagarha's did Vallabh Bhai Patel the get the title "Sardar"?
(a) Champaran
(b) Bardoli
(c) Kheda
(d) Ahmedabad mill strike

65. From which language is the word 'El-Nino' derived?
(a) Spanish (b) French
(c) Italian (d) Dutch

66. Which of the following region is 'Viticulture' a speciality?
(a) Australia
(b) Mediterranean region
(c) North California
(d) Austria

67. Which plateau is spread across Rajasthan, Madhya Pradesh and Gujarat with an average altitude of 500 m?
(a) Chotanagpur Plataeu
(b) Deccan Plateau
(c) Malwa Plateau
(d) Marwar Plateau

68. Which article of the Constitution of India covers 'Right to Life'?
(a) Article 20 (b) Article 34
(c) Article 32 (d) Article 21

69. _____ means cases that can be directly considered by the Supreme Court without going to the lower courts before that.
(a) Writ Jurisdiction
(b) Appellate Jurisdiction
(c) Original Jurisdiction
(d) Advisory Jurisdiction

70. Which of the United Nation's organization has International Institute of Education Planning at Paris as its part?
(a) UNICEF (b) UNESCO
(c) UNU (d) ILO

71. Where are the headquarters of the OECD is located?
(a) Rome (b) Geneva
(c) New York (d) Paris

72. Deccan Odyssey is a ———
(a) Luxury train (b) Five star hotel
(c) Botanical garden (d) Cricket stadium

73. Which Five Year Plan of India was Chalked out for the period Spanning 1974 to 1979 with the objective of increasing the employment level, reducing poverty, and attaining self-reliance?
(a) Fifth Five-Year Plan
(b) Second Five-Year Plan
(c) First Five – Year Plan
(d) Third Five- Year Plan

74. Fiscal policy is the policy of:
(a) the Government
(b) RBI
(c) NABARD
(d) Both the Government and RBI

75. Who was the first woman in the world to graduate from medical college?
(a) Rebecca Lee Crumpler
(b) Elizabeth Blackwell
(c) Anandibai Joshee
(d) Kei Okami

76. Which of the following pairs is not correctly matched (UNESCO Natural Heritage Site to its location)?
(a) Elephanta Caves - Karnataka
(b) Sunderbans National Park - West Bengal
(c) Sun Temple - Odisha
(d) Fatehpur Sikri - Uttar Pradesh

77. Sahitya Akademi is located in which city of India?
(a) Varanasi (b) Nagpur
(c) New Delhi (d) Bangalore

78. The 'Sangai' festival is celebrated in which of the following states of India?
(a) Manipur (b) Mizoram
(c) Nagaland (d) Tripura

79. Which Union Ministry organizes National film award every year?
(a) Culture and Tourism
(b) Ministry of Home Affairs
(c) Youth Affairs
(d) Information and Broadcasting

80. **Name the famous Indian writer who has written novels like 'Untouchable' and 'Coolie'.)'.**
(a) RK Narayan (b) Mulk Raj Anand
(c) Anita Desai (d) Kamla Das

81. **Which of the following days is celebrated every year on 9 January to mark the contribution of the overseas Indian community in the development of India?**
(a) Pravasi Bharatiya Divas
(b) Akhil Bhartiya Divas
(c) Unnatiy Bharat Divas
(d) Overseas Indian Development day.

82. **Which economic revolution in India, M.S. Swaminathan is associated ?**
(a) White Revolution (b) Green Revolution
(c) Pink Revolution (d) Yellow Revolution

83. **Who was given the Hindi Language Award under the Sahitya Academy Yuva Puraskar 2024 in June 2024 ?**
(a) Gaurav Pandey
(b) Nandini Sen Gupta
(c) Devendra Kumar
(d) K. Vaishali

84. **Recently, who was awarded the 58th Jnanpith Award 2023 recently ?**
(a) Devendra Kumar
(b) Gulzar
(c) Jagadguru Rambhadracharya
(d) (b) and (c) both

85 **Ozone is found in two regions of the Earth's atmosphere – at the ground level and in the upper regions of the atmosphere. While the upper atmosphere ozone protects the Earth from the sun's harmful rays, ozone at the ground level is the main component of the –**
(a) Methane (b) Smog
(c) Lead (d) Sulphur oxide

86. **Which of the following the work done by a body does not depend on ?**
(a) Initial velocity of object
(b) Displacement
(c) Angle between force and displacement
(d) Applied force

87. **What is the equation for Newton's second law of motion?**
(a) $F = mc^2$ (b) $F = ma$
(c) $F = AP$ (d) $F = \frac{1}{2}mv^2$

88. **Borosilicate glass ware is used in microwave ovens because-**
(a) It is not brittle
(b) It is highly heat resistant
(c) It cooks faster than any other vessel
(d) It is energy efficient

89. **Echocardiogram is more closely related to?**
(a) Doppler effect (b) Zeeman effect
(c) Photoelectric effect (d) Magnetic effect

90. **The equivalent anti-particles of electron are called .....**
(a) neutron (b) proton
(c) anti electron (d) positron

91. **What is the pH value of lemon Juice approximately?**
(a) 9 (b) 2
(c) 12 (d) 7

92. **Which of the following gases has the highest energy value (calorific value)?**
(a) hydrogen (b) LPG
(c) natural gas (d) methane

93. **Which fluid carries absorbed fat from intestine and drains excess fluid from extra cellular space back into the blood?**
(a) Platelets (b) Capillaries
(c) Plasma (d) Lymph

94. **Who is called the father of taxonomy?**
(a) Eichler
(b) Engler
(c) Carlous Linnaeus
(d) Bentham and Hooker

95. **Plant kingdom is divided into groups. Which of the following options is not one of them?**
(a) Arthopoda (b) Thallophytes
(c) Angiosperms (d) Gymnosperms

96. **Which of the following carries blood from the heart to the kidneys?**
(a) Renal vein (b) Coronary artery
(c) Renal artery (d) Vena cava

97. **How many spinal nerves are there in human body?**
(a) 31 pairs (b) 30 pairs
(c) 33 pairs (d) 32 pairs

98. **Which of the following options represents the number of pixels per inch printed on a page?**
(a) Print margin (b) Resolution
(c) Filter (d) Colour mode

99. **What is the full form of ASCII?**
(a) American Standard Code for Information Interchange
(b) American Stable Code for Information Interchange
(c) American Standard Code for International Interchange
(d) American Stable Code for Institutional Interchange

100. **Gir forest, which is famous for the Asiatic lion, is located in :**
(a) Punjab
(b) Gujarat
(c) Odisha
(d) Andaman and Nicobar Islands

SOLUTION : PRACTICE SET- 10

ANSWER KEY

1. (b)	11. (b)	21. (c)	31. (a)	41. (b)	51. (d)	61. (c)	71. (d)	81. (a)	91. (b)
2. (c)	12. (c)	22. (b)	32. (b)	42.(a)	52. (b)	62. (a)	72. (a)	82. (b)	92. (a)
3. (a)	13. (a)	23. (b)	33.(a)	43. (d)	53. (a)	63. (b)	73. (a)	83. (a)	93. (d)
4. (d)	14. (a)	24. (a)	34. (b)	44. (a)	54. (a)	64. (b)	74. (a)	84. (d)	94. (c)
5. (c)	15. (d)	25. (b)	35. (b)	45. (c)	55. (c)	65. (a)	75. (b)	85 (b)	95. (a)
6. (b)	16. (d)	26. (c)	36. (a)	46. (a)	56. (c)	66. (b)	76. (a)	86. (a)	96. (c)
7. (c)	17. (c)	27. (d)	37. (a)	47. (d)	57. (c)	67. (c)	77. (c)	87. (b)	97. (a)
8. (a)	18. (d)	28. (a)	38. (d)	48. (b)	58. (c)	68. (d)	78. (a)	88.(b)	98. (b)
9. (b)	19.(b)	29. (c)	39. (a)	49. (d)	59.(d)	69. (c)	79. (d)	89. (a)	99. (a)
10. (d)	20. (b)	30. (b)	40. (a)	50. (b)	60. (d)	70. (b)	80. (b)	90. (d)	100. (b)

SOLUTION

1. (b)

Let the length of second piece = x cm

Length of first piece $= x \times \frac{3}{4} = \frac{3x}{4}$

According to the question,

$$\Rightarrow \frac{3x}{4} + x = 91$$

$$\Rightarrow 7x = 91 \times 4$$

$$\Rightarrow x = \frac{91 \times 4}{7}$$

length of second piece (x) = 52 cm

Length of first piece $= 52 \times \frac{3}{4}$

$= 39$ cm

Hence the length of the shorter piece = 39 cm

2. (c)

The number of factors of $2^8 \times 3^2 \times 5^3 \times 7^5 = (8 + 1)(2 + 1)(3 + 1)(5 + 1) = 648$

$\therefore$ The number of even factors (multiples) = 648 – The number of total odd factors

$= 648 - \{(2 + 1)(3 + 1)(5 + 1)\}$

$= 648 - \{3 \times 4 \times 6\}$

$= 648 - 72 = 576$

3. (a)

From question

$$\frac{2}{5} = 0.4,\ \frac{1}{3} = 0.33,\ \frac{3}{5} = 0.6,\ \frac{1}{4} = 0.25,$$

$$\frac{7}{10} = 0.7,\ \frac{5}{8} = 0.625$$

Hence, ascending order of given fractions

$$= \frac{1}{4}, \frac{1}{3}, \frac{2}{5}, \frac{3}{5}, \frac{5}{8}, \frac{7}{10}$$

4. (d)

Let $0.\overline{41} = x$

$0.414141 \ldots\ldots = x$

Multiplying by 100 in both sides,

$100x = 41.4141 \ldots\ldots$

$100x = 41 + x$

$99x = 41$

$$x = \frac{41}{99}$$

Hence, it is clear that the number of digit 9 in denominator is twice. So n = 2.

5. (c)

Let the fraction be $= \frac{x}{y}$

According to the question,

$$\sqrt{\frac{x}{y}} + 1 = 3\frac{1}{4}$$

$$\sqrt{\frac{x}{y}} = \frac{13}{4} - 1$$

$$\sqrt{\frac{x}{y}} = \frac{9}{4}$$

$$\frac{x}{y} = \frac{81}{16},\quad \frac{x}{y} = 5\frac{1}{16}$$

6. (b)

On rationalizing $\frac{1}{5 - 2\sqrt{3}}$

$$= \frac{1}{5 - 2\sqrt{3}} \times \frac{5 + 2\sqrt{3}}{5 + 2\sqrt{3}}$$

$$= \frac{5 + 2\sqrt{3}}{25 - 12} = \frac{5 + 2\sqrt{3}}{13}$$

7. (c)

LCM of 12, 15, 20 and 27,

$12 = 2 \times 2 \times 3$

$15 = 3 \times 5$

$20 = 2 \times 2 \times 5$

$27 = 3 \times 3 \times 3$

LCM = $2 \times 2 \times 3 \times 5 \times 3 \times 3$

$= 540$

Hence, the required number = 540 + 6 = 546

8. (a)
According to the question,
7072 – 22 = 7050
8505 – 45 = 8460
9925 – 55 = 9870
HCF = 1410
sum of digit of x = 1 + 4 + 1 + 0
= 6

9. (b)
According to the question-
Let- LCM = x
and HCF = y
x = 26y
x + y = 729
26y + y = 729
27y = 729
(y) = 27
First number×Second number = LCM×HCF
81 × Second number = $(26\times27)\times27$

Hence, second number = $\frac{26\times27\times27}{81}=234$

10. (d)
Dividend = Divisor × Quotient + Remainder
Last divisor = 15, Quotient = 2
Dividend = 15×2 = 30
Divisior = 30, Quotient = 5, Remainder = 15
Dividend = 30 × 5 + 15
= 165
Again,
Divisor = 165, Quotient = 11, Remainder = 30
Dividend = 165 × 1 + 30
= 195
Hence the numbers are = 165, 195
165 = 15×11
195 = 15×13
LCM = 15 ×11×13 = 2145

11. (b)
A : (B+C) = 3 : 5

$A=\frac{4800\times3}{8}=₹1800$

$B+C=\frac{4800\times5}{8}=₹3000$

B + C = 3000 ..... (i)

$C=(A+B)\times\frac{5}{7}$

7C = 5 (A+B)
7C – 5B = 5A
7C – 5B = 5 × 1800
7C – 5B = 9000 ..... (ii)
Multiplying equation (i) by 7 and substracting equation (ii)
7C + 7B = 21000
7C – 5B = 9000
– + –

12B = 12000
B = 1000
The difference of A's share and B's share
= ₹1800 – ₹1000
= ₹800

12. (c)
$\frac{26}{21}:\frac{24}{9}::k:\frac{14}{13}$

$\Rightarrow\frac{26}{21}\times\frac{14}{13}=\frac{24}{9}\times k$

$\Rightarrow k=\frac{26\times14\times9}{21\times13\times24}$ $\Rightarrow k=\frac{1}{2}$

13. (a)
Let Bala's income = ₹x

So, Arun's income = $x\times\frac{150}{100}=\frac{3x}{2}$

And Chandu's income = $\frac{3x}{2}\times\frac{120}{100}=\frac{9x}{5}$

According to the question,

$x+\frac{3x}{2}+\frac{9x}{5}=86000$

$\frac{10x+15x+18x}{10}=86000$

43x = 10 × 86000
x = 20000

So, Chandu's income = $\frac{9\times20000}{5}$ = ₹36000

14. (a)
Let Divya's marks =100

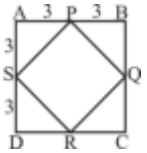
Then Shyam's marks = $100\times\frac{125}{100}=125$

Shyam's marks - Divya's marks = 125 – 100= 25
So, Divya's marks are 25 less than Shyam's marks.

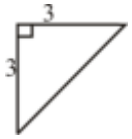
Required % = $\frac{25}{125}\times100$

$=\frac{100}{5}$ = 20%

15. (d)



Area of square = a^2
$a^2 = 36$
a = 6



$(\text{Hypotenuse})^2 = (\text{Base})^2 + (\text{Height})^2$
$(\text{Hypotenuse})^2 = (3)^2 + (3)^2$

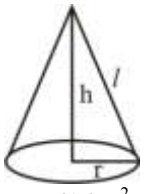
Hypotenuse $= 3\sqrt{2}$

Area of PQRS $= \left(3\sqrt{2}\right)^2$

$= 9 \times 2$

$= 18\ \text{cm}^2$

16. (d)



Area of base of cone $= 616\ \text{m}^2$

$\pi r^2 = 616$

$\frac{22}{7} \times r^2 = 616$

$r^2 = 7 \times 7 \times 4$

$r = 14\ \text{m}$

$l = \sqrt{h^2 + r^2}$

$= \sqrt{48^2 + 14^2}$

$= \sqrt{2500}$

$= 50\ \text{m}$

Required cost $= \pi r l \times 150 = \frac{22}{7} \times 14 \times 50 \times 150$

$= ₹\ 330{,}000$

17. (c)

According to the question,

Work done by A, B and C in one day $= \frac{1}{81}$ part

$A + B + C = \frac{1}{81}$ ..... (i)

Then, 1 day work of A + B $= \frac{1}{97.2}$ part

$A + B = \frac{10}{972}$

$A + B = \frac{5}{486}$ ..... (ii)

On putting the value of equation (ii) in equation (i),

$C = \frac{1}{81} - \frac{5}{486}$

$C = \frac{6-5}{486} = \frac{1}{486}$ part

One day work of (B + C) $= \frac{1}{162}$ part

$B + \frac{1}{486} = \frac{1}{162}$

$B = \frac{1}{162} - \frac{1}{486}$

$B = \frac{3-1}{486} = \frac{1}{243}$ part

Hence, B will complete that work alone in 243 days.

18. (d)

1 day work of A + B $= \frac{1}{12}$ part

1 day work of A $= \frac{1}{15}$ part

1 day work of B $= \frac{1}{12} - \frac{1}{15}$

$= \frac{5-4}{60} = \frac{1}{60}$ part

Let A and B did work together for x days.

x.A+x.B+10B = 1

x (A+B) + 10B = 1

$x\left(\frac{1}{12}\right) + \frac{10}{60} = 1$

$\frac{x}{12} = 1 - \frac{1}{6}$

$\frac{x}{12} = \frac{5}{6}$

x = 10 days

19. (b)

Let total distance covered by Vishnu is x km.

According to the question,

$\frac{\left(\frac{x}{3}\right)}{10} + \frac{\left(\frac{x}{3}\right)}{30} + \frac{\left(\frac{x}{3}\right)}{8} = \frac{15.5}{60}$

$\frac{x}{3}\left(\frac{1}{10} + \frac{1}{30} + \frac{1}{8}\right) = \frac{15.5}{60}$

$\frac{x}{3}\left(\frac{24+8+30}{240}\right) = \frac{15.5}{60}$

$\frac{x}{3}\left(\frac{62}{240}\right) = \frac{15.5}{60}$

$x = \frac{15.5 \times 240 \times 3}{60 \times 62}$

$x = \frac{186}{62}$

x = 3 km.

20. (b)

Speed of the first train = 42 km/h $= 42 \times \frac{5}{18} = \frac{35}{3}\ \text{m/s}$

Speed of the second train =30 km/h $= 30 \times \frac{5}{18} = \frac{25}{3}\ \text{m/s}$

Relative speed $= \frac{35}{3} + \frac{25}{3} = \frac{60}{3} = 20\ \text{m/s}$

Distance = 131 + 89 = 220 m

Required time $= \frac{220}{20} = 11\ \text{s}$

21. (c)

Principal = ₹1200

SI = ₹768

Given,

Time = Rate

t = r

$SI = \frac{P \times r \times t}{100}$

$768 = \frac{1200 \times r^2}{100}$

$\Rightarrow r^2 = \frac{768}{12} = 64$

$r = \sqrt{64}$

$r = 8\%$

22. (b)

Let principal = ₹x

Then,

$2000 = x \times \frac{10}{100} \times 2$

$x = ₹10{,}000$

$CI = 10000\left[\left(1+\frac{10}{100}\right)^2 - 1\right]$

$= 10000\left(\frac{121}{100} - 1\right) = ₹2100$

So, now interest rate on ₹2100

$r = \frac{2100 \times 100}{10000 \times 2} = \frac{21}{2} = 10.5\%$

23. (b)

Let the total cost of item = ₹ x.

According to the question,

Selling price of $\frac{2}{3}$ part of $x = \frac{2x}{3} \times \frac{106}{100} = \frac{212x}{300}$

Remaining part $= x - \frac{2x}{3} = \frac{x}{3}$

$\therefore$ The selling price of $\frac{x}{3}$ part $= \frac{x}{3} \times \frac{97}{100} = \frac{97x}{300}$

The selling price of total item $= \left(\frac{212x}{300} + \frac{97x}{300}\right) = \frac{309x}{300}$

Profit $= \frac{309x}{300} - x = 540$

$\frac{9x}{300} = 540$

$x = ₹18000$

Hence, the total cost of the item was ₹18000.

24. (a)

From question,

Cost price of 20 articles = ₹16

$\therefore$ Cost price of 1 article $= \frac{16}{20} = ₹0.8$

Given, Selling price of an article = ₹1.50

Profit = Selling price – Cost price

= 1.5 – 0.8

= ₹0.7

Profit % $= \frac{0.7}{0.8} \times 100\%$

$= \frac{7}{8} \times 100\%$

= 87.5 %

25. (b)

2x (x + y + z) = 250 …… (1)

2y (x +y+z) = 100 …… (2)

2z (x+y+z) = 100 …….. (3)

Adding the equation of (1), (2) and (3)

(x+y+z) (2x + 2y + 2z) = 450

2 $(x + y+z)^2$ = 450

$(x+y+z)^2$ = 225

x + y + z = 15

$\therefore$ From equation (1), $x = \frac{250}{30} = \frac{25}{3}$

From equation (2), $y = \frac{100}{30} = \frac{10}{3}$

From equation (3), $z = \frac{100}{30} = \frac{10}{3}$

$\therefore$ 3x + 6y + 15z

$= 3 \times \frac{25}{3} + 6 \times \frac{10}{3} + 15 \times \frac{10}{3} = 25 + 20 + 50 = 95$

26. (c)

Given,

x (x + y + z) = 30 and x, y, z > 0

y (x + y + z) = 64

z (x + y + z) = 50

(x + y + z) [x + y + z] = 30 + 64 + 50 = 144

$(x + y + z)^2 = (12)^2$

(x + y + z) = 12

Then,

2 (x + y + z)

= 2 × 12

= 24

27. (d)

$\sin x - 3\cos x = \sqrt{3}\cos x$

On multiplying by $\frac{1}{\cos x}$ both sides

or $\frac{\sin x}{\cos x} - 3\frac{\cos x}{\cos x} = \sqrt{3}$

$\tan x - 3 = \sqrt{3}$

$\tan x = 3 + \sqrt{3}$

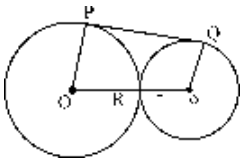
$\cot x = \frac{1}{3+\sqrt{3}} \times \frac{3-\sqrt{3}}{3-\sqrt{3}}$

$= \frac{3-\sqrt{3}}{(3)^2 - \left(\sqrt{3}\right)^2}$

$= \frac{3-\sqrt{3}}{9-3}$

$\cot x = \frac{3-\sqrt{3}}{6}$

28. (a)



$$PQ = \sqrt{d^2 - (r_1 - r_2)^2}$$

Where $d = O\,O' = (R + r)$

$r_1 = R$

$r_2 = r$

Then, $PQ = \sqrt{(R+r)^2 - (R-r)^2}$

$= \sqrt{R^2 + r^2 + 2Rr - R^2 - r^2 + 2Rr}$

$= \sqrt{4Rr}$

$PQ = 2\sqrt{Rr}$

$PQ^2 = \left(2\sqrt{Rr}\right)^2 = 4Rr$

29. (c)

0, 1, 1, 2, 2, 3, 3, 3, 4, 5

$n = 10$ (even)

$$\text{median} = \frac{1}{2}\left[\left(\frac{n}{2}\right)^{th}\text{term} + \left(\frac{n}{2}+1\right)^{th}\text{term}\right]$$

$$= \frac{1}{2}\left[\left(\frac{10}{2}\right)^{th}\text{term} + \left(\frac{10}{2}+1\right)^{th}\text{term}\right]$$

$$= \frac{1}{2}[5\text{th term} + 6\text{th term}]$$

$$= \frac{1}{2}(3+2) = \frac{5}{2} = 2.5$$

30. (b)

Number of balls = 20

$\therefore$ n (s) = 20

The number of balls marked by a number divisible by 3 or 5

= 3, 5, 6, 9, 10, 12, 15, 18 and 20

$\therefore$ n (A) = 9

Required probability $P(A) = \frac{n(A)}{n(s)} = \frac{9}{20}$

31. (a)

Just as, the rhinoceros has horns. Similarly, the elephant has tusk.

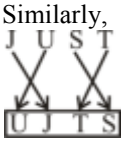
32. (b)

Just as, waiter related to restaurant. Similarly, worker is related to factory.

33.(a)

Such as,

Similarly,

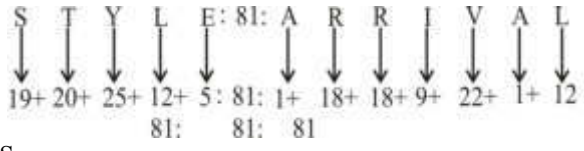


And,

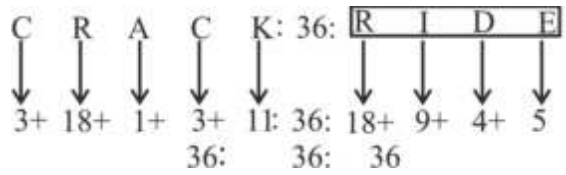
Hence option (a) is correct answer.

34. (b)

Just as,



Same as,



35. (b)

According to the question,

$R \to 4$ And $W \to 1$

$A \to 6$ $E \to 3$

$I \to 7$ $T \to 5$

$N \to 8$

Using the code of above letters,

$E \to 3$

$N \to 8$

$T \to 5$

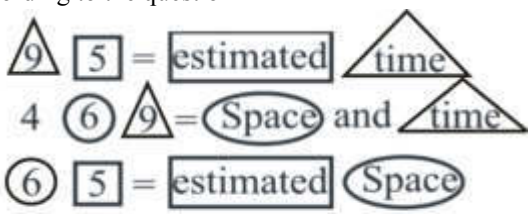
$E \to 3$

$R \to 4$

$\Rightarrow$ ENTER = 38534

36. (a)

According to the question-



Space depicts '6' in that code.

37. (a)

Just as,

P	+0 →	P
R	+1 →	S
O	-2 →	M
B	+3 →	E
L	-4 →	H
E	+5 →	J
M	-6 →	G

Same as,

S	+0 →	S
P	+1 →	Q
R	-2 →	P
I	+3 →	L
N	-4 →	J
G	+5 →	L
S	-6 →	M

Hence, SPRINGS will be written as SQPLJLM.

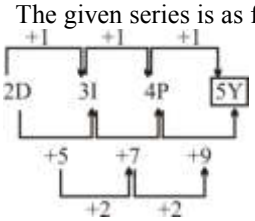
38. (d)

Just as, Team's head is called Captain. Gang's head is called Boss. Cabinet's head is called Prime Minister whereas Troupe word is used for group of artist. So, option (d) is different.

39. (a)
Principal, Dean and Director are all three official positions whereas student is different from them.

40. (a)
Except figure (a), all other figure have shapes in chronological difference while figure (a) has a pentagon, quadrilateral and hexagon inside it.

41. (b)
The given series is as follows



42.(a)
From the first column,

$$13+(7\times2)=13+14=27$$

From the second column,

$$54+(45\times2)=54+90=144$$

From the third column,

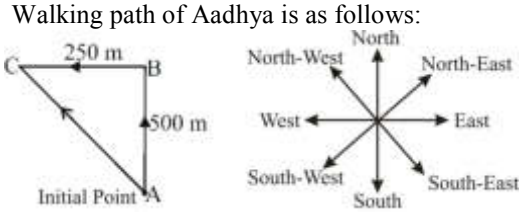
$$?+(32\times2)=68$$

$$?=68-64$$

$$\boxed{?=4}$$

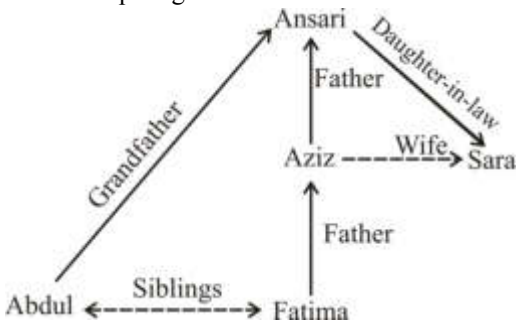
43. (d)
Figure (d) will complete the figure that comes in place of the question mark.

44. (a)
Walking path of Aadhya is as follows:



From the diagram, it is clear that Aadhya is in North-West with respect to her initial position.

45. (c)
The relationship diagram is as follows-



Hence, it is clear from the relation diagram that Sarah is Aziz's wife.

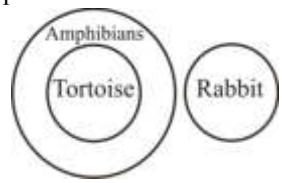
46. (a)
Given,

$$13-2\times4\div9+3$$

On changing the sign,

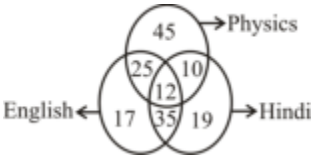
$$=13\times2+4-9\div3$$
$$=26+4-3$$
$$=30-3$$
$$=27$$

47. (d)
Tortoise is amphibians while Rabbit is mammals.



Hence, option (d) is correct.

48. (b)

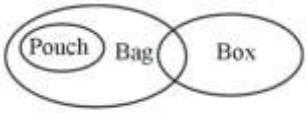


Number of those students who got distinction in only two subjects = 25 + 10 + 35 = 70

$$\text{Required percentage} = \frac{70}{350}\times100$$
$$= 20\%$$

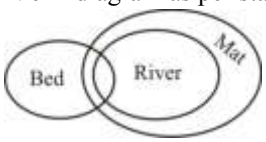
49. (d)
On arranging according to the question,
Sophia = Badminton, Football
Rohan = Badminton, Football, Hockey, Cricket.
Dinesh = Cricket, Volleyball
Rahul = Cricket, Volleyball
Naveen = Hockey, Cricket
Hence, Sophia does not play Cricket.

50. (b)
On drawing Venn-diagram-



Conclusion :
I. (✓)
II. (×)
It is clear from above diagram that only conclusion I follows.

51. (d)
On drawing the Venn diagram as per statement.



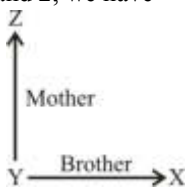
Conclusion :
I. (×)
II. (✓)
It is clear from the Venn-diagram that some beds are mats therefore, only conclusion II follows.

52. (b)
In the given statement, Y told his friend, "My children enjoy playing in our garden" from this statement both conclusions are logical.

53. (a)
Statement 'A' and 'R' both are true and 'R' is the correct explanation of 'A'.

54. (a)
Only assumption I is implicit in the given statement.

55. (c)
From statement 1 and 2, we have-



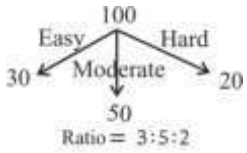
It is clear from figure that either statement 1 alone or statement 2 alone is sufficient.

56. (c)
Total number of student = 72

$$\frac{72}{3} = 24 \text{ (Group)}$$

Thus, in the 24 group which is of 3-3 student must have spoken Hindi because, the total number of Hindi speakers is 25.

57. (c)



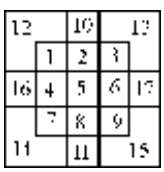
According to the question,

Section	Easy	Moderate	Hard
20	6	10	4
20	6	10	4
20	6	10	4
20	6	10	4
20	6	10	4

Total correct question solved by Sachin in three sections = $(6 + 10 + 4) \times 3 = 60$
The rest abilities easy questions = $6 + 6 = 12$
Total number of correct questions solved by Sachin = $60 + 12 = 72$
So, questions with wrong answer = $(10 \times 2) + (4 \times 2) = 28$

Therefore, expected score = $72 - \frac{28}{3} = 62.76$

58. (c)



Square formed by one-digit = 13
Square formed by two-digits
= (1,12) (3, 13) (9,15) (7, 14) = 4
Square formed by four-digits
= (1, 2, 4, 5) (2, 3, 5, 6) (4, 5, 7, 8) (5, 6, 8, 9) = 4
Square formed by seven-digits = (10, 2, 5, 1, 4, 12, 16) (16, 4, 5, 7, 8, 14, 11) (10, 2, 5, 3, 6, 13, 17) (5, 6, 17, 8, 9, 11, 15) = 4
Square formed by nine digits
= (1, 2, 3, 4, 5, 6, 7, 8, 9) = 1
Square formed by completing all digit = 1
So, total number of squares = 13 + 4 + 4 + 4 +1 +1 = 27

59.(d)
Given, time = 01:20 PM
After 58 minute time will be,
= 01:20 + 58 minute
= 02:18 PM
Hence, option (d) is corret.

60. (d)

Value per container in 1st year $= \frac{340}{400} = ₹0.85$

Value per container in 2nd year $= \frac{270}{280} = ₹0.96$

Value per container in 3rd year $= \frac{280}{350} = ₹0.80$

Value per container in 4th year $= \frac{350}{450} = ₹0.77$

Hence, it is clear that the value per container was minimum in 4th year.

61. (c)
Borobudur is a Mahayana Buddhist Monastery built between 750-850 AD, located in the city of Magelang, Central Java, Indonesia. It is still the largest Buddhist Vihar in the world. It was constructed during the Shailendra Dynasty in the 9th century.

62. (a)
Virupaksha temple is the oldest and principal temple in Hampi, Karnataka. It is located on the bank of river Tungbhadra. It has been an important pilgrimage centre for the worshipping of Lord Shiva. Krishnadevaraya was a major patron of this temple. Lakkana Dandesha who was the chieftain of Deva Raya II of Vijayanagara Empire has commissioned this temple.

63. (b)
The Ajmer Sharif Dargah is considered to be among the holiest Muslim shrines in India and is also a famous landmark in Ajmer. Khwaja Moinuddin Chishti, the Sufi saint from Persia is enshrined here in 13th century. In keeping with his secular teachings, its doors are open to people of all faiths and religions. Some say that Khwaja Moinuddin Chishti is believed to be the direct descendant of Muhammad and preached his beliefs to the masses.

64. (b)

The Bardoli Satyagraha 1928, was a movement in the independence struggle led by Sardar Vallabh Bhai Patel for the farmers of Bardoli against the unjust rise of taxes. He fought for the rights of the pleasents. It was during this very time the womens who took active part in this movement gave the title of 'Sardar' to Vallabh Bhai Patel. Vallabh Bhai Patel was popularly known as Sardar Patel. He was a freedom fighter. He served as the first Deputy Prime Minister of India. Vallabh Bhai Patel is also known as "Iron Man of India".

65. (a)

El Niño was originally recognized by fisherman of the coast of South America as the appearance of unusually warm water in the Pacific Ocean, occurring near the beginning of the year. El Niño means 'The Little Boy or Christ Child in Spanish. This name was used for the tendency of the phenomenon to arrive around Christmas.

66. (b)

Viticulture in the Mediterranean region has been improved by agronomic methods based on ecophysiological and genetic knowledge of the species and varieties cultivated. Viticulture is the science related to production and study of grapes.

67. (c)

Malwa Plateau is spread across Rajasthan, Madhya Pradesh and Gujarat with an average altitude of 500m and with total area of 83,535 km^2

68. (d)

'Right to life' is included in Article-21 of Part III of the Indian constitution. According to Article-21 of the Indian constitution, No person shall be deprived of his life or personal liberty except according to procedure established by law from time to time many rights have been included under Article 21 (By the Hon'ble Courts). After interpretation, some rights under Article 21 are Court explained article 21. It includes many rights. Like Right to health and human dignity, decent, privacy, livelihood, shelter, education, free legal aid, against inhumane treatment, travel abroad, emergency medical aid, reputation, employment, sleep, electricity etc.

69. (c)

Original Jurisdiction means that can be directly considered by the Supreme Court without going to the lower courts. Original jurisdiction of a court refers to a matter for which the particular court is approached first. In the case of the Supreme Court in India, its original jurisdiction is covered under Article-131. For example –

(1) Disputes between GOI and State.

(2) Disputes between two or more states.

70. (b)

The United Nations Educational, Scientific And Cultural Organization (UNESCO) is an international organization that promotes education, science and culture. UNESCO was founded on November 16, 1945. It has the International institute of Educational planning in Paris as its part. UNESCO'S International Institute for Educational planning was-founded in Paris, France, in 1963. The Headquarters of UNESCO is situated in Paris.

71. (d)

Organisation for Economic Co-operation and Development (OECD) is headquartered in Paris, France. The OECD was officially founded on 30 September 1961, It is an intergovernmental economic organization whose purpose is to promote economic progress and world trade. It has 38 member countries.

72. (a)

Deccan Odyssey is a luxury train which is based on the model of palace on wheels to promote tourism. It is an undertaking of Government of Maharashtra and Ministry of Railways, Government of India. This aims to be a complete 5-star hotel on wheels.

73. (a)

The Fifth Five Year Plan (1974-79)

The fifth five year plan was prepared and launched by D.P. Dhar with objectives of removal of poverty (Garibi Hatao) and attainment of self-reliance. Promotion of high rate of growth, better distribution of income and significant growth in domestic rate of savings were seen as key instruments. However, this plan was terminated one year before the plan period (in 1978).

74. (a)

Fiscal policy is the policy of government and is managed by its organs like finance commission. On the other hand RBI is responsible for monetary controls. Monetary policy is decided by Monetary Policy Committee (MPC) which consists of 6 members and which holds its meetings bimonthly.

75. (b)

Elizabeth Blackwell was a British Physician, notable as the first woman to receive as medical degree in the United States, and the first woman on the Medical register of the General Medical Council.

Rebecca Lee Crumpler was the first African-American woman physician of United States.

Anandibai Joshi was the first Indian female practitioner of western medicine, alongside Kadambini Ganguly.

Kei Okami was the first Japanese woman to obtain a degree in Western medicine from Women's Medical college of Pennsyvania, USA.

76. (a)
UNESCO (United Nations Educational Scientific and Cultural Organisation) prepares a World Heritage Site list and places them in "Places" of significant cultural or physical specialization, in this list.
As per July 2021, total 40 Heritage sites are in India in which.
Cultural sites – 32, Natural sites –7, Mixed sites –1
The correct match is -

Site	Places
Elephanta Caves	Maharashtra
Sundarban National Park	West Bengal
Sun Temple	Odissa
Fatehpur Sikri	Uttar Pradesh
Dholavira	Gujarat

77. (c)
Sahitya Akademi is located in New Delhi. The Sahitya Akademi is a India's National Academy of letters and is an organization dedicated to the promotion of literature in the languages of India. It was formally inaugurated by the government of India on 12 March 1954. It annually confers the Sahitya Akademi Award for writers of the most outstanding books of literary merit published in any of the 24 major Indian languages, i.e. English, Rajasthani and the 22 listed languages in the 8th schedule of the Indian constitution.

78. (a)
Sangai festival is an annual calendar mega event of the Government of Manipur spearheaded by Tourism Department that seeks to showcase and promote the finest of Manipur's arts and culture, adventure, sports, indigenous cuisines, handloom and handicrafts, fine arts, various other niche products to a regional, national and global audience.

79. (d)
The National film awards is presented by Ministry of Information and Broadcasting in India to felicitate the best of Indian cinema censored in the year 1953. Ceremony took place at Vigyan Bhavan, New Delhi on 10 October 1954 and awards were given by the President of India, Dr. Rajendra Prasad.

80. (b)
Mulk Raj Anand born on 12 December 1905 at Peshawar, British India (now in Pakistan) was prominent Indian author of novels, short stories, and critical essays in English, who is known for his realistic and sympathetic portrayal of the poor in India. He is considered a founder of the English language Indian novel. He gained wide recognition for his novels Untouchable (1935) and Coolie (1936), both of which examined the problems of poverty in Indian society. Among his other major works are: The Village (1939), The Sword and the Sickle (1942), and the Big Heart (1945). He passed away on 28 September 2004 in Pune.

Notable awards
- International Peace Prize - 1953
- Padma Bhushan - 1967
- Sahitya Akademi Award – 1971

81. (a)
Pravasi Bharatiya Divas is celebrated on 9 January every year since 2003 by the Republic of India to mark the contribution of the overseas Indian community towards the development of India. Mahatma Gandhi returned to India from South Africa on the same day (1915).

82. (b)
M.S. Swaminathan is known as father of Green Revolution in India. He accepted Mexican variety of wheat in order to bring self-sufficiency in Indian foodgrains. This lead to increase in production of wheat. In India the Green-revolution started in 1965-68. On world level it was started by Norman Borlaug. The main aim of Green Revolution was to increase food grains production in the country.
White Revolution- Its founder was Dr. Verghese Kurien. It is associated with increasement of milk production.
Pink Revolution- It is related with onion, meat, paultry production.
Yellow Revolution- It is related wtih production of oil seeds.

83. (a)
In June 2024, the Sahitya Akademi Yuva Puraskar 2024 was given to Gaurav Pandey for the Hindi language for his poetry collection "Smritiyon Ke Beech Ghiri Hai Prithvi" and to K. Vaishali for the English language for her work Homeless Growing Up Lesbian and Dyslexic in India.

84. (d)
Famous urdu poet and lyricist Gulzar and Sanskrit Scholar Jagadguru Rambhadracharya have been awarded the 58th Jnanpith Award for the year 2023.

85 (b)
Ozone, or tri oxygen, is an inorganic molecule with the chemical formula O_3 It is a pale blue gas with a distinctively pungent smell. It is an allotrope of oxygen that is much less stable than the diatomic allotrope O_2, breaking down in the lower atmosphere to O_2. The mix of sea salt, ship fumes and city smoke leads to a chemical reaction that encourages the formation of ozone smog. This compound is created when nitrogen oxides from ship exhausts and city smoke, mix with aerosol particles containing chloride, such as sea salt spray.

86. (a)
Work done (W) = F.d cosθ
where, F = External/applied force
d = Displacement of the body/object
θ = Angle between force and displacement
From the above equation, the work done depends upon applied force, displacement and angle between the force and displacement but does not depend upon mass or initial velocity of object/body.

87. (b)

Second law of motion expressed by Newton as follows:

The rate of change of momentum of a body is directly proportional to the applied force on the body and in the direction in which the force acts. This statement is expressed in equation form as,

$$F = ma$$

where,

F = force

m = mass of object

a = acceleration

The unit of force is $kg.m.s^{-2}$ or Newton, which is represented by symbol N. The second law of motion gives us a method to measure the force acting on an object as a product of its mass and acceleration.

88.(b)

Borosilicate glassware is used in microwave ovens because it is highly heat resistant. Borosilicate glass is made up of glass network former which are silica, boron oxide and aluminum oxide.

89. (a)

The echocardiogram is more closely related to the Doppler effect. It is a kind of ultrasound test in which invisible sound waves are examined through a transducer. This device captures the sound coming from different parts of the heart and these waves can be seen on screen through a video.

90. (d)

The equivalent anti-particles of electrons are called positrons. The positron is an elemental particle found in the electron atom, which was discovered by Carl D. Andersen in 1932 A.D., it is a positively charged particle, whose mass and charge are equal to the electron, so it is also called the electron's anti-particle.

91. (b)

Lemon Juice nature is acidic with a pH of about 2, but once metabolized it actually becomes alkaline with a pH value above 7. pH is a measure of hydrogen ion concentration, a measure of the acidity or alkalinity of a solution.

92. (a)

Calorific value:- The heat produced by the combunstion of unit weight of fuel is called its calorific value. Hydrogen gas has the highest energy value (calorific value).

93. (d)

Lymph is a fluid connective tissue which plays a major role in the process of transportation. Capillaries contain pores through which small amount of plasma, proteins and blood cells flow out into inter-cellular spaces. Lymphatic vessels present in the intestinal villi absorb fatty acids and carries the digested food and fats from the small intestine. It acts as a reservoir of digested food and water .

94. (c)

Carolus Linnaeus, the Swedish botanical taxonomist was the first person to formulate and adhere to a uniform system for defining and naming the world's plants and animals. Taxonomy is the study of naming, comparing and sorting organisms which involve all the plants, animals and microorganisms of the world. Carolus Linnaeus, who gave an organism classification, named as 'father of taxonomy'. He categorized the organism on the basis of similarities and differences.

95. (a)

Arthropoda is not related to plant kingdom. Arthropoda is probably the largest group of animals. These animals are bilaterally symmetrical and segmented. Some familiar examples are prawns, butterflies, houseflies, spiders, scorpions and crabs. Biologists, such as Ernst Haeckel (1894), Robert Whittaker (1959) and Carl Woese (1977) have tried to classify all living organisms into broad categories, called kingdom. Whittaker proposed an elaborate five kingdom classification Monera, Protista, Fungi, Plantae and Animalia.

96. (c)

Blood vessel is a vessel in the human or animal body in which blood circulates. The vesseles that carry blood away from the heart are called arteries and their small branches are arterioles. The Renal arteries are the part of circulatory system. They carry large amounts of blood from the aorta (hearts main artery) to the kidneys.

97. (a)

The part of the body which helps in consideration, understanding, memorizing and controlling voluntary and involuntary actions of human body is termed as nervous system. It is of two types:

1– Peripheral Nervous System (PNS)

2– Central Nervous System (CNS)

CNS is constituted by spinal and cranial nerves. The human body has 12 pairs of cranial nerves and 31 pairs of spinal nerves.

98. (b)

Resolution represents the number of pixels per inch printed on a page. Increasing the resolution makes the image clearer.

99. (a)

The full form of ASCII is American Standard Code For Information Interchange. It is a standard for character-encoded character for use in computers. It is arranged according to the order of the english alphabet. Standard ASCII codes have values from 0 to 127, while characters form 128 to 256 are the enhanced ASCII character set.

100. (b)

The Gir forest which is famous for Asiatic Lion is located in Gujarat. The Asiatic Lion or Persian Lion is a member of the Panthera leo, a species of leo that today survives in the wild only in India. The lion is falls into endangered category in the IUCN Red List and in Appendix-1 of the CITIES. Asiatic Lions are mainly confined to the protected area of Sasan Gir National Park in Gujarat.

PRACTICE SET - 11

1. If the sum of two numbers is 25 and the product is 136, then the sum of their cubes is :
   (a) 5425 (b) 5524
   (c) 4525 (d) 4524
2. Calculate the total prime factors in the product of $\{(16)^7 \times (27)^6 \times 5^9\}$
   (a) 28 (b) 43
   (c) 55 (d) 56
3. Which of the following is true for given numbers?
   (a) 13/33<32/47<20/47<25/27
   (b) 13/33<20/47<25/27<32/27
   (c) 13/33<20/47<32/47<25/27
   (d) 20/47<13/33<32/47<25/27
4. The sum of $\frac{1}{2}+\frac{1}{6}+\frac{1}{12}+....+\frac{1}{n(n+1)}$ is:
   (a) $\frac{n+1}{n}$ (b) $\frac{n(n+1)}{2}$
   (c) $\frac{n+1}{2n}$ (d) $\frac{n}{n+1}$
5. What is the fraction which, when subtracted from $\frac{3}{4}$, gives $\frac{2}{5}$?
   (a) $-\frac{1}{1}$ (b) $\frac{7}{20}$
   (c) $\frac{1}{20}$ (d) $\frac{3}{10}$
6. If $\frac{3}{4}$ of the weight of a brick is $\frac{7}{8}$ kg, then $\frac{5}{7}$ of the weight of the brick will be:
   (a) $\frac{20}{21}$ kg (b) $\frac{5}{6}$ kg
   (c) $\frac{5}{8}$ kg (d) $\frac{15}{32}$ kg
7. The largest five digit number, which when divided by 5, 6 and 7, gives remainder 2 in each case. What is the number?
   (a) 99958 (b) 99972
   (c) 99858 (d) 99962
8. Find the largest number which, when divides 1250 and 1615, gives remainder 4 and 5 respectively.
   (a) 13 (b) 14
   (c) 16 (d) 18
9. If the sum of two numbers is 84 and their HCF and LCM are 3 and 124 respectively, the sum of the reciprocals of the two numbers will be:
   (a) $\frac{11}{31}$ (b) $\frac{9}{31}$
   (c) $\frac{8}{31}$ (d) $\frac{7}{31}$
10. Find the largest 3-digit number that is completely divisible by 10, 8 and 12.
    (a) 940 (b) 960
    (c) 980 (d) 999
11. Seats for Mathematics, Physics and Chemistry in a school are in the ratio of 7:8:9. There is a proposal to increase the seats by 30%, 40% and 50% respectively. What will be the ratio of increased seats?
    (a) 91 : 112: 135 (b) 135 : 112 : 91
    (c) 35 : 37 :91 (d) 112 : 91: 135
12. Krishna has a few coins of 1 rupee, 50 paisa and 25 paisa in the ratio $\frac{1}{4}:\frac{1}{2}:\frac{1}{2}$. If the number of 25 paise coins is 100, then the total amount with Krishan is :
    (a) ₹100 (b) ₹75
    (c) ₹125 (d) ₹120
13. Veer spends 15% of his monthly income on the house rent and 60% of the rest on household expenditure. If he saves ₹2210, what is his monthly income ?
    (a) ₹ 6500 (b) ₹ 7500
    (c) ₹ 8000 (d) ₹ 7000
14. If the radius of a circle is decreased by 35% then its area decreases by:
    (a) $57\frac{3}{4}\%$ (b) $57\frac{2}{4}\%$
    (c) $56\frac{3}{4}\%$ (d) $57\frac{1}{4}\%$
15. The middle area of a square room of 10 m sides is covered with square tank carpet and the remaining floor is covered with oil cloth. The carpet and the oil cloth are priced at Rs. 15 and Rs. 6.5 respectively, and their total price is Rs. 1338.50. What will be the width of the oil cloth border?
    (a) 2 m (b) 5 m
    (c) 1 m (d) $\frac{1}{2}$m
16. There are two cones that have a ratio of volume 1 : 10 and a ratio of height 2 : 5. Find the ratio of their base radius.
    (a) 2:1 (b) 5:2
    (c) 7:25 (d) 1:2
17. A, B and C together can finish a work in 10 days. A and B together can finish the work in 12 days. While B and C together can finish the same work in 20 days. If B worked alone, how many days will he take to finish the work ?
    (a) 30 (b) 22
    (c) 45 (d) 20
18. A, B and C can finish a work separately in 8, 9 and 12 days respectively. C starts working alone and after one day B joins him. A also joins them even three days after the start of the work. In how many days the entire work will be finished?

(a) $3\frac{7}{29}$ (b) $3\frac{23}{29}$
(c) $4\frac{15}{23}$ (d) $1\frac{6}{23}$

19. **Jai travels from his home to school at a speed of 10 km./hr and reaches late by 5 minutes. If he increases his speed by 3 km./hr, he reaches the school 4 minutes early. What is the distance between his home and the school?**
(a) 2 km. (b) 6.5 km.
(c) 4.8 km. (d) 2.5 km.

20. **Two train of same speed are moving in opposite direction. If each trains length is 120 metre and they crosses each other in 12 seconds. Then find the speed of each train?**
(a) 72km/hr (b) 10 km/hr
(c) 18 km/hr (d) 36 km/hr

21. **At what rate will a sum of money double itself in twelve years?**
(a) 8% (b) $8\frac{1}{2}\%$
(c) $8\frac{1}{3}\%$ (d) $8\frac{1}{4}\%$

22. **A certain sum of money earns, simple interest of to ₹ 2,000 in two years at the rate of 10% p.a. if the interest on the same amount is compounded annually, then what will be the difference between the two types of interest?**
(a) ₹200 (b) ₹220
(c) ₹100 (d) ₹120

23. **A wholesaler sold a water purifier at a loss of 40%. If the selling price has been increased by ₹125, then wholesaler will get the profit of 10%. What was the cost price of the purifier?**
(a) ₹ 250 (b) ₹ 225
(c) ₹ 275 (d) ₹ 300

24. **A man bought a number of apples at 5 for ₹50 and equal number at 6 for ₹50. If he sells them at 11 for ₹100. What would be his percentage profit or loss?**
(a) $\frac{100}{121}\%$ loss (b) $\frac{100}{121}\%$ profit
(c) $\frac{121}{100}\%$ profit (d) $\frac{121}{100}\%$ loss

25. **If $x^4 + \frac{1}{x^4} = 194$, find $x^3 + \frac{1}{x^3}$**
(a) 54 (b) 56
(c) 52 (d) 62

26. **If x + 2y = 27 and x – 2y = – 1 then find the value of y.**
(a) 3 (b) 4
(c) 7 (d) 6

27. **If $2(\cos\theta + \sec\theta) = 5$, then $\sec^2\theta + \cos^2\theta$ find the value?**
(a) $\frac{4}{17}$ (b) $\frac{17}{4}$
(c) $\frac{25}{2}$ (d) $\frac{25}{2}$

28. **Each interior angle of a regular polygon measures 168°. How many sides does this polygon have?**
(a) 36 (b) 20
(c) 30 (d) 24

29. **The median of the following term was determined: 32, 12, 23, 17, 28, 25, 43. Later it was found that 17 was written by mistake instead of 29. Now what will be the changeable median?**
(a) 29 (b) 17
(c) 23 (d) 28

30. **When a pair of dice is thrown, what is the probability of the sum of numbers being odd?**
(a) 1 (b) 0.25
(c) 0.4 (d) 0.5

31. **Select the option that is related to the third term in the same way as the second term is related to the first term.**
Boxing : Round :: Badminton :?
(a) Point (b) Tournament
(c) Match (d) Game

32. **Just as, break is related to seal in the same way as talk has to.**
(a) Calm (b) Grumble
(c) Silent (d) Peace

33. **In the given letter-cluster pairs, the first letter-cluster is related to the second letter-cluster following a certain logic. Study the given pair carefully, and from the given options, select the pair that follows the same logic.**
ASD : EWH
FGH : JKL
(a) GYU : JCY (b) JKL : NOP
(c) NSP : ORQ (d) CBH : GFM

34. **Select the word from the options, which is similar to the given words in a certain manner**
Stable, Burrow, Nest
(a) Slum (b) City
(c) Herd (d) Den

35. **In a certain code language, SCHOOL is coded as the number 72. What number will FLOWER be coded as in that language?**
(a) 54 (b) 79
(c) 71 (d) 89

36. **In a certain code language, 'Ram work there' is written as 'huge tyo tre', 'Sima study there' is written as 'noe dow tre' and 'Ram study here' is written as 'huge dow try', then how will 'Ram there' and 'Sima work' be written as in that language respectively?**
(a) 'try dow' and 'huge tyo'
(b) 'noe tyo' and 'huge dow'
(c) 'huge tre' and 'noe tyo'
(d) 'huge tyo' and 'dow tre'

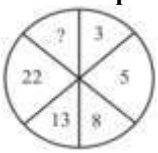
37. **In a certain code language LIVE is written as OREV then how is DEAD written in that code?**
(a) XVZX (b) UVZU
(c) GVZG (d) WVZW

38. **Four awards have been listed, out of which three are alike in some manner and one is different. Select the odd one.**
(a) Padma Vibhushan (b) Padma Bhushan
(c) Param Vir Chakra (d) Padma Shri

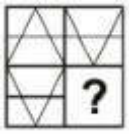
39. **Out of the four words listed, three are alike in some manner and one is different. Select the odd one.**
(a) Umpire (b) Pitch
(c) Boundary (d) Ground

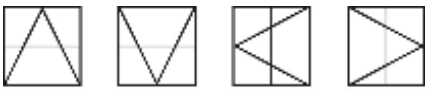
40. **Identify odd one out of the given figures.**
(a)  (b) 
(c)  (d) 

41. **Select the alphanumeric cluster from among the given option that can replace the question mark (?) in the following series.**
D4C3B2A1, H8G7F6E5, L12K11J10I9, ?
(a) P16O15N14M13 (b) P16R15S14T13
(c) Q17P16O15N14 (d) M15N16O17P18

42. **Find the number in the place of question mark**


(a) 45 (b) 29
(c) 39 (d) 37

43. **Select that answer figure which will come in the place of '?' in question figure series**


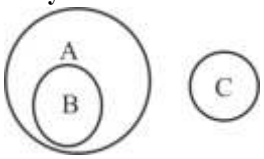


(a) D (b) B
(c) C (d) A

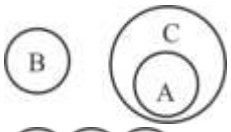
44. **Balaji walks 8 meter straight and then turns left and walks 5 meters. He then turns left and now north is in front of him. Now in which direction is he from the starting point?**
(a) North-East (b) South-West
(c) South-East (d) North-West

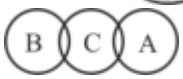
45. **Pointing towards a man, Vivek said, "His only brother is the father of my daughter's father". From among the given options, how could the man be related to Vivek?**
(a) Father-in-law (b) Brother
(c) Uncle (d) Father

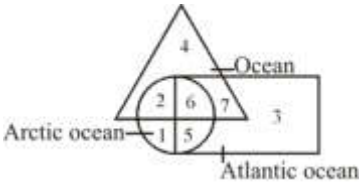
46. **If '+' means '×', '–' means '÷', '×' means '–' and '÷' means '+', then which of the following equations is correct?**
(a) $8 \div 2 \times 6 + 8 - 4 = 2$
(b) $8 + 6 \div 12 \times 4 - 2 = 58$
(c) $12 - 4 \times 2 \div 5 + 4 = 25$
(d) $7 \times 9 \div 6 - 3 + 2 = 6$

47. **Which of the following diagrams correctly represents the relationship between the given classes?**
A. Blood
B. Wheat
C. Body
(a) 

(b) 

(c) 

(d) 

48. **In the given figure, the circle denotes the Arctic Ocean, the triangle represents the Ocean and the rectangle represents the Atlantic Ocean. Which area represents the Ocean and the Atlantic Ocean but not the Arctic Ocean?**


(a) 2 (b) 5
(c) 7 (d) 6

49. **Vimal and Kamal are good at Piano and Guitar, Rima and Sima are good at Hockey and Guitar, Rima, Komal and Rina are good at Hockey and Chess. Rina and Rima are good at Piano and Badminton. Komal and Sobha are good at Chess and Piano. Who is good at Hockey, chess and Badminton but NOT at Guitar?**
(a) Komal (b) Sima
(c) Rina (d) Rima

50. **Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow (s) from the statements.**
Statements:
I. Some bats are balls.
II. All recquets are tables.
III. All balls are recquets.

Conclusions:

I. Some bats are recquets.

II. All racquets are balls.

III. All tables are bats.

IV. All racquets are bats.

(a) Only III and IV follow

(b) Only conclusion II follows

(c) Only conclusions I and II follow

(d) Only conclusion I follows

51. Statement :

Some pins are sharp.

All sharps are metals.

Conclusion :

1. All metals are pins.

2. Some metals are sharps.

(a) Only conclusion 1 follows

(b) Only conclusion 2 follows

(c) No Conclusion follows

(d) Both conclusion follow

52. Statement:

Most of the clothes in this outlet are old fashioned.

Conclusion:

1. Some clothes of the shop are no longer in fashion.

2. The shop is about to close soon.

(a) Only conclusion I follows.

(b) Only conclusion II follows.

(c) Conclusion I or II follows.

(d) Conclusion I and II follows.

53. Read the given statement and conclusions carefully and decide which of the conclusions logically follow(s) from the statement.

Statement:

Despite sufficient availability of books in the libraries of educational institutions, majority of students studying in urban area's educational institutions have started using mobile phones or other electronic equipment as the main resource for seeking on/offline study material; as a consequence, there is severe decline in the use of books as study material.

Conclusions:

1) Methods of book reading should be devised.

2) A study should be conducted to know about the status of book reading.

(a) Only conclusion 1 follows

(b) Either conclusion 1 or 2 follows

(c) Neither conclusion 1 nor 2 follows

(d) Only conclusion 2 follows.

54. Statement:

Karan is a versatile writer. His comic and fictional novels are very famous among youngsters.

Assumption:

I. Karan is capable of adopting to various writing styles.

II. All writers are versatile

(a) Only assumption II implicit

(b) Both assumption I and II implicit

(c) Only assumption I implicit

(d) Neither assumption I nor II implicit

55. Question:

Gautam is at eighteen place in a class. From the end what is his rank?

Statement:

I. There are 47 students in the class.

II. Jegan who is 10th place in the same class. He is at 38th place from the end.

(a) Statement 1 alone is sufficient.

(b) Both statement are needed simultaneously.

(c) Statement 2 alone is sufficient.

(d) Either statement 1 or II is sufficient.

56. Arrange the given words in alphabetical order

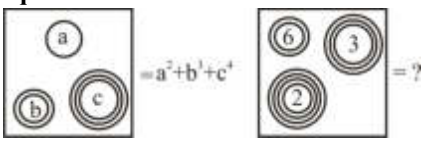
A. mild **B. moderate**

C. severe **D. profound**

(a) A, C, B, D (b) A, D, B, C

(c) A, B, C, D (d) A, B, D, C

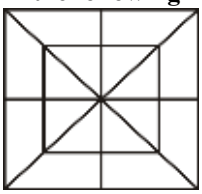
57. Identify the number that will replace the question mark(?) in the second equation based on the relationship represented in the first equation.



(a) 36 (b) 329

(c) 79 (d) 420

58. What is the minimum number of straight lines in the following figure.



(a) 12 (b) 13

(c) 14 (d) 16

59. What is the elapsed time period between 5:47 pm of 21 June, 2027 to 5:39 pm of 22 June, 2028?

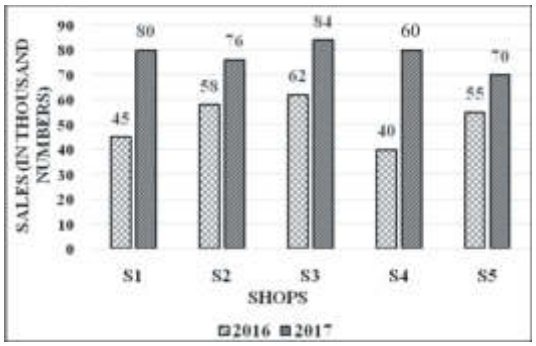
(a) 365 days 23 hours 52 minute

(b) 367 days 8 minute

(c) 366 days 23 hours 52 minute

(d) 366 days 8 minute

60. The given graph shows the sales of hard drives (in thousand numbers) from five different shops S1, S2, S3, S4, S5 in the years 2016 and 2017



What is the ratio of total sales in all the shops in 2016 to that of the total sales in all the shops in 2017?

(a) 74 : 52 (b) 31 : 42
(c) 45 : 80 (d) 26 : 37

61. The concept of Triratna is related to ____.

(a) Sikhism
(b) Jainism
(c) Buddhism
(d) Zoroastrianism (Parsiya)

62. Which of these dynasties is not associated with south India?

(a) Pandya (b) Pal
(c) Satavahana (d) Pahlavas

63. Who was the founder of the social reform movement for Sikhism - the Nirankari movement?

(a) Baba Balak Singh (b) Baba Gurmeet Dev
(c) Shri Sohan Singh (d) Baba Dyal Das

64. Who founded the Servants of India society?

(a) Swami Dayanand Sarswati
(b) Bal Gangadhar Tilak
(c) Jyotiba Phule
(d) Gopal Krishna Gokhale

65. The "10 Degree Channel" is related to.....

(a) Andaman and Nicobar Islands
(b) Gulf of Kachch
(c) Lakshadweep islands
(d) Malabar Coast

66. The origin of caste is happen when this is a difference of.....

(a) Geographical Isolation
(b) Climate change
(c) Change due to earthquake
(d) Change due to cyclone

67. Which among the following states has the longest mainland coastline in India?

(a) Gujarat (b) Odisha
(c) Tamil Nadu (d) Maharashtra

68. In July 2022, the Supreme Court of India gave an order giving more power to the right to be forgotten, which has been acknowledged as a fact of the right to privacy by the top court in its 2017 landmark judgment; the new order is related to _____.

(a) medical history
(b) print media
(c) phone calls
(d) search engines and internet

69. The State Election Commission does NOT conduct elections to _____.

(a) State Legislative Assemblies
(b) Town Municipal Councils
(c) Gram Panchayats
(d) Muncipal Corporations

70. Which of the following countries is not a part of the European Union?

(a) Greece (b) Germany
(c) Hungary (d) Argentina

71. Which Indian city was included in the UNESCO Creative Cities Network in 2017 for its rich musical tradition?

(a) New Delhi (b) Lucknow
(c) Chennai (d) Bengaluru

72. Which one of these comprises the Golden Quadrilateral?

(a) Delhi-Mumbai-Chennai-Kolkata
(b) Delhi-Jaipur-Agra-Meerut
(c) Delhi-Mumbai-Bangalore-Kolkata
(d) Delhi-Pune-Chennai-Bhubaneshwar

73. Who gave the term 'Hindu rate of growth', which referred to as the low growth rate period in the Indian economy?

(a) Jagdish Bhagwati (b) Kaushik Basu
(c) Amartya Sen (d) Raj Krishna

74. Which of the following is NOT a GST rate slab in India?

(a) 28% (b) 10%
(c) 18% (d) 5%

75. Who was the first woman to reach the summit of Mount Everest?

(a) Bachendri Pal (b) Junko Tabei
(c) Arunima Sinha (d) Premlata Agrawal

76. Valley of Flowers National Park declared as a World Heritage Site of UNESCO and is located in which state?

(a) Karnataka (b) Jammu and Kashmir
(c) Sikkim (d) Uttarakhand

77. The Sahitya Academy is mainly devoted to promote which field?

(a) Drama (b) Music
(c) Literature (d) Dance style

78. What is ' Jallikattu'?

(a) A traditional bull-taming sport popular in Tamil Nadu
(b) A popular watersport enjoyed by the Marina beach, Chennai
(c) A bull worship festival at Pashupatinath temple, Nepal
(d) The traditional name for "People's Leader" in Tamil

79. **The United Nations University is located in:**
(a) Beijing, China (b) Stockholm, Sweden
(c) Tokyo, Japan (d) London, England

80. **Who among the following has compiled 'The wings of fire'?**
(a) K. R. Narayan (b) Pranab Mukherjee
(c) A.P.J. Abdul Kalam (d) V.S. Naipaul

81. **India celebrates 29 August as National sports day in whose honor?**
(a) J.Shrinath (b) Milkha Singh
(c) Major Dhyan Chand (d) P.T. Usha

82. **Which of the following is the kharif crop?**
(a) Maize (b) Millet
(c) Onion (d) Wheat

83. **Which country has launched the world's first '6G device' in May, 2024 ?**
(a) Russia
(b) Indonesia
(c) Japan
(d) Australia

84. **Who took oath for fourth Prime Minister of 'Singapore' in May, 2024 ?**
(a) Lawrence Wong
(b) Mikhail Mishustin
(c) Jaremiah Manele
(d) Luis Montenegro

85. **Which of the following pairs (Species-Category) is correct with respect to India?**
(a) Great Hornbill - Vulnerable
(b) Black Buck - Rare
(c) Nicobar Pigeon - Endangered
(d) Asiatic Elephant - Endemic

86. **The materials through which objects can be seen but not clearly are called _____ materials**
(a) Translucent (b) Transparent
(c) Opaque (d) Lustre

87. **The ..... oval spot in the human eye is the area of best vision**
(a) yellow (b) white
(c) green (d) blue

88. **An integrated circuit, also called an IC chip, is a group of electronic circuits built on a small plate made up of .....**
(a) copper (b) silicon
(c) silica (d) chromium

89. **In the 1940s, some great scientists tried to purify uranium and manufacture atom bomb. What was the name of this project?**
(a) Manhattan Project
(b) Atomic Heritage
(c) Pearl Harbor Project
(d) Los Alamos Project

90. **Which of the following gases makes up 78% of our atmosphere and also a part of many element essential to life?**
(a) Carbon (b) Helium
(c) Nitrogen (d) Oxygen

91. **The most active ingredient of bleaching powder is.**
(a) Iodine
(b) Calcium hypochloride
(c) nitric acid
(d) ammonium sulphate

92. **What is the main component of LPG?**
(a) Methane (b) Propane
(c) Ethane (d) Butane

93. **Which one of the following statement is NOT correct?**
(a) The stapes in the middle ear is the smallest bone of the human skeleton.
(b) Appendix is a vestigial organ present in the human body.
(c) Bone marrow produces red blood cells in the human body.
(d) The human vertebral column has 33 vertebrae.

94. **What is full name of A.D.H.?**
(a) Anti-diuretic hormone
(b) Acidic diuretic hormone
(c) Adhesive diuretic hormone
(d) Adhesive double hormone

95. **What is the common name of E300?**
(a) Vitamin B (b) Vitamin C
(c) Vitamin B (d) Vitamin A

96. **Bryophyte is related with which kind of vegetation?**
(a) Cladophora (b) Devdar
(c) Marchantia (d) Water clover

97. **'Tropism' mostly refers to the-**
(a) Directional growth of a plant
(b) Longevity of animal species
(c) Bird migration
(d) Behavioral patterns of human

98. **Which of the following is not an operating system?**
(a) OS X (b) Windows 7
(c) DOS (d) C^{++}

99. **What is the meaning of letter 's' in 'https' Protocol ?**
(a) Scale (b) Save
(c) Software (d) Secure

100. **What is the full name of UNFCCC?**
(a) United Nations Framework Convention on Climate Change
(b) United Nations Framework on Climate Change Convention
(c) United Nations Federation of Climate Change Convention
(d) United Nations Federation Convention on Climate Change

SOLUTION : PRACTICE SET- 11

ANSWER KEY

1. (a)	11. (a)	21. (c)	31. (d)	41. (a)	51. (b)	61. (b/c)	71.(c)	81. (c)	91. (b)
2. (c)	12. (c)	22. (c)	32. (c)	42. (c)	52. (a)	62. (b)	72. (a)	82. (b)	92. (d)
3. (c)	13. (a)	23. (a)	33. (b)	43. (d)	53. (c)	63. (d)	73. (d)	83. (c)	93.(d)
4. (d)	14. (a)	24. (a)	34. (d)	44. (c)	54. (c)	64. (d)	74. (b)	84. (a)	94. (a)
5. (b)	15. (d)	25. (c)	35. (b)	45. (c)	55.(d)	65. (a)	75. (b)	85. (a)	95. (b)
6.(b)	16. (d)	26. (c)	36. (c)	46. (b)	56. (d)	66. (a)	76. (d)	86. (a)	96. (c)
7. (d)	17. (a)	27. (b)	37. (d)	47. (c)	57. (b)	67. (a)	77. (c)	87. (a)	97.(a)
8. (b)	18. (c)	28. (c)	38. (c)	48. (c)	58. (a)	68. (d)	78. (a)	88.(b)	98. (d)
9. (d)	19. (b)	29. (d)	39. (a)	49. (c)	59. (c)	69. (a)	79. (c)	89.(a)	99. (d)
10. (b)	20. (d)	30. (d)	40. (d)	50. (d)	60. (d)	70. (d)	80. (c)	90. (c)	100. (a)

SOLUTION

1. (a)

Let the numbers be a and b respectively.

According to the question

$a + b = 25$

$ab = 136$

$\because [a^3 + b^3 = (a+b)(a^2 + b^2 - ab)]$

$(a+b)^2 = (25)^2$ (On squaring both side)

$a^2 + b^2 + 2ab = 625$

$a^2 + b^2 = 625 - 272$

$a^2 + b^2 = 353$

$a^3 + b^3 = 25 \times (353 - 136)$

$a^3 + b^3 = 25 \times 217$

$a^3 + b^3 = 5425$

2. (c)

Total prime factors $\{(16)^7 \times (27)^6 \times 5^9\}$

$= (2^4)^7 \times (3^3)^6 \times 5^9$

$= 2^{28} \times 3^{18} \times 5^9$

$= 28 + 18 + 9 = 55$

3. (c)

The given fractions–

$\frac{13}{33} = 0.\overline{39}, \frac{20}{47} = 0.42$

$\frac{32}{47} = 0.68, \frac{25}{27} = 0.92$

$0.\overline{39} < 0.42 < 0.68 < 0.92$

Hence, $\frac{13}{33} < \frac{20}{47} < \frac{32}{47} < \frac{25}{27}$ is true.

4. (d)

$\frac{1}{2} + \frac{1}{6} + \frac{1}{12} + \ldots\ldots + \frac{1}{n(n+1)}$

$= \frac{1}{1\times 2} + \frac{1}{2\times 3} + \frac{1}{3\times 4} + \ldots\ldots + \frac{1}{n(n+1)}$

$= \frac{1}{1} - \frac{1}{2} + \frac{1}{2} - \frac{1}{3} + \frac{1}{3} - \frac{1}{4} + \ldots\ldots + \frac{1}{n} - \frac{1}{(n+1)}$

$= \frac{1}{1} - \frac{1}{(n+1)}$

$= \frac{n+1-1}{n+1} = \frac{n}{n+1}$

5. (b)

Let the fraction be $\frac{x}{y}$.

According to the question,

$\frac{3}{4} - \frac{x}{y} = \frac{2}{5}$

$\Rightarrow \frac{x}{y} = \frac{3}{4} - \frac{2}{5}$

$\Rightarrow \frac{x}{y} = \frac{15-8}{20}$

$\frac{x}{y} = \frac{7}{20}$

6.(b)

Let the weight of the brick is x kg.

According to the question,

$\frac{3x}{4} = \frac{7}{8}$

$x = \frac{7}{8} \times \frac{4}{3}$

Hence $\frac{5x}{7} = \frac{7}{8} \times \frac{4}{3} \times \frac{5}{7}$

$\frac{5x}{7} = \frac{5}{6}$

Hence $\frac{5}{7}$ of weight of the bricks will be $\frac{5}{6}$ Kg.

7. (d)

The largest five digit number = 99999

LCM of 5, 6 and 7 = $5\times6\times7 = 210$

So,

$$210\overline{)99999}\,(476$$
$$840$$
$$1599$$
$$1470$$
$$1299$$
$$1260$$
$$39$$

Remainder = 39

Hence, the number = 99999 – 39 = 99960

But in each condition remainder is 2, so the required number = 99960 + 2 = 99962

8. (b)

1250 – 4 = 1246

1615 – 5 = 1610

HCF of 1246 and 1610 = 14

$$1246\overline{)1610}\,(1$$
$$1246$$
$$364\overline{)1246}\,(3$$
$$1092$$
$$154\overline{)364}\,(2$$
$$308$$
$$56\overline{)154}\,(2$$
$$112$$
$$42\overline{)56}\,(1$$
$$42$$
$$14\overline{)42}\,(3$$
$$42$$
$$\times\times$$

Hence the required number is = 14

9. (d)

Let the first and second numbers are Ha and Hb respectively.

$$L = Hab \Rightarrow 124 = 3ab$$
$$ab = \frac{124}{3}$$

And $H(a + b) = 84 \Rightarrow (a + b) = 28$

Then, $\frac{1}{Ha}+\frac{1}{Hb}=\frac{Ha+Hb}{Ha\times Hb}$

$$=\frac{H(a+b)}{H^2ab}$$
$$=\frac{(a+b)}{Hab}=\frac{28}{124}=\frac{7}{31}$$

10. (b)

LCM of 10, 12 and 8

2	10, 8, 12
2	5, 4, 6
2	5, 2, 3
3	5, 1, 3
5	5, 1, 1
	1, 1, 1

LCM = 2 ×2×2×3×5 = 120

The largest 3-digit number = 999

According to the question-

$$120\overline{)999}\,(8$$
$$960$$
$$39$$

Hence, the required number = 999 – 39 = 960.

11. (a)

Ratio = 7 : 8 : 9

Increase = 30%, 40%, 50%

Let the ratio → 70 : 80 : 90

According to the question,

Number of seats in Mathematics $=\frac{70\times130}{100}=91$

Number of seats in Physics $=\frac{80\times140}{100}=112$

Number of seats in Chemistry $=90\times\frac{150}{100}=135$

Ratio of increased seats = 91 : 112 : 135

12. (c)

The ratio of 1 rupee, 50 paisa and 25 paisa

$$=\frac{1}{4}:\frac{1}{2}:\frac{1}{2}=1:2:2$$

Let Krishna has the number of coins of ₹1, 50 paisa and 25 paisa be x, 2x and 2x respectively.

According to the question

Number of coins of 25 paisa (2x) = 100

$$x=\frac{100}{2}=50$$

Total amount with Krishna

$$=50\times1+2\times50\times\frac{1}{2}+50\times2\times\frac{1}{4}$$

50 + 50 + 25 = ₹ 125

13. (a)

Let the monthly income of Veer = ₹x

According to the question,

$$\frac{(100-15)}{100}\text{ of }\frac{(100-60)}{100}\text{of x}=2210$$
$$x\times\frac{85}{100}\times\frac{40}{100}=2210$$
$$x=\frac{2210\times100\times100}{85\times40}=₹6500$$

14. (a)

Let, radius of circle (r) = 100 units

∴Area of circle = $\pi r^2 = \pi \times 100 \times 100$

$= \pi\ 10000$

Radius of circle when reduced by 35% (R) = 65 units

∴ Area of circle = $\pi R^2 = \pi \times 65 \times 65$

$= \pi\ 4225$

∴ % decrease in area = $\frac{\pi(10000-4225)}{\pi10000}\times100$

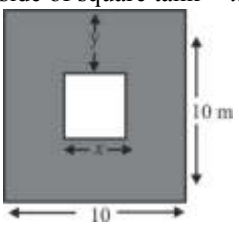
$$= \frac{5775}{100} = 57 \cdot 75\ \%$$

$$= 57\frac{3}{4}\ \%$$

Hence, there will be a decrease of $57\frac{3}{4}\%$ in the area.

15. (d)

Let the side of square tank $= x$ m.



$\therefore$ Area of square shape tank (which cover with carpet) $= x^2$

Area of oil cloth's $= 10 \times 10 - x^2$

$= 100 - x^2$

$\therefore \quad 15x^2 + 6.50\,(100 - x^2) = 1338.50$

$15x^2 + 650 - 6.5\,x^2 = 1338.50$

$8.5\,x^2 = 688.50$

$x^2 = \frac{688.5}{8.5}$

$x^2 = 81$

$x = 9$

$\therefore$ Breadth of oil cloth's border $= \frac{10 - x}{2}$

$= \frac{10 - 9}{2} = \frac{1}{2}$ m

16. (d)

$V_1 : V_2 = 1 : 10$

$h_1 : h_2 = 2 : 5$

$$\frac{V_1}{V_2} = \frac{\frac{1}{3}\pi r_1^2 h_1}{\frac{1}{3}\pi r_2^2 h_2}$$

$$\frac{1}{10} = \frac{r_1^2 \times 2}{r_2^2 \times 5}$$

$$\frac{1}{2} = \frac{r_1^2 \times 2}{r_2^2 \times 1}$$

$$\boxed{r_1 : r_2 = 1 : 2}$$

17. (a)

One day work of (A+B+C) $= \frac{1}{10}$ ..... (i)

One day work of (A + B) $= \frac{1}{12}$ ..... (ii)

One day work of (B + C) $= \frac{1}{20}$ ..... (iii)

From equation (ii) + equation (iii)

$$B + (A + B + C) = \frac{1}{12} + \frac{1}{20}$$

$$\Rightarrow \quad B + \frac{1}{10} = \frac{1}{12} + \frac{1}{20} \qquad \{\text{From equation (i)}\}$$

$$\Rightarrow \quad B = \frac{1}{12} + \frac{1}{20} - \frac{1}{10}$$

$$\Rightarrow \quad B = \left(\frac{5 + 3 - 6}{60}\right)$$

$$\Rightarrow \quad B = \frac{2}{60}$$

$$\Rightarrow \quad B = \frac{1}{30}$$

Hence B will complete the work in 30 days.

18. (c)

Let C alone worked for x days

$$\frac{x-3}{8} + \frac{x-1}{9} + \frac{x}{12} = 1$$

$$\frac{9x - 27 + 8x - 8 + 6x}{72} = 1$$

$23x - 35 = 72$

$23x = 72 + 35$

$23x = 107$

$x = \frac{107}{23}$

$x = 4\frac{15}{23}$

Hence entire work will be finished in $4\frac{15}{23}$ days

19. (b) From the question-

Let the distance covered by Jai = d

$\because \quad d = vt$

According to the question,

$$d = 10 \times \left(t + \frac{5}{60}\right) \qquad \text{..... (i)}$$

and $$d = 13 \times \left(t - \frac{4}{60}\right) \qquad \text{.....(ii)}$$

From equation (i) and (ii),

$$10 \times \left(t + \frac{5}{60}\right) = 13 \times \left(t - \frac{4}{60}\right)$$

$$10t + \frac{50}{60} = 13t - \frac{52}{60}$$

$$\frac{50}{60} + \frac{52}{60} = 13t - 10t$$

$$\frac{102}{60} = 3t$$

$$t = \frac{34}{60}$$

Putting the value of t in equation (i)

$$d = 10 \times \left(\frac{34}{60} + \frac{5}{60}\right)$$

$$d = 10 \times \frac{39}{60} \Rightarrow d = 6.5 \text{ km.}$$

20. (d)

From the question-

Let the length of train is l_1 and l_2

$\because$ $l_1 = l_2 = 120$ metre

According to the question it is given that–

$V_1 = V_2 = V$

$\therefore$ $V_1 + V_2 = \frac{l_1 + l_2}{T}$

$V + V = \frac{120+120}{12} = \frac{240}{12} = 20$

$2V = 20$

$V = 10\text{m/s}$

$V = 10 \times \frac{18}{5} = 36\text{ km/h}$

21. (c)

Let Principal = ₹ P

Amount = ₹ 2P

Rate = r % per annual

Time = 12 Years

Simple interest = 2P – P = ₹ P

$\therefore P = \frac{P \times r \times 12}{100}$

$r = \frac{100}{12} = \frac{25}{3}$

$r = 8\frac{1}{3}\%$

22. (c)

Let Principal = ₹x

$\because$ Simple interest = $\frac{P \times R \times T}{100}$

$2000 = \frac{x \times 10 \times 2}{100}$

$x = ₹10000$

$\therefore$ Compound interest for 2 years $= P\left[\left(1+\frac{R}{100}\right)^T - 1\right]$

$= 10000\left[\left(1+\frac{10}{100}\right)^2 - 1\right]$

$= 10000\left[\frac{121}{100} - 1\right]$

$= 10000 \times \frac{21}{100} = ₹2100$

$\therefore$ Difference between CI and SI = 2100 – 2000 = ₹100

23. (a) From the question-

Let the cost price of the water purifier is ₹ x.

According to the question,-

$x \times \frac{(100-40)}{100} + 125 = \frac{x \times 110}{100}$

$\frac{60x}{100} + 125 = \frac{110x}{100}$

$\frac{50x}{100} = 125$

$\frac{x}{2} = 125$

$x = 125 \times 2 = 250$

24. (a)

Cost price of 1 apple bought at the rate of 5 in ₹50 = ₹$\frac{50}{5}$

Cost price of 1 apple bought at rate of 6 in ₹50 = ₹$\frac{50}{6}$

Cost price of two apples (one rate of 5 + one rate of 6)

$= \frac{50}{5} + \frac{50}{6} = ₹\frac{55}{3}$

$\therefore$ Cost price of 1 apple = $\frac{55}{2 \times 3}$

= ₹ (55/6)

Selling price of 1 apple = ₹ (100/11)

$\therefore$ Loss% = $\frac{605-600}{\frac{66}{(55/6)}} \times 100$

Loss% = $\frac{100}{121}\%$

25. (c)

Given,

$x^4 + \frac{1}{x^4} = 194, \quad x^3 + \frac{1}{x^3} = ?$

Let,

$x^4 + \frac{1}{x^4} = k_1$

$\therefore$ $x^2 + \frac{1}{x^2} = \sqrt{k_1 + 2}$

$x^2 + \frac{1}{x^2} = \sqrt{194 + 2}$

$x^2 + \frac{1}{x^2} = 14 = k_2$

Again-

$x + \frac{1}{x} = \sqrt{k_2 + 2}$

$x + \frac{1}{x} = \sqrt{14 + 2}$

$x + \frac{1}{x} = 4$ ..... (I)

$\because \left(x + \frac{1}{x}\right)^3 = x^3 + \frac{1}{x^3} + 3x \times \frac{1}{x}\left(x + \frac{1}{x}\right)$

From equation (I)–

$$4^3 = x^3 + \frac{1}{x^3} + 3 \times 4$$

$$x^3 + \frac{1}{x^3} = 64 - 12$$

$$\boxed{x^3 + \frac{1}{x^3} = 52}$$

26. (c)

$x + 2y = 27$ .....(1)

$x - 2y = -1$ .....(2)

$\therefore$ Equation (1) − equation (2)

$x + 2y = 27$

$x - 2y = -1$

$\underline{- \quad + \quad +}$

$4y = 28$

$y = 7$

27. (b)

Given,

$$2(\cos\theta + \sec\theta) = 5$$

$$\cos\theta + \sec\theta = \frac{5}{2}$$

On squaring both sides,

$$(\cos\theta + \sec\theta)^2 = \left(\frac{5}{2}\right)^2$$

$$\cos^2\theta + \sec^2\theta + 2\cos\theta.\sec\theta = \frac{25}{4}$$

$$\cos^2\theta + \sec^2\theta + 2 = \frac{25}{4}$$

$$\cos^2\theta + \sec^2\theta = \frac{25}{4} - 2$$

$$\cos^2\theta + \sec^2\theta = \frac{17}{4}$$

28. (c)

Each interior angle of regular polygon

$$= \frac{(n-2)180^\circ}{n}$$

$$\frac{(n-2)180^\circ}{n} = 168^\circ$$

$45n - 90^\circ = 42n$

$3n = 90$

$n = 30$

Hence number of sides of polygon = 30

29. (d)

32, 12, 23, 17, 28, 25, 43

After replacing 17 with 29 and arranging in ascending order to the given data–

12, 23, 25, 28, 29, 32, 43

n = 7 (odd)

$$\text{median} = \left(\frac{n+1}{2}\right)^{th} \text{ term}$$

$$= \left(\frac{7+1}{2}\right)^{th} \text{ term} = 4\text{th term} = 28$$

30. (d)

When two dice are thrown,

The probability of occurrence of some event is n (s) = 36

The probability of odd sum of numbers = n (E) = 18

$\therefore$ The probability that the sum is odd = $\frac{n(E)}{n(S)} = \frac{18}{36} = \frac{1}{2} = 0.5$

31. (a)

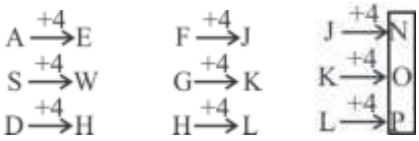
Just as, boxing is related to the round, in the same way badminton will be related to point.

32. (c)

Just as, Break is opposite of seal in the same way as Talk is opposite of silent.

33. (b)

Just as, and Same as,



34. (d)

In the given alternatives the words are same as given in the original words, because the stables are for animals (domestic), nest for birds, burrows for rats, snakes etc and dens for lions.

35. (b)

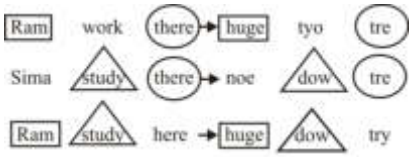
Just as,

SCHOOL $\Rightarrow$ 19+3+8+15+15+12 = 72

Same as,

FLOWER $\Rightarrow$ 6+12+15+23+5+18 = 79

36. (c)



'Ram there' will be written as 'huge tre' and 'Sima work' will be written as 'noe tyo'.

37. (d)

Just as, LIVE is coded as their opposite letters and written as OREV. Similarly, when DEAD coded in opposite letters, we will get option (d) = WVZW

38. (c)

Param Vir Chakra is the honour given for the extraordinary valor and sacrifice of the soldiers. It was also given to the soldiers posthumously.

While, the Padma Vibhushan, Padma Bhushan and Padma Shri awards are given for exceptional and outstanding work in any field.

39. (a)

Pitch, Boundary and Ground are the venues related to the game, whereas, the umpire is the main person responsible for decisions of game.

40. (d)

In the given figures, inside the figures shaded square and rod are diagonally of each other while in the figure 'd' both are face to face.

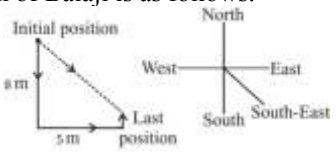
41. (a)
Given series follows as –

D	+4 →	H	+4 →	L	+4 →	P
4	+4 →	8	+4 →	12	+4 →	16
C	+4 →	G	+4 →	K	+4 →	O
3	+4 →	7	+4 →	11	+4 →	15
B	+4 →	F	+4 →	J	+4 →	N
2	+4 →	6	+4 →	10	+4 →	14
A	+4 →	E	+4 →	I	+4 →	M
1	+4 →	5	+4 →	9	+4 →	13

42. (c)
It is clear from the above diagram that
$3 \times 2 - 1 = 5$
$5 \times 2 - 2 = 8$
$8 \times 2 - 3 = 13$
$13 \times 2 - 4 = 22$
$22 \times 2 - 5 = \boxed{39}$
Hence, 39 will become in place of question mark.

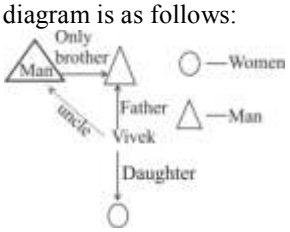
43. (d)
Figure A will complete the question figure.
So, option (d) is correct.

44. (c)
Walking path of Balaji is as follows:



Hence, he is in South-East direction from his initial position.

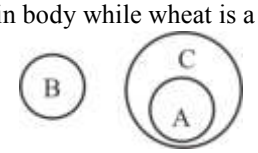
45. (c)
Blood relation diagram is as follows:



It is clear from the blood relation diagram that the man will be uncle of Vivek.

46. (b)
On taking option (b),
$8 + 6 \div 12 \times 4 - 2 = 58$
According to the question, on changing symbols:
L.H.S = $8 \times 6 + 12 - 4 \div 2$
$48 + 12 - 2$
$60 - 2$
$58 = R.H.S$

47. (c)
Blood is found in body while wheat is a type of crop.

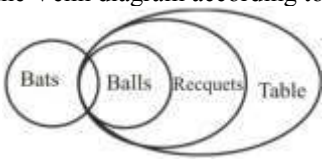


Hence, option (c) is correct.

48. (c)
From the given figure it is clear that 7 is a number which belongs to the triangle an rectangle let the circle, so 7 represents the ocean and the Atlantic ocean but not the arctic ocean.

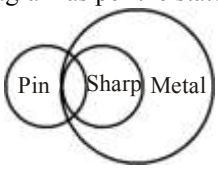
49. (c)
According to the question,
Vimal + Kamal – Piano, Guitar
Rima + Sima – Hockey, Guitar
Rima + Komal + Rina – Hockey, Chess
Rima + Rina – Piano, Badmintan
Komal + Sobha – Chess, Piano
Hence, Rina is good at Hockey, Chess and Badminton but not at Guitar.

50. (d)
On drawing the Venn diagram according to question-



(I) ✓
(II) ×
(III) ×
(IV) ×
It is clear from the Venn diagram that some bats are racquets.

51. (b)
On making the diagram as per the statement.



Hence, only conclusion 2 follows.

52. (a)
According to the given statement, only conclusion I follows.

53. (c)
According to the statement neither conclusion 1 nor 2 follows.

54. (c)
According to the given statement only assumption I "Karan is capable of adopting to various writing styles" is implicit.

55.(d)
I. There are 47 students in a class. Gautam is ranked 18^{th} in the same class. So Gautam's place from the end = 47 – 17 = 30th.
II. Jegan who is 10th in the same class is 38th from the end. If Gautam is in the 18th position in the same class, then from the end, his rank (place) = (38 + 10)–18 = 30th place/rank
Hence, either statement I or statement II is sufficient to answer the question.

56. (d)
mild → moderate → profound → severe
A B D C

57. (b)

Just as, In the first figure = $a^2 + b^3 + c^4$

Similarly, In the second figure = $6^3 + 3^4 + 2^5$

= 216 + 81 + 32

= 329

58. (a)

Total number of straight lines in two quadrilateral figures = 2 × 4 = 8

Number of straight lines between sides = 2

Diagonal straight lines = 2

Total number of straight lines = 8+2+2 = 12

59. (c)

2028 is a leap year.

Therefore total days from 21 June 2027 at 5:47 pm to 21 June 2028 at 5 : 47 pm = 366 days.

Total time from 21 June 2028 at 5:47 pm to 22 June 2028 at 5:47 pm = 24 hours

8 minute is less from 5 : 47 to 5 : 39 pm.

Hence total time from 21 June 2027 at 5 : 47 pm to 22 June 2028 at 5 : 39 pm.

= 366 days + 24 hours – 8 minute

= 366 days 23 hours 52 minute

60. (d)

Total sales of all the shops in 2016

= 45 + 58 + 62 + 40 + 55

= 260

Total sales of all the shops in 2017

= 80 + 76 + 84 + 60 + 70

= 370

So, required ratio = $\frac{260}{370}$

= $\frac{26}{37}$ = 26 : 37

61. (b/c)

In Buddhism, the Triratna comprises the Buddha, the Dharma (doctrine, or teaching), and the Sangha (the monastic order). It is significant that, the Triratna is a Buddhist symbol and it is also called Threefold Refuge.

In Jainism, the Triratna comprises the right faith (Samyak Darshana), the right knowledge (Samyak Gyana) and the right action (Samyak Charita).

Note- This question has been dropped/rejected by the RRB.

62. (b)

Pandya, Satavahana and Pahalava dynasties of south India are famous dynasties, while the Pala dynasty was founded by Gopal in Bengal. The capital of the Pala dynasty was Munger. The next ruler of the Pala dynasty was Dharmapala (770-810 AD), during which the tripartite struggle began. He established Vikramshila University and Sompur Mahavihar and renovated Nalanda University. He was succeeded by Devpal. It was during this period that Balaputradeva, the Shailendra dynasty ruler of Java, built a Buddhist Bihar in Nalanda. Rampal was the last ruler of Pal dynasty.

63. (d)

Baba Dyal Das was the founder of the social reform movement for Sikhism is name a - the Nirankari movement. It was founded in 1851, to restore the practices and other beliefs of Sikhs, prevalent during the establishment of Sikhism by Guru Nanak Dev.

64. (d)

Gopal Krishna Gokhale was the founder of the Servants of Indian Society. He had founded it on 12 June, 1905 AD in Pune (Maharashtra) for further expansion of education in India. He left the Deccan Education Society to form this association. Servants of India Society was a dedicated group of people for social service and reforms. The society organised mobile libraries, founded schools, and provided night class for factory workers.

65. (a)

10 degree channel separates the (Little Andman) Andaman islands and the (Car Nicobar) Nicobar islands from each other in Bay of Bengal. It is so named as it lies on the 10 degree line of latitude, north of the equator whereas 9 degree channel separates the islands of Minicoy form the main Lakshadweep archipelago. The maritime boundary between the Maldives and India runs through the eight degree channel. It separates the island of Minicoy and Lakshadweep.

66. (a)

When there is a variation with geographical isolation, there originates caste. Geographical isolation refers to the population of plants or organism which belongs to a single speices and to exchange the genetic material with others. Usually, geographical isolation is result of co-incident.

67. (a)

Gujarat has the largest mainland coastline in India. The entire length of India's coastline is 7516.6 kilometres. The Arabian Sea spreads most of its Coastline in Gujarat. The length of Gujarat coastline is 1214.7 kilometres. It covers about 23% of the total coastline.

68. (d)

On 18th July 2022, the Supreme Court of India gave an order giving more power to the right to be forgotten, which has been acknowledged as a fact of the right to privacy by the top court in its 2017 landmark judgment, the new order is related to 'search engines and internet'. Recognizing 'Right to be forgotten as part of right to privacy, the Supreme Court ordered its registry to work out a mechanism to remove personal details of litigants entangled in matrimonial litigation.

69. (a)

The State Election commission does not conduct elections to State Legislative Assemblies. The Election Commission is the body that conducts elections to the legislative assemblies in India states. Election Commission in India are responsible for conducting elections for urban local bodies like Municipalities, Municipal corporations and Panchayats.

70. (d)

Argentina is not a member of EU. Argentina is a part of the EU's negotiating with the regional bloc Mercosur for a free trade agreement which will form the back bone of EU-Latin American relations. The European Union (EU) is a political and economic union of 27 member states that are located primarily in Europe. The EU was created by the Maastricht Treaty, which entered into force on November 1, 1993.

71.(c)

UNESCO has included Chennai in the list of creative cities network. Chennai has been roped in to contribute to the rich tradition of music. Under this, cities are selected in seven fields - handicrafts, folk art, design, film, cooking, literature, music and media arts. There are six Indian city in Creative City Network– Jaipur (2015), Varanasi (2015), Chennai (2017), Mumbai (2019), Hyderabad (2019) and Srinagar (2021).

72. (a)

The Golden Quadrilateral project was launched by Atal Bihari Bajpayee in 2001. By this project the country's big cities will be connected by road in which the government has covered 5846 km road and launched the Golden Quadrilateral scheme of the four major metropolitan cities of the country - Delhi (North), Chennai (South), Kolkata (East) and Mumbai (West).

73. (d)

Hindu growth rate is a term formulated by Professor Raj Krishna which was based on the low rate of growth of Indian economy in a certain time period. According to professor Raj Krishna, the economy growth rate of below 3.5% is termed as "Hindu Growth Rate". The Indian economy grew with the same rate during 1950-1980. He characterized the slow growth and explained it against the backdrop of socialistic economic policies.

74. (b)

Goods and Services Tax (GST) is an indirect tax (or consumption tax) used in India on the supply of goods and services. The tax came into effect from 1 July, 2017 through the implementation of the 101 Amendment of the Constitution of India by the Indian government. The GST replaced existing multiple taxes levied by the central and state governments. Goods and Services Tax (GST) are divided into five different tax slabs for collection of tax: 0%, 5%, 12%, 18% and 28%.

Hence, option (b) is NOT a rate slab in India.

75. (b)

Junko Tabei was the first woman to climb the summit of the Mount Everest in 1975. She was a Japanese mountaineer and she was also the first woman to climb the seven summits, climbing the highest peak on every continent. She died on 20 October 2016 at the age of 77.

Bachendri Pal is an Indian mountaineer, who in 1984 became the first Indian woman to reach the summit of Mount Everest. She was from Uttarakhand State.

Arunima Sinha is a the world's first female amputee to scale Mount Everest. She was born in Uttar Pradesh.

Premlata Agrawal has the distinction of being the first Indian woman to climb the seven summits, the seven highest continental peaks of the world.

76. (d)

Valley of Flowers National Park is located in the state of Uttarakhand, North India. It was declared a national park in 1982 further it was declared a World Heritage Site by UNESCO in 2005. It gained importance as a region containing a diversity of Alpine flora, Himalayan alpine shrub and meadows ecoregion.

Extra facts-

- The Netherland is known as land of flowers.
- Bulgaria is known as land of roses.

77. (c)

The Sahitya Academy is mainly devoted to promotion of literature.

78. (a)

Jallikattu, a popular bull taming sport practiced in TamilNadu as a part of Pongal celebrations on Mattu Pongal day, third day of the four-day Pongal festival. The term 'Jallikattu,' comes from Tamil terms 'Salli Kaasu' which means coins and kattu which means package tied to the horns of bulls as prize money. It is renowned as an ancient 'sport', believed to have been practised about 2500 years ago.

79. (c)

The United Nations University (UNU) is the academic and research arm of the United Nations, Headquartered in Shibuya, Tokyo, Japan. The University was established in 1972 and formally began its activities in September 1975 following the signature of the permanent headquarters agreement between the United Nations and Japan. Its mission is to help resolve global issues related to human development and welfare through collaborative research and education.

80. (c)

The wings of fire is an auto biography of A.P.J. Abdul kalam. He was an Indian Aerospace scientist and politician who served as 11th President of India from 2002-2007. He was also known as missile man of India. He was awarded by Bharat Ratna, Padma Vibhushan Padma Bhushan.

81. (c)

The National Sports day is celebrated on Dhyan chand's birthday on August 29 to honour this hockey legend. He was born on August 29, 1905 in Prayagraj and is also known as Hockey Magician. The Government of India awarde Mr. Dhyanchand India's third highest civilian honour of Padma Bhushan in 1956.

82. (b)

Kharif crops require high temperature at time of sowing and dry environment at ripening time. In north India, kharif crops are sown in June-July and harvested in october. Kharif crops are Paddy, Maize, Groundnut, Sorghum, Millet, MOONg, Soyabean etc.

83. (c)
The prototype of world's first 6G device has been presented by Japan. It works 20 times faster in comparison of 5G. This device is capable of covering an area of more than 300 feet at a speed of 100 Gps.

84. (a)
Economist Lawrence Wong took the oath of Singapore's fourth Prime Minister in May 2024. Lawrence Wong will take the place of former Prime Minister Lee Sun Lung. President Therman Shaumugaratnam administered the oath to Lawrence Wong.

85. (a)
Due to habitat loss and hunting the Great Hornbill is evaluated as vulnerable in IUCN list and Appendix I of CITES. Great Hornbill is the state bird of Kerala and Arunachal Pradesh. Great hornbills are found in the forest of India, Bhutan, Nepal and mainland of Southeast Asia etc.

86. (a)
The materials through which objects can be seen, but not clearly, are known as translucent. Eg. butter paper.

- Those substances or materials, through which other objects can be seen are called transparent objects. eg. glass, water, air etc.

87. (a)
The yellow spot is an oval spot near the centre of the retina of the human eye. It is specialized for seeing things with highest clearness. It is the area of best vision where the maximum amount of rod cells and cone cells are present.

88.(b)
IC chips are used in integrated circuits. It is a group of electronic circuits made of silicon.

89.(a)
The Manhattan Project was the world's first nuclear bomb making mission. In 1942, Oppenheimer was made the head of the Manhattan Project. He was an American physicist, also known as the father of the atomic bomb. During World War II, scientists at the Los Alamos Laboratory, under the leadership of Oppenheimer, carried out the first artificial nuclear explosion called the 'Trinity'. The project came to an end with nuclear bombs falling on Hiroshima and Nagasaki, in Japan.

90. (c)
Nitrogen gas makes up 78% of our atmosphere and also a part of many element essential to life. Earth's atmosphere is composed of about 78% Nitrogen, 21% Oxygen and 0.93 percent Argon and 0.03% Carbon dioxide. Trace amounts of Neon, Helium, Methane Krypton and Hydrogen as well as water vapour.

91. (b)
The most active ingredient of bleaching powder is Calcium hypochloride. It is an inorganic compound also known as bleaching powder. Its chemical formula is $CaOCl_2$. It has a strong smell of chlorine, it is also used in purifying water, making chloroform and chlorine gas.

92. (d)
Main components of LPG (Liquified Petroleum Gas) is butane and propane. These are highly inflammable organic gases and with no odor.Ethyl mercaptan is mixed with LPG to indicate its leakage.

93.(d)
In the given statements, option (d) is incorrect because our vertebral column is formed by 26 serially arranged units called vertebrae and is dorsally placed. It extends from the base of the skull and constitutes the main framework of the trunk. The vertebral column is differentiated into cervical (7), thoracic (12), lumbar (5), sacral (1-fused) and coccygeal (1-fused) regions starting from the skull. Point to be noted is that there are 33 small vertebrae in the vertebral column of the child.

94. (a)
The full form of ADH is antidiuretic hormone. It is released by the posterior part of the pituitary gland and also known as vasopressin. It mainly increases the permeability of distal convoluted tubule (DCT) and collecting duct (CD) due to which reabsorption of water increases and maintains osmoregulation in human kidney.

95. (b)
E300 is the common name for vitamin C. Its chemical name is ascorbic acid. Ascorbic acid is commonly found in citrus fruit such as oranges, tomatoes, brussels sprouts, cauliflower, broccoli etc. Deficiency of vitamin C causes scurvy disease.

96. (c)
Bryophytes exist in a wide variety of habitats. They can be found growing in a range of temperatures, elevations and moisture. Marchantia is a Bryophyta. These are simple plants without roots or vascular systems.

97.(a)
Tropism refers to the response or orientation of a plant to directional external stimulus like gravitation, sunlight etc that acts with greater intensity from one direction to another. Forms of tropism include phototropism (response to light), geotropism (response to gravity), chemotropism (response to particular substances), hydrotropism (response to water), thigmotropism (response to mechanical stimulation), traumatotropism (response to wound lesion), and galvanotropism, or electrotropism (response to electric current). Most tropic movements are orthotropic; i.e., they are directed toward the source of the stimulus. Plagiotropic movements are oblique to the direction of stimulus. Diatropic movements are at right angles to the direction of stimulus.

98. (d)
C++ is a general-purpose programming language created by Bjarne Stroustrup as an extension of the C programming language, or "C with Classes".

99. (d)
Https stands for Hyper Text Transfer Protocol Secure. It makes a secure connection by establishing an encrypted link between the browser and the server or any two systems.

100. (a)
The full name of UNFCCC is United Nation Framework Convention on Climate Change. Its headquarter is located in the city of Bonn, Switzerland.

PRACTICE SET - 12

1. **What is the sum of the cube of the natural numbers from 1 to 10, both inclusive?**
   (a) 3023 (b) 3025
   (c) 3024 (d) 3022

2. **Find the difference between the place values of 8 and 4 in the number 683479.**
   (a) 7 (b) 80000
   (c) 79600 (d) 76600

3. **Whose ascending order from the following numbers is correct?**
   (a) $\frac{5}{6},\frac{3}{5},\frac{7}{9}$ (b) $\frac{3}{5},\frac{5}{6},\frac{7}{9}$
   (c) $\frac{3}{5},\frac{7}{9},\frac{5}{6}$ (d) $\frac{7}{9},\frac{3}{5},\frac{5}{6}$

4. **Solve the following-**
   $\frac{\sqrt{144}}{6}\times\frac{\sqrt{121}}{8}\times\frac{132}{\sqrt{484}}=?$
   (a) 4 (b) $\frac{155}{36}$
   (c) $\frac{33}{2}$ (d) $\frac{3}{4}$

5. **What is the fraction which, when subracted from $\frac{1}{2}$, gives $\frac{2}{3}$?**
   (a) $\frac{1}{3}$ (b) $-\frac{1}{3}$
   (c) $-\frac{1}{6}$ (d) $\frac{1}{6}$

6. **Which of the following fraction falls between $\frac{3}{4}$ and $\frac{6}{7}$?**
   (a) $\frac{11}{9}$ (b) $\frac{9}{10}$
   (c) $\frac{5}{9}$ (d) $\frac{9}{11}$

7. **What is the smallest number which when divided by 4, 6, 10 and 15, gives remainder 3 in each case?**
   (a) 58 (b) 126
   (c) 37 (d) 63

8. **What is the largest number by which, dividing 63, 77 and 98, gives remainders 3, 5 and 2 respectively?**
   (a) 10 (b) 9
   (c) 6 (d) 8

9. **The HCF and LCM of two numbers are in the ratio of 1 : 30 and the difference between the HCF and LCM is 493. Find the product of LCM and HCF.**
   (a) 8670 (b) 540
   (c) 6064 (d) 4040

10. **The least perfect square number completely divisible by 4, 5, 9 and 12 is?**
    (a) 900 (b) 400
    (c) 2500 (d) 3600

11. **If 15% of x = 25% of y = 50% of z Then find the value of x : y : z.**
    (a) 3:5:10 (b) 10:6:3
    (c) 10:5:3 (d) 3:2:1

12. **In a bag, the coins of 50 paise, 25 paise and 10 paise are in the ratio of 5:4:3. If the value of coins is ₹ 171. Find the number of each types of coins.**
    (a) 200, 250, 150 (b) 225, 180, 135
    (c) 140, 150, 280 (d) 200, 360, 160

13. **40% of the first number is 12 and 50% of the second number is 24. The ratio of the first number to the second number is:**
    (a) 8 : 5 (b) 4 : 5
    (c) 5 : 8 (d) 1 : 2

14. **If the length of a rectangle increased by 15% and the breadth decreased by 20%, then find the % change in area of the rectangle.**
    (a) 0.8% decrease (b) 0.8% increase
    (c) 8% decrease (d) 8% increase

15. **The sum of the length of the cores of a cube is equal to twice the perimeter of a square. If the numerical value of the volume of the cube is equal to the numerical value of the area of the square then what is the area of the square?**
    (a) 10.5 unit (b) 27 unit
    (c) 13.5 unit (d) 12.5 unit

16. **A solid metallic sphere of radius 3 cm is melted and drawn into a wire of thickness 4 mm What is the length of the wire (in m)?**
    (a) 7.5 (b) 8
    (c) 9 (d) 9.25

17. **3 men and 2 women can complete a work in 8 days, while 2 men and 3 women can complete the same work in 10 days. In how many days can 2 men and 1 woman complete the same work ?**
    (a) 12.5 (b) 15
    (c) 13 (d) 13.5

18. **A and B undertake to complete a piece of work for ₹600. A alone can complete it in 4 days while B alone can complete it in 6 days. With the help of C, they finish the work in 2 days. Find the share of C in the payment received.**
    (a) ₹100 (b) ₹200
    (c) ₹300 (d) ₹78

19. **Rohan had to travel from A to B. He covers 75% of the distance at a speed of 60 km/h and the remaining distance at a speed of 40 km/h. What was his average speed for the entire journey?**

(a) 55 km/h (b) $53\frac{1}{3}$ km/h

(c) 50 km/h (d) $54\frac{2}{3}$ km/h

20. **The distance between two stations is 380 km from these stations two trains run together on the parallel track to cross each other. In these one train speed is 7 km/hr is more than the other. If the distance between the train is 126 km after 2 hours from starting then what is the speed of each train?**

(a) 75 km/hr, 82 km/hr
(b) 55 km/hr, 62 km/hr
(c) 58 km/hr, 65 km/hr
(d) 67 km/hr, 60 km/hr

21. **Find the simple interest rate at which a sum of money at the rate of simple interest becomes five times in 10 years.**

(a) 40% (b) 35%
(c) 25% (d) 50%

22. **A sum of ₹10,000 amounts to ₹11,025 in 2 years at a certain rate of interest per annum, compounded annually. The rate of interest per annum is:**

(a) 4% (b) 5%
(c) 6% (d) 3%

23. **The selling price of 2 blankets are the same. One of the blanket is sold at $66\frac{2}{3}$% profit and the CP of the other blanket is ₹ 400 less than its SP. if the total profit on selling both the blankets is 50% then find the selling price of each blanket.**

(a) ₹ 1510 (b) ₹ 1530
(c) ₹ 1520 (d) ₹ 1500

24. **A seller buys a dozen of pencils for ₹ 25 and sells at the rate of 5 pencils for ₹ 12 for. Find the percentage of Profit or loss?**

(a) 15% Loss (b) 15.2% Loss
(c) 15.2% Profit (d) 15% Profit

25. **If $x > 1$ and $x+\frac{1}{x}=\sqrt{29}$, what is the value of $x-\frac{1}{x}$?**

(a) 3 (b) 4
(c) 5 (d) 2

26. **If $0.08x + 0.04y = 10$ and $0.2(x-1) + 0.4y = 24.8$ then find the value of x.**

(a) 125 (b) 150
(c) 1.25 (d) 12.5

27. **If $\cos^4\theta - \sin^4\theta = \frac{3}{5}$, then find the value $1 - 2\sin^2\theta + 2\sin\theta\cos\theta$**

(a) 0 (b) $\frac{8}{5}$
(c) $\frac{9}{5}$ (d) $\frac{7}{5}$

28. **The interior angle of a regular polygon is 150°. This polygon is a ___.**

(a) Octagon (b) Decagon
(c) Dodecagon (d) Heptagon

29. **A survey conducted by a group of students on 20 households in a local area resulted in the following frequency tables relating to the number of members of the household family-**

Size of family	Family numbers
1–3	7
3–5	9
5–7	2
7–9	1
9–11	1

Find the mode of the given data.

(a) 3.571 (b) 3.444
(c) 3.628 (d) 3.286

30. **Satish puts 5 yellows and 3 blue balls in a closed box. His brother Manish picks two balls at random. Calculate the probability that balls picked are of the same colour.**

(a) $\frac{15}{28}$ (b) $\frac{15}{23}$
(c) $\frac{13}{28}$ (d) $\frac{11}{23}$

31. **Select the option that is related to the third term in the same way as the second term is related to the first term.**

Beauty : See :: Melody :?

(a) Touch (b) Hear
(c) Sense (d) Feel

32. **Just as, Knife is related to Cut in the same way Spanner is related to.**

(a) Mechanic (b) Grip
(c) Grind (d) Drill

33. **In the given letter-cluster pairs, the first letter-cluster is related to the second letter-cluster following a certain logic. Study the given pairs carefully and from the given options, select the pair that follows the same logic.**

ACR : BDS
GUX : HVY

(a) SIO : KQP (b) MQF : NRG
(c) OIF : NHE (d) HJL : SQO

34. **Following a certain logic, 5 is related to 28 in the same way as 7 is related to 52 and 9 is related to 84. Using the same logic, to which of the following is 11 related?**
(a) 126 (b) 121
(c) 128 (d) 124

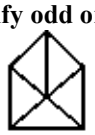
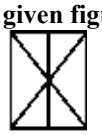
35. **In a certain code language 'RQN' is coded as 53 'DLP' is coded as 36 how will 'SRF' be written in that code language?**
(a) 47 (b) 51
(c) 53 (d) 49

36. **In a certain code language, 'tomorrow you see' is written as 'la et vi', 'are you late' is written as 'et ju fa' and 'tomorrow come late' is written as 'si vi fa'. How will 'are' be written as in that language?**
(a) si (b) et
(c) ju (d) la

37. **Sritin is playing a secret word game, in which FIRE is written as DGPC, so what will SHOT be written.**
(a) QFMR (b) QRST
(c) PQRS (d) SNGR

38. **Out of the four materials listed. Three are alike in some manner and one is different. Select the odd one.**
(a) Silver (b) Gold
(c) Brass (d) Aluminium

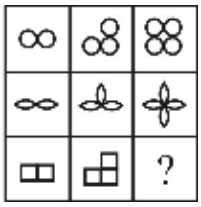
39. **Out of the four words listed, three are alike in some manner and one is different. Select the odd one.**
(a) Tendon (b) Nose
(c) Ligament (d) Bone

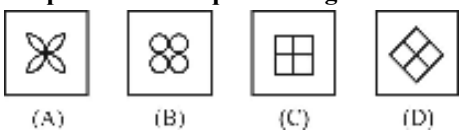
40. **Identify odd one out of the given figures.**
(a)  (b) 
(c)  (d) 

41. **Select the option that can replace the question mark (?) in the following series.**
K 15 S 23 A ?
11 O 19 W 1 ?
(a) $\frac{5}{F}$ (b) $\frac{5}{E}$
(c) $\frac{E}{5}$ (d) $\frac{6}{E}$

42. **Find the number in the place of question mark.**


(a) 13 (b) 14
(c) 12 (d) 15

43.


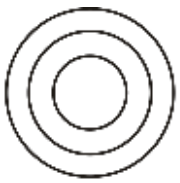
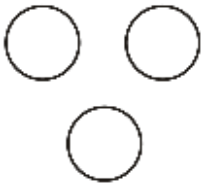
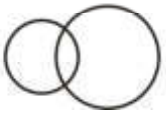
Select that answer figure which will come in the place of '?' in question figure series


(a) C (b) B
(c) D (d) A

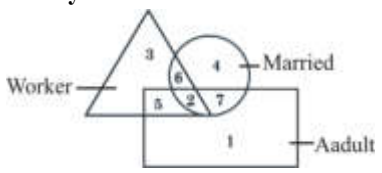
44. **Raj walks 10 meter from his home towards North, turns left and walks 25 meter, then turn left walks 40 meter, then turns right and walks 5 meter to reach the school. In which direction is school from his home?**
(a) North-West (b) South-West
(c) North-East (d) South-East

45. **Radha told Sita, "My mother's only brother's son is your brother". How is Radha related to Sita?**
(a) Father's sister's daughter
(b) Sister
(c) Father's sister's
(d) Mother's brother's daughter

46. **If '+' means '×', '–' means '÷', '×' means '+' and '÷' means '–' then what will be the value of**
$208 - 4 + 3 \div 23 \times 57$?
(a) 190 (b) 195
(c) 201 (d) 290

47. **Choose the most suitable Venn diagram for the following words-**
Bat, Hockey stick, Wood
(a)  (b) 
(c)  (d) 

48. **In the given figure, the circle represents the married then, the triangle represents the workers and rectangle represents the adult. Which area represents married men who are adults only?**



(a) 6 (b) 7
(c) 2 (d) 5

49. **Amongst six friends, G, K, M, P, R and V, each has a different height. R is shorter than K but taller than V, who is taller than G. P is taller than M but shorter than G. Who is the shortest of all six friends?**

(a) G (b) M
(c) P (d) V

50. **Read the given statements carefully.**
Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, from the given options decide which conclusion logically follows from the statements.
Statement 1 : Some locks are keys.
Statement 2 : All keys are doors.

(a) No lock is door
(b) All locks are doors
(c) Some locks are doors
(d) All doors are keys

51. **Statement :**
I. All keys are metals.
II. Some metals are locks.
Conclusions :
1. Some keys are locks
2. Some metals are keys.

(a) Only conclusion 1 follows
(b) Both conclusion 1 and 2 follow
(c) Neither conclusion 1 nor 2 follows
(d) Only conclusion 2 follows

52. **Statement:**
S.S. Rajamouli is a very good director. He is very intelligent.
Conclusion:
I. All directors are very intelligent.
II. All intelligent people are good directors.

(a) Only conclusion II follows.
(b) Only conclusion I follows.
(c) Neither conclusion I nor II follows.
(d) Conclusion I and II follows.

53. **Without assuming anything beyond the given information, select the correct nature of relationship between the two statements.**
Statements:
I. Country X has started a war with country Y during the start of the years.
II. Country Y has lost the lives of so many soldiers over the years.

(a) Statement II is the effect and statement I is its immediate and principal cause
(b) Both the statements are the effects of some common cause
(c) Statement I is the effect and Statement II is its immediate and principal cause
(d) Both the statements are the effects of some independent causes

54. **Statement:**
I like to cook food. I want to be a chef.
Assumption:
I. I am a chef.
II. I am not a chef.

(a) Both assumption I and II implicit
(b) Only assumption I implicit
(c) Only assumption II implicit
(d) Either assumption I or II implicit

55. **A question and two statements are given. Identify which of the statements is/are sufficient to answer the question**
Question:
Find the area of the equilateral triangle.
Statement:
1. The measure of one of the sides of the triangle side is 7 cm.
2. The perimeter of the triangle is 21 cm.

(a) Statement 1 is sufficient but statement 2 is not sufficient.
(b) Both statements 1 and 2 are sufficient independently.
(c) Statement 2 is sufficient but statement 1 is not sufficient.
(d) Neither statement 1 nor 2 is sufficient independently.

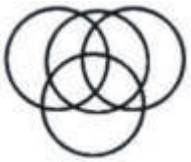
56. **Five students Radha, Sujit, Mihir, Anshul and Vikas have a total of five books on the subjects of Accountancy, Business Studies, Mathematics, Economics and English, written by authors Jain, Kohli, Das, Sharma and Edwin. Each student has only one book on one of the five subjects.**

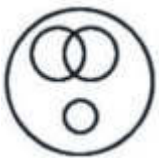
- **Jain is the author of the Accountancy book, which is not owned by Vikas or Radha.**
- **Anshul owns the book written by Edwin.**
- **Mihir owns the Mathematics book.**
- **Vikas has the English book, which is not written by Kohli.**
- **The Economics books is written by Sharma.**

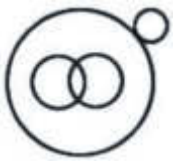
Identify the author of the Business Studies book.

(a) Das (b) Sharma
(c) Jain (d) Edwin

57. **In a certain language institute English and Spanish language courses were available. Some students enrolled for only English and some students for only Spanish. A group of students of this institute were not interested in either so they didn't enroll. The rest enrolled for both English and Spanish. Which one of the following logic diagrams correctly reflects the above situation.**

(a) 

(b) 

(c) 

(d) 

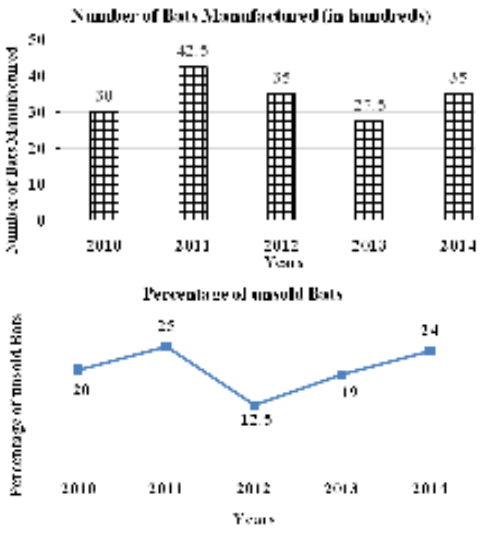
58. **What is the number of circle in the following figure?**

(a) 7 (b) 6
(c) 8 (d) 5

59. **Find the sum of the days of February during the year 1900 to 2000.**

(a) 2857 (b) 2853
(c) 2828 (d) 2835

60. **The given graph shows the number (in hundreds) of bats manufactured and the following line graph shows the percentage of unsold bats by a factory in Meerut over the period of 2010-2014**



What is the difference between the number of bats sold in the year 2010 and year 2014?

(a) 240 (b) 260
(c) 500 (d) 200

61. **Gautama (Siddhartha) is believed to have piously meditated at which place for six years before he went to Bodhgaya for the final realisation ?**

(a) Pragbodhi (b) Kapilavastu
(c) Rajgir (d) Itkhori

62. **Mecca Masjid, Hyderabad was completed by ___.**

(a) Muhammad Qutub Shah
(b) Jahangir
(c) Qutubshahi
(d) Aurangzeb

63. **Who laid the foundation stone of the world-famous Swarna Mandir (Golden Temple)?**

(a) Muhammad Iqbal (b) Hazrat Mian Mir Ji
(c) Ashraf Ali Thanvi (d) Mahmud-ul-Hasan

64. **Who founded the Tattwabodhini Sabha to propagate Ram Mohan Roy's ideas?**

(a) Debendranath Tagore
(b) Rabindranath Tagore
(c) Anandmohan Bose
(d) K.C. Sen

65. **Niagra falls is situated on the border of:**

(a) Canada and USA
(b) France and Germany
(c) Mexico and Gautemala
(d) USA and Mexico

66. **Which country is not the part of proposed TAPI gas pipeline ?**

(a) Afghanistan (b) Iran
(c) Turkmenistan (d) India

67. **Kolleru lake is located in which Indian state?**

(a) Andhra Pradesh (b) Maharashtra
(c) Kerala (d) Rajasthan

68. **Which Articles of the Indian Constitution are related with the Right against Exploitation?**

(a) 23 to 24 (b) 14 to 18
(c) 25 to 28 (d) 19 to 22

69. **Which of the following options is not a function of Gram Panchayats?**

(a) Development of village facilities
(b) Management of local public resources
(c) Collection of local taxes
(d) Scrutinises and approves budgets of the Block Samities

70. **Which of the following missile is India's first tactical surface-to-surface missile?**

(a) Agni (b) Akshay
(c) Prithvi (d) Brahmos

71. **Where is the headquarters of SAARC Development Fund (SDF) established by SAARC nations?**
(a) Kathmandu, Nepal (b) Dhaka, Bangladesh
(c) Thimphu, Bhutan (d) Mumbai, India

72. **National Highway Authority of India (NHAI) was set up in:**
(a) 2014 (b) 1988
(c) 2002 (d) 1952

73. **Which one of the following is NOT a basic principle of Micro Finance Institutions in India?**
(a) Focus on women borrowers
(b) Peer monitoring
(c) Large amounts of loan
(d) Lack of physical collateral

74. **As per the census of 2011 which of the following is the highest populated state in India?**
(a) Rajasthan (b) Madhya Pradesh
(c) Uttar Pradesh (d) Bihar

75. **Which of the following is the largest fair of West Bengal?**
(a) Rass Mela
(b) Gangasagar Mela
(c) Joydeb Kenduli Mela
(d) Ramkeli Mela, Malda

76. **Group of Monuments at Mahabalipuram on of the " UNESCO World Heritage Site" founded by the Pallava kings is in _____ district of ___.**
(a) Thanjavur, Tamil Nadu
(b) Kanchipuram, Tamil Nadu
(c) Sivagangai, Tamil Nadu
(d) Nilgiris, Tamil Nadu

77. **Which of the following museum is situated in Kerala?**
(a) Dakshinachitra Museum
(b) Salar Jung Museum
(c) Albert Hall Museum
(d) Napier Museum

78. **What is the Shigmo?**
(a) Spring festival of Goa
(b) The highest peak of Nilgiri
(c) A type of Rangoli
(d) of the Name of Lord Shiva

79. **FAO is a specialized agency that works on the behalf of UN. Choose its full form.**
(a) Fund for Agriculture Organization
(b) Food and Agriculture Organization
(c) Foreign Aviation Organization
(d) Foreign Agriculture Organization

80. **'No Nation for Women' is written by:**
(a) Manav Kaul (b) Priyanka Dubey
(c) Indumati Desai (d) Kishwer Desai

81. **International women's day is celebrated every year on March–**
(a) 6 (b) 7
(c) 8 (d) 9

82. **Which of the following is not a planting crop?**
(a) Tea (b) Coffee
(c) Cashew (d) Millet

83. **Which Indian state has started the 'Bahan-Beti Swavlamban Protsahan Yojana' in June, 2024?**
(a) Madhya Pradesh
(b) Gujarat
(c) Jharkhand
(d) Bihar

84. **Who became the brand ambassador of Green Day's 'Better Nutrition' brand in June, 2024 ?**
(a) Saina Nehwal
(b) PV Sindhu
(c) Aakarshi Kashyap
(d) Anupama Upadhyay

85 **Project Elephant was launched by the Government of India in the year .....**
(a) 1990 (b) 1972
(c) 1992 (d) 1986

86. **Light is a transverse wave, which of the only event proving this?**
(a) dispersion of light (b) interference
(c) diffusion (d) polarization

87. **While watching 3D movies in the theater, we have to wear special glasses because:**
(a) Glasses allow our left and right eyes to see different images.
(b) 3D films use special colors which cannot be felt by human eyes.
(c) 3D films are brighter than ordinary films and can damage our eyes if seen directly.
(d) Glasses allow both eyes to see the same images.

88. **Germanium is mainly used for .....**
(a) Mediator (b) Semiconductor
(c) Conductor (d) Insulator

89. **Which of the following was discovered by Henri Becquerel?**
(a) Infrared radiation (b) Radioactivity
(c) Ultraviolet light (d) X–Ray

90. **What is the atomicity of phosphorus ?**
(a) Monoatomic (b) Tetra-atomic
(c) Diatomic (d) Poly-atomic

91. **The process of forming a thick oxide layer of aluminium oxide on the surface of aluminium so as to protect it from corrosion is called:**
(a) Roasting (b) Anodising
(c) Calcination (d) Galvanising

92. **Which of the following is used in plastics?**
(a) Butane (b) Ethylene
(c) Krypton (d) Ammonia

93. Which part of the muscular system attaches bone to bone?
(a) Tendon
(b) Cartilage
(c) Muscle
(d) Ligament

94. What is the basic function of estrogen?
(a) To balance the mood
(b) To regulate the menstrual cycle
(c) To develop male reproductive tissues
(d) To maintain a pregnancy

95. Identify the water-soluble vitamin from the following.
(a) Vitamin D (b) Vitamin E
(c) Vitamin B_1 (d) Vitamin A

96. Which of the following plants has specialized tissue for the conduction of water and other substances from one part of the plant body to another?
(a) Chara (b) Moss
(c) Riccia (d) Marsilea

97. In a plant, the seed contains the embryo which develops into a seedling under appropriate conditions. This process is known as:
(a) Germination (b) Cross- pollination
(c) Pollination (d) Transpiration

98. Which of the following is a computer programming language?
(a) UNIX (b) Scratch
(c) Norton (d) BOSS

99. In which year was the World Wide Web invented?
(a) 1989 (b) 1987
(c) 1986 (d) 1988

100. Full Form of IPCC is –
(a) Inter Parliamentary Panel For Climate Change.
(b) Inter Governmental Panel on Climate Change.
(c) Inter Government Parliamentary Panel On Climate Change.
(d) International Panel on Climate Change.

SOLUTION : PRACTICE SET- 12

ANSWER KEY

1.(b)	11. (b)	21. (a)	31. (b)	41. (b)	51. (d)	61.(a)	71. (c)	81. (c)	91. (b)
2. (c)	12. (b)	22. (b)	32. (b)	42. (a)	52. (c)	62. (d)	72. (b)	82. (d)	92. (b)
3. (c)	13. (c)	23. (d)	33. (b)	43 (a)	53. (a)	63. (b)	73. (c)	83. (c)	93. (d)
4. (c)	14. (c)	24. (c)	34. (d)	44. (b)	54. (c)	64. (a)	74. (c)	84. (b)	94. (b)
5. (c)	15. (c)	25. (c)	35. (a)	45. (a)	55. (b)	65. (a)	75. (b)	85 (c)	95.(c)
6. (d)	16. (c)	26. (a)	36. (c)	46. (a)	56. (d)	66. (b)	76. (b)	86.(d)	96. (d)
7. (d)	17. (a)	27. (d)	37. (a)	47. (c)	57. (b)	67. (a)	77. (d)	87.(b)	97. (a)
8. (c)	18. (a)	28. (c)	38. (c)	48. (b)	58. (b)	68. (a)	78. (a)	88. (b)	98. (b)
9. (a)	19. (b)	29.(b)	39. (b)	49.(b)	59. (b)	69.(b)	79. (b)	89. (b)	99. (a)
10. (a)	20. (d)	30. (c)	40. (a)	50. (c)	60. (b)	70. (c)	80. (b)	90. (b)	100.(b)

SOLUTION

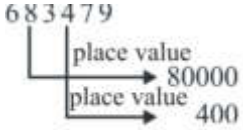
1. (b)
The sum of the cube of the natural numbers from 1 to 10–

$$=1^3+2^3+3^3+4^3+5^3+6^3+7^3+8^3+9^3+10^3$$

$$=\left(\frac{10\times11}{2}\right)^2 \qquad \left\{\because \Sigma n^3=\left[\frac{n(n+1)}{2}\right]^2\right\}$$

$$=\frac{100\times121}{4}=3025$$

2. (c)



Hence, required difference = 80000 – 400 = 79600

3. (c)
From options,
The given fractions–

$$\frac{5}{6}=0.83\,,\quad \frac{3}{5}=0.6$$

$$\frac{7}{9}=0.77$$

The required ascending order is 0.6, 0.77, 0.83

$$=\frac{3}{5},\frac{7}{9},\frac{5}{6}$$

4. (c)

$$=\frac{\sqrt{144}}{6}\times\frac{\sqrt{121}}{8}\times\frac{132}{\sqrt{484}}$$

$$=\frac{12}{6}\times\frac{11}{8}\times\frac{132}{22}=\frac{33}{2}$$

5. (c)

Let the fraction be $\frac{x}{y}$.

According to the problem,

$$\frac{1}{2}-\frac{x}{y}=\frac{2}{3}\Rightarrow\frac{x}{y}=\frac{1}{2}-\frac{2}{3}$$

$$\frac{x}{y}=\frac{-1}{6}$$

6. (d)

The given fractions $\frac{3}{4}=0.75$

and $\frac{6}{7}=0.857$

Now from options-

(a) $\frac{11}{9}=1.22$

(b) $\frac{9}{10}=0.9$

(c) $\frac{5}{9}=0.55$

(d) $\frac{9}{11}=0.818$

$\because$ 0.818 lies between 0.75 and 0.85

Hence, $\frac{9}{11}$ lies between $\frac{3}{4}$ and $\frac{6}{7}$

7. (d)

LCM of 4, 6, 10 and 15.

2	4,6,10,15
2	2,3,5,15
3	1,3,5,15
5	1,1,5,5
	1,1,1,1

LCM $= 2 \times 2 \times 3 \times 5 = 60$

So, the required number = 60 + 3 = 63

8. (c)

According to the question,

63 – 3 = 60

77 – 5 = 72

98 – 2 = 96

So, the required number = HCF of 60, 72 and 96.

$60 = 2\times2\times3\times5$

$72 = 2\times2\times2\times3\times3$

$96 = 2\times2\times2\times2\times2\times3$

HCF $= 2\times2\times3 = 12$

While 12 is not in the option but 12 will be divisible by 6.

So, option (c) is required answer.

9. (a)

Let, HCF = x

LCM = 30x

According to the question,

LCM – HCF = 493

30x – x = 493

29 x = 493

x = 17

Hence, HCF × LCM = 30x × x

= 30 × 17 × 17

= 8670

10. (a)

L.C.M. of 4, 5, 9 and 12

$= 2\times2\times3\times3\times5$

= 180

2	4, 5, 9, 12
2	2, 5, 9, 6
3	1, 5, 9, 3
3	1, 5, 3, 1
5	1, 5, 1, 1
	1, 1, 1, 1

From option -

$\frac{900}{180}=5$

Hence the least perfect square number is 900 which is divisible by 4, 5, 9 and 12.

11. (b)

According to the question,

$$x\times\frac{15}{100}=y\times\frac{25}{100}=z\times\frac{50}{100}$$

$3x = 5y = 10z = k$ (Let)

$3x = k$

$x=\frac{k}{3}$

Same as,

$y=\frac{k}{5}$

$z=\frac{k}{10}$

$x:y:z=\frac{k}{3}:\frac{k}{5}:\frac{k}{10}$

$x:y:z=10k:6k:3k$

$\boxed{x:y:z=10:6:3}$

12. (b)

Let the number of coins of 50 paise, 25 paise and 10 paise in the bag are 5x, 4x, 3x respectively

$$\text{Ratio of coins} = \frac{5x}{2}:\frac{4x}{4}:\frac{3x}{10}$$

According to the question,

$$\frac{5x}{2}+\frac{4x}{4}+\frac{3x}{10}=171$$

$50x + 20x + 6x = 3420$

$76x = 3420,$

$x = 45$

Hence the number of coins $= 5x = 5 \times 45 = 225$

$= 4x = 4 \times 45 = 180$

$= 3x = 3 \times 45 = 135$

i.e. coins of 50 paise, 25 paise and 10 paise are 225, 180, 135 respectively.

13. (c)

Let the first number $= x$

The second number $= y$

According to the question,

$$\frac{x \times 40}{100} = 12$$

$$\text{or} \quad x = \frac{12 \times 100}{40} = 30$$

$$\frac{y \times 50}{100} = 24$$

$$\text{or } y = \frac{24 \times 100}{50} = 48$$

Ratio of the first number (x) and second number (y)

$$\Rightarrow \frac{x}{y} = \frac{30}{48}$$

$$\frac{x}{y} = \frac{5}{8}$$

or $\boxed{x : y = 5 : 8}$

14. (c)

Increase in length = 15% = x

And decrease in breadth = 20% = y

$$\text{Change in area} = (x - y - \frac{x \times y}{100})\%$$

$$= 15 - 20 - \frac{15 \times 20}{100} = -5 - \frac{300}{100} = -5 - 3$$

$= -8\%$

Hence, area or rectangle will be decreased by 8%.

15. (c)

Let the length of core of cube $=$ a unit

and length of side of square = b unit

$\because$ Number of cores of cube $= 12$

As per the question,

$12a = (4b) \times 2$

$12a = 8b$

$$a = \frac{2}{3}b \text{ unit}$$

Volume of cube = area of square

$a^3 = b^2$

$$\left(\frac{2}{3} \times b\right)^3 = b^2$$

$$\therefore b = \frac{27}{8} \text{ unit}$$

So perimeter of square $= 4\times$ side $= 4 \times b$

$$= 4 \times \frac{27}{8} = 13.5 \text{ unit}$$

16. (c)

Volume of wire = Volume of sphere

$$4\text{mm} = \frac{4}{10}\text{cm.}$$

$$\text{Radius of wire} = \frac{1}{2} \times \frac{4}{10} = 0.2\,\text{cm.}$$

Volume of wire $= \pi r^2 l$

Where, l = length of wire

$$\therefore \pi(0.2)^2 l = \frac{4}{3}\pi(3)^3$$

$$0.04 \times l = \frac{4}{3} \times 27$$

$$0.04 \times l = 36$$

$$l = \frac{36}{0.04}$$

$$l = \frac{36 \times 100}{4}$$

$l = 9 \times 100$ cm

$l = 9$ m.

17. (a)

Let the working efficiency of 1 man = x

and the working effieiency of 1 woman = y

According to the question,

$(3x + 2y)8 = (2x + 3y)10$

$24x + 16y = 20x + 30y$

$24x - 20x = 30y - 16y$

$4x = 14y$

$$\frac{x}{y} = \frac{14}{4}$$

$x : y = 7 : 2$

Total work $= [(3 \times 7) + (2 \times 2)] \times 8$

$= (21 + 4) \times 8$

$= 25 \times 8$

$= 200$ unit

Let 2 men and 1 woman do the work in D days.

then $(2x + 1y)D = 200$

$(2 \times 7 + 2)D = 200$

$$D = \frac{200}{16}$$

$D = 12.5$ days

18. (a)

According to the question,

$$\frac{W}{4}+\frac{W}{6}+\frac{W}{C}=\frac{W}{2}$$

$$\frac{1}{4}+\frac{1}{6}+\frac{1}{C}=\frac{1}{2}$$

$$\frac{1}{C}=\frac{1}{2}-\frac{1}{4}-\frac{1}{6}\Rightarrow\frac{1}{12}$$

$$\Rightarrow\frac{\text{work by C}}{\text{Total work}}=\frac{\frac{W}{12}}{\frac{W}{2}}=\frac{1}{6}$$

So, C will get 1/6 of the salary $=\frac{1}{6}\times 600=₹100$

19. (b)

Let the total distance be x km.

Distance covered at 60 km/h $=\frac{75}{100}\times x=\frac{3}{4}x$

Distance covered at 40 km/h $=\frac{1}{4}x$

$$\text{Average speed}=\frac{\text{Total distance}}{\text{Total Time}}=\frac{x}{\frac{3}{4}x\times\frac{1}{60}+\frac{1}{4}x\times\frac{1}{40}}$$

$$=\frac{x}{\frac{3x}{160}}$$

$$=\frac{160}{3}=53\frac{1}{3}\text{ km/h}$$

20. (d)

Let the speed of first train is x km/hr.

∴ Speed of second train = (x + 7) km./hr.

Distance travelled by both trains in 2 hours

= 380 – 126 = 254

⇒ 2x + 2 (x + 7) = 254

⇒ 2x + 2x + 14 = 254

⇒ 4x = 240

⇒ x = 60 km./hr.

Hence speed of first train = x = 60 km/hr.

Speed of second train = (x + 7) km/hr.

= (60 + 7) = 67 km/hr.

21. (a)

Time = 10 Years

Let Principal = ₹x

∴ Amount = 5x

Simple interest = 5x – x = 4x

Rate = R%

$$\text{Simple interest}=\frac{PTR}{100}$$

$$4x=\frac{x\times 10\times R}{100}$$

$$R=40\%$$

22. (b)

Given,

A = ₹ 11025

P = ₹ 10000

t = 2 years

$$A=P\left(1+\frac{R}{100}\right)^t$$

$$11025=10000\left(1+\frac{R}{100}\right)^2$$

$$\frac{11025}{10000}=\left(1+\frac{R}{100}\right)^2$$

$$\left(\frac{105}{100}\right)^2=\left(1+\frac{R}{100}\right)^2$$

$$\frac{105}{100}=\frac{100+R}{100}$$

R = 105 – 100

R = 5%

So, option (b) is right.

23. (d)

Let the selling price of each blanket = ₹ x

$$\text{Cost price of 1st blanket}=x\times\frac{100}{\left(100+\frac{200}{3}\right)}=₹\frac{3x}{5}$$

Cost price of 2nd blanket = ₹ (x – 400)

According to the question,

$$\frac{3x}{5}+(x-400)=2x\times\frac{100}{150}$$

$$\frac{8x-2000}{5}=\frac{4x}{3}$$

$$24x-6000=20x$$

$$4x=6000$$

$$x=\frac{6000}{4}$$

$$\boxed{x=₹1500}$$

24. (c)

∵ The cost price of 12 pencils = ₹ 25

So, the cost price of 1 pencil = ₹ 25/12

∵ The selling price of 5 pencils = ₹ 12

So, the selling price of 1 pencil = ₹ 12/5

$$\text{So, the required profit \%}=\frac{\frac{12}{5}-\frac{25}{12}}{\frac{25}{12}}\times 100$$

$$=\frac{\frac{144-125}{60}}{\frac{25}{12}}\times 100=\frac{19}{60}\times\frac{12}{25}\times 100=15.2\%$$

25. (c)

$$x+\frac{1}{x}=\sqrt{29}$$

$$x^2+\frac{1}{x^2}+2=29 \quad \text{(On squaring of both sides)}$$

$$x^2+\frac{1}{x^2}=27 \quad \text{\_\_\_\_\_(i)}$$

$$\left(x-\frac{1}{x}\right)^2=x^2+\frac{1}{x^2}-2$$

$$\left(x-\frac{1}{x}\right)^2=27-2 \quad \text{(From equation (i))}$$

$$x-\frac{1}{x}=\sqrt{25}$$

$$\boxed{x-\frac{1}{x}=5}$$

26. (a)

From the question,

$$0.08x + 0.04y = 10$$

$$\frac{8}{100}x+\frac{4}{100}y=10$$

$$8x + 4y = 1000$$

$$2x + y = 250 \ldots\ldots(i)$$

Again

$$0.2\,(x-1) + 0.4y = 24.8$$

$$2(x-1) + 4y = 248$$

$$2x - 2 + 4y = 248$$

$$2x + 4y = 250$$

$$x + 2y = 125 \ldots\ldots.(ii)$$

Multiplying 2 in equation (i) and subtracting equation (ii).

$$4x - x = 500-125$$

$$3x = 375$$

$$\boxed{x=125}$$

27. (d)

Given,

$$\cos^4\theta-\sin^4\theta=\frac{3}{5}$$

$$(\cos^2\theta+\sin^2\theta)(\cos^2\theta-\sin^2\theta)=\frac{3}{5}$$

$$\cos^2\theta-\sin^2\theta=\frac{3}{5}$$

$$\cos 2\theta=\frac{3}{5} \quad (\because \cos^2\theta-\sin^2\theta=\cos 2\theta)$$

then, $(1-2\sin^2\theta)+2\sin\theta.\cos\theta$

$$\cos 2\theta+\sin 2\theta \qquad \left[\because \begin{matrix}\cos 2\theta=1-2\sin^2\theta \\ \sin 2\theta=2\sin\theta.\cos\theta\end{matrix}\right]$$

$$\cos 2\theta+\sqrt{1-\cos^2 2\theta}$$

$$\frac{3}{5}+\sqrt{1-\frac{9}{25}}$$

$$\frac{3}{5}+\frac{4}{5}=\frac{7}{5}$$

28. (c)

Each interior angle of a regular polygon with n sides.

$$=\frac{(n-2)\times 180}{n}$$

$$150=\frac{(n-2)\times 180}{n}$$

$$150n = 180n - 360$$

$$30n = 360$$

$$n=\frac{360}{30}=12$$

Therefore this polygon will be a dodecagon.

29.(b)

Size of family	Family numbers
1–3	$7 = f_0$
3–5	$9 = f_1$
5–7	$2 = f_2$
7–9	1
9–11	1

The frequency of category 3-5 is the highest so mode category is 3-5

$L = 3,\ f_0 = 7,\ f_1 = 9,\ f_2 = 2$ and $h = 2$

$$\text{mode}=L+\left(\frac{f_1-f_0}{2f_1-f_0-f_2}\right)\times h$$

$$=3+\frac{9-7}{18-7-2}\times 2=3+\frac{2}{9}\times 2=\frac{31}{9}=3.444$$

30. (c)

Number of total balls = 8

Probability of picking balls of the same colour

$$=\frac{{}^5C_2+{}^3C_2}{{}^8C_2} \qquad \left[{}^nc_r=\frac{n!}{r!(n-r)!}\right]$$

$$=\frac{\frac{5!}{3!\times 2!}+\frac{3!}{1!\times 2!}}{\frac{8!}{2!\times 6!}}$$

$$\frac{\frac{5\times 4\times 3!}{2\times 1\times 3!}+\frac{3\times 2!}{2!\times 1}}{\frac{8\times 7\times 6!}{2\times 1\times 6!}}$$

$$=\frac{\frac{5\times 4}{2\times 1}+3}{\frac{8\times 7}{2\times 1}}$$

$$=\frac{\frac{5\times 4}{2}+3}{8\times 7/2}=\frac{\frac{26}{2}}{\frac{56}{2}}=\frac{13}{28}$$

31. (b)
Just as, 'Beauty' is related to 'See'. Similarly, 'Melody' is related to 'Hear'.

32. (b)
Just as, 'Knife' is related to 'Cut' in the same way 'Spanner' is related to 'Grip'.

33. (b)
Just as,

$A \xrightarrow{+1} B$

$C \xrightarrow{+1} D$

$R \xrightarrow{+1} S$

and,

$G \xrightarrow{+1} H$

$U \xrightarrow{+1} V$

$X \xrightarrow{+1} Y$

Same as,

$M \xrightarrow{+1} N$

$Q \xrightarrow{+1} R$

$F \xrightarrow{+1} G$

Hence option (b) is correct.

34. (d)
Just as,,

$5^2 + 3 = 28$

and $7^2 + 3 = 52$

and $9^2 + 3 = 84$

Same as,

$11^2 + 3 = \boxed{124}$

35. (a)
Just as,

RQN=18+17+14=49

49+4=53

DLP=04+12+16=32

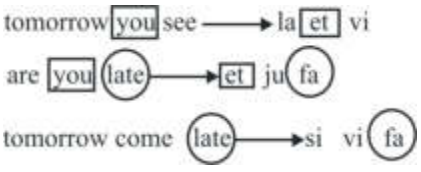
32+4=36

Similarly,

SRF=19+18+6=43

43+4=$\boxed{47}$

36. (c)



It is clear that 'are' will be written as 'ju'.

37. (a)
Just as,

Similarly,

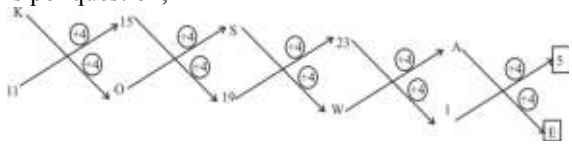
Hence, SHOT = QFMR

38. (c)
Brass is an alloy, whereas all other are metals.
Hence option (c) is different from all other options.

39. (b)
Tendon, Ligament and Bone are the internal parts of the body while the Nose is the external part which is different from other.

40. (a)
Six lines are present inside the given geometrical shapes whereas in figure option - (a) has five lines. So, it is inconsistence.

41. (b)
As per question,



42. (a)
Just as,

$2 \times 2 - 1 = 3 \quad 2 \rightarrow 3$

$5 \times 2 - 1 = 9 \quad 5 \rightarrow 9$

$6 \times 2 - 1 = 11 \quad 6 \rightarrow 11$

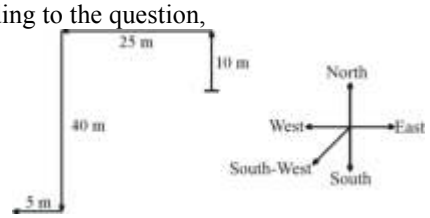
Similarly,

$7 \times 2 - 1 = 13 \quad 7 \rightarrow 13$

Hence, ? = 13

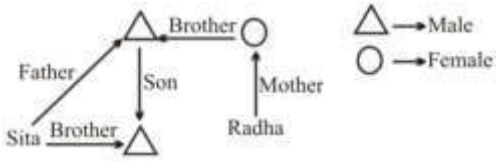
43 (a)
In the place of question mark, figure C will come because all the parts are growing in each figure. So, option (a) is correct.

44. (b)
According to the question,



Hence, Raj's school from home will be in South-West direction.

45. (a)
On making blood relation diagram according to the question–



It is clear from the above diagram that Radha is the daughter of Sita's father's sister.

46. (a)
Given,

$208 - 4 + 3 \div 23 \times 57$

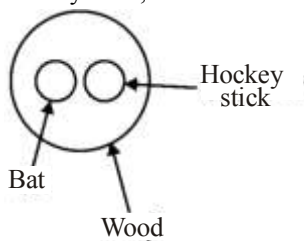
On changing the symbols according to the question,

$= 208 \div 4 \times 3 - 23 + 57$

$= 52 \times 3 - 23 + 57$

$= 156 - 23 + 57 = 190$

47. (c)
Bat and Hockey stick, both are made by Wood.



Hence, option (c) is correct.

48. (b)
According to the given venn diagram area 7 represents those married who are adults only.

49.(b)
According to the question,

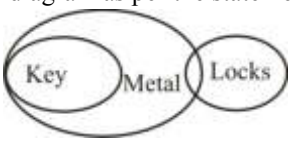
$$K > R > V > G > P > M$$

Hence, it is clear that 'M' is the shortest of all six friends.

50. (c)
According to the statement, the Venn diagram is as follows-

So, it is clear from the above Venn diagram that some locks are doors.

51. (d)
On making the diagram as per the statement.



Hence, conclusion some metals are keys' completely follows.

52. (c)
Neither conclusion I nor II follows the given statement.

53. (a)
In the beginning of year 'X' has started battle against 'Y' So, it will leave a dangerous impact on lives of soldiers.

54. (c)
I like to cook food. I want to be a chef. Hence, it is clear that I am not a chef. Thus assumption II is implicit in the statement.

55. (b)
By using statement 1:

$$\text{Area of equilateral triangle} = \frac{\sqrt{3}}{4} \times \text{side}^2 = \frac{49\sqrt{3}}{4}\ \text{cm}^2$$

Hence, both statements 1 & 2 are sufficient independently.

By using statement 2:

$\because$ As we know that, all the sides of an equilateral triangle are equal

$\therefore$ Perimeter of triangle = 3× side

$$21 = 3 \times \text{side}$$

$$\text{Side} = \frac{21}{3} = 7\text{cm}$$

$$\text{Area of equilateral triangle} = \frac{\sqrt{3}}{4} \times (7)^2$$

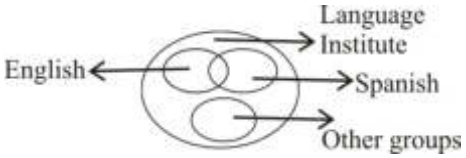
$$= 49\frac{\sqrt{3}}{4}\text{cm}^2$$

56. (d)

Student	Book	Author
Radha	Economics	Sharma
Sujeet	Accountancy	Jain
Mihir	Mathematics	Kohli
Anshul	Business Studies	Edwin
Vikas	English	Das

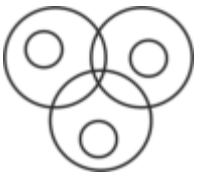
Hence, it is clear that Business Studies Book author is Edwin.

57. (b)
According to the question-



Hence, it is clear that the logic diagram of option (b) correctly reflects the given situation.

58. (b)
From figure,



Number of circles in the given figure = 6

59. (b)
Number of days in the month of February during the year 1900 to year 2000

= 28 × 101 + 25 ($\because$February has 29 days in a leap year)

= 2828 + 25

= 2853 days

60. (b)
Difference between the number of bats sold in the year 2010 and year 2014

$$= 3000 \times 80\% \sim 3500 \times 76\%$$

$$= 2400 \sim 2660 = 2660 - 2400 = 260$$

61.(a)
Pragbodhi is the place where lord Buddha spent six year before attaining enlightenment. The place is evidence of Gautam Buddha's efforts toward the eternal truth. When he realized the truth, he became Buddha - the enlightened one. Historical developments have led to change of the name of mountain and now it is called Dhungeswara.

62. (d)
Mecca Masjid is located in Hyderabad, Telangana. The construction of this mosque started in the year 1614 by Sultan Muhammad Qutub Shah and it was completed by Aurangzeb in 1693 AD.

63. (b**)**
The foundation stone was laid down by Hazrat Mian Mir a muslim divine of Lahore (Pakistan). The temple was destroyed several times by Afghan invaders and was finally rebuilt of marble and copper overlain with gold foil during the kingship of Maharaja Ranjit Singh.

64. (a)
On 6 October 1839 Debendranath Tagore established Tattwabodhini Sabha which was shortly thereafter renamed the Tattwabodhini (Truth-seekers) Sabha to propogate Raja Ram Mohan Roy's ideas. The objective of Sabha was to promote a rational and humanist form of Hinduism based on Vedanta and the Upanishads.The Tattwabodhini Sabha was a group, started in Calcutta.

Note: In 1828, Raja Ram Mohan Roy established Brahmo Samaj.In 1859, the Tattwabodhini Sabha were dissolved back into the Brāhmo Samaj by Debendranath Tagore.

65. (a)
Niagara Falls is the collective name for three waterfalls that straddle the international border between the Canadian province of Ontario and the American state of New York. They form the southern end of the Niagara Gorge. From largest to smallest, the three waterfalls are the Horseshoe Falls, the American Falls and the Bridal Veil Falls. The Horseshoe Falls lie on the border of the United States and Canada with the American Falls entirely on the United States' side, separated by Goat Island. The smaller Bridal Veil Falls are also on the United States' side, separated from the American Falls by Luna Island.

66. (b)
The TAPI project is a key transnational scheme aimed to carry natural gas from Turkmenistan to India through Afghanistan and Pakistan.
T-Turkmenistan
A-Afghanistan
P- Pakistan
I-India
This pipeline being developed by the Galkynysh – TAPI Pipeline Company Limited with participation of the Asian Development Bank.

67. (a)
Kolleru lake is located in the state of Andhra Pradesh. This lake is the one of the largest freshwater lakes in the country. It is situated in the middle of the Godavari and Krishna River. It was considered a wildlife sanctuary under the Wildlife Conservation Act, 1972 in 1999. It was included as a wetland under the International Ramsar Convention. Atapaka is a bird sanctuary in Kolleru which has become the only safe breeding place of migratory birds Stork and Grey Pelican.

68. (a)
The right against Exploitation is enshrined in Articles 23 and 24 of Indian constitution. These are the fundamental rights that guarantee every citizen protection from any form of forced labour and also prohibit the employment of children in factories.
Article 23 forbids any form of exploitation and Article 24 says that no child below the age of 14 years shall be employed to work in any factory or mine or engaged in any other hazardous employment.

69.(b)
The major functions of Gram Panchayats include the Civic functions relating to sanitation, cleaning of public roads, minor irrigation, construction of public toilets, supply of drinking water, rural electrification, primary and adult education, levying and collecting local taxes and execution of government schemes relating to generation of employment at village, level and management of local public resources whereas Zila Parishad approves the budget of the block Samitis and allocates and distribute funds among them.

70. (c)
The Prithvi missile is a family of tactical surface-to-surface short-range ballistic missile (SRBM) and is India's first indigenously developed ballistic missile. Development of the Prithvi began in 1983, and it was first test-fired on 25 February 1988 from Sriharikota. It was developed by DRDO under the Integrated guided Missile development program (IGMDP). Operational rage of Prithvi I is 150 km, Prithvi II 250-350 km and Prithvi III 350-600 km.

71. (c)
The SAARC Development Fund (SDF) was established in 2005. It is the umbrella financial institution of the South Asian Association for Regional Cooperation (SAARC). The SDF Secretariat based in Thimphu, Bhutan undertakes and implements projects and programmes under three windows: Social, Economic and Infrastructure in fulfillment of the greater developmental goals of the SAARC region.
Note : South Asian Association for Regional Cooperation (SAARC) is an economic and political organization of eight countries in South Asia. It was established in 1985 when the Heads of State of Afganistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka formally adopted the charter.

72. (b)
NHAI was set up in 1988. It's headquarter is situated in New Delhi. The National Highway Authority of India (NHAI) is responsible for managing the network of National highways in India. The National Highway Authority of India comes under the Ministry of Road Transport and Highways. NHAI was set up as an act of 1988, this act ensures the development, maintenance, and management of National highways.

73. (c)
Micro Finance Institution (MFI) is an organisation that offers financial services to low income populations. These services include microloans, microsaving, microinsurance, focus on women borrowers, peer monitoring etc. Hence MFI does not provide large amounts of loan, it provides micro loan.

74. (c)
Uttar Pradesh with the population of 19 Crore 98 Lakh 12 Thousand 241 is the highest populated state and Delhi is the highest populated Union territory in India according to the 2011 Census.Uttar Pradesh contributes approximately 16.50 percent to India's population. Sikkim is the least populated state among all Indian states having a population of only 610,577 and a population density of 86 per km^2.

75. (b)
Ganga Sagar Mela is the largest fair of West Bengal. It is held in the month of January-February, on the Ganga Sagar Island, at the mouth of the river Hooghly in Bengal, in the confluence of river Ganga and the Bay of Bengal on Makar Sankranti.

76. (b)
Mahabalipuram is also known as Mamallapuram, It's known for its temples and monuments built by the rules of Pallava dynasty in the 7th and 8th centuries. It was named after Pallava king Narsimhavarman I, who was also known as Mahabali Kanchipuram was the capital of Pallava dynasty. It is famous for temples in form of chariots and the shore temple dedicated to Shiva. Thanjavur is famous for Brihadshvara Temple.

77. (d)
The Napier Museum is an art and natural history museum situated in Thiruvananthapuram, Kerala, India. The museum has been named after the former Madras Governer-General John Napier. Impressed by the traditional Kerala style architecture, Lord Napier in 1872 CE assigned, the architect of the Government of Madras, Robert Fellowes Chisholm, to build this royal structure.
Whereas, the location of other museums are-
Dakshinachitra Museum → Chennai, Tamil Nadu
Salar Jung Museum → Hyderabad, Telangana
Albert Hall Museum → Jaipur, Rajasthan

78. (a)
Shigmo (Shishirotsave) is a spring festival celebrated in Goa. It is also celebrated by Konkani diaspora and Indian festival of Holi is a part of it.

79. (b)
The Food and Agriculture Organization (FAO) of the United Nations leads international effects to defeat hunger. Serving both developed and developing countries, FAO acts as a neutral forum where all nations meet as equals to negotiate agreements and debate policy. FAO is the largest of the UN agencies. It was established in 16 October 1945 and its headquarters is in Rome, Italy.

80. (b)

Book	Writer
Prem Kabootar	Manav Kaul
No Nation for Women	Priyanka Dubey
Origin of love	Kishwar Desai
The Inheritence of Loss	Kiran Desai

81. (c)
International women's day is celebrated on the 8th of March every year around the world. It is a focal point in the movement for women's rights. The them of international women's day in 2024 was 'Invest in women: Accelerate progress'.

82. (d)
Millet is not a planting crop. The crops that can be obtained for a long time after sowing are called planting crops such as cashew, tea, coffee, pistachio etc.

83. (c)
'Mukhyamantri Behan-Beti Swavalamban Yojana' has been started by Jharkhand state, under which such women, who are not able to take benefit of any operated pension scheme in the Jharkhand state can apply for this scheme. Under this scheme, a financial help of Rs. 1000/- will be provided to women of various communities in order to enhance and accelerate their important role in taking vital decision in the field of education, health, nutrition, empowerment and family related decisions.

84. (b)
Indian badminton star P.V. Sindhu has been appointed as the brand ambassador of Green Day's Better Nutrition brand in June, 2024. She has also invested in this company.

85 (c)
Project Elephant was launched by the Ministry of Environment and Forest and Government of India in February 1992. It ensures the protection of elephant corridors and elephant habitat for the survival of elephant population in the wild. Elephant is included in the list of protected species according to the Schedule-I of the

Indian Wildlife Protection Act 1972 and in Convention on International Trade in the Engangered Species of Wild Fauna and Flora (CITES).

86.(d)

The phenomenon of polarization of light proves that light waves are transverse waves. Polarization occurs only in transverse waves, which are related to the direction of their oscillations. The moving sound waves in a gas or liquid do not exhibit the properties of polarization.

87.(b)

When watching 3D movies in the theater, we have to wear special glasses, because 3D movies use special colors, which cannot be felt by human eyes.

88. (b)

Germanium is four valent element. It is used mainly for semiconductor. A semiconductor material have the no. of free electrons more than insulator and less than conductor. Germanium is a pure semiconducting material.

89. (b)

Radioactivity was discovered by Henri Becquerel in 1896. He was a French physicist and he was awarded the Nobel Prize in Physics in 1903 for his discovery of spontaneous radioactivity. He was studying the properties of X-rays when he discovered radioactivity.

90. (b)

The molecules of many elements are composed of four atoms of that element then. They are termed as tetra atomic. For example, P_4, SO_3. So their atomicity is 4. Phosphorus is a chemical element with the symbol P and atomic number 15.

Hence phosphorus is tetra-atomic element.

91. (b)

The process of forming a thick oxide layer of aluminium oxide on the surface of aluminium so as to protect it from corrosion is called anodising, while galvanisation includes forming of thick layer zinc over the iron.

92. (b)

Ethylene gas is used to form plastic, rubber, and fiber. Ethylene is a simple molecule composed of two double bonded carbon atoms and four hydrogen atoms it is found in gas form at room temperature.

93. (d)

Ligament is a connective tissue which joints one bone to another bone. Tendon is also a connective tissue which joints muscles to bones.

94. (b)

The primary function of estrogens is development of female secondary sexual characteristics. These include breasts, endometrium, regulation of the menstrual cycle etc. Estrogens are present in significant amounts in both men and women. They are present in significantly higher amounts in women. In males estrogen helps in maturation of the sperm and maintenance of a healthy libido.

95.(c)

Vitamins were discovered by Funk in 1911 AD. It is a kind of organic compound. No calories are obtained from them, but they are very necessary for the regulation of chemical reactions in metabolism in the body. It is also called protective substance. On the basis of solubility, vitamins are of two types –

- Water soluble vitamins -B, C
- Fat soluble vitamins -A, D, E, K

96. (d)

Marsilea has specialized tissues for the conduction of water and other substances from one part of the plant body to another. Marsilea consist of rooted, aquatic herbs with emergent leaves.

97. (a)

Seeds contain embryo which develop into a seedling when grown under appropriate conditions. The endosperm inside the seeds helps in the growth and development of the embryo. It has starch as stored nutrition which allows the rapid growth of embryo. This process is called germination.

98. (b)

Scratch as high level block based visual programming language and website targeted primarily at children 8-16 years as an educational tool for programming. Users on the side called scratchers can create projects on the website using a block-like interface.

99. (a)

English scientist Tim Berners-Lee co-invented the World Wide Web in 1989 along with Robert Cailliau while working at CERN. The World Wide Web (WWW), commonly known as the Web, is an information system where documents and other web resources are identified by Uniform Resource Locators which may be interlinked by hyperlinks, and are accessible over the Internet.

100.(b)

The Intergovernmental Panel on Climate Change (IPCC) is an intergovernmental of the United Nation that is dedicated to provide the world with objective, scientific information relevant to understanding the scientific basis of the risk of human-induced climate change, its natural, political, and economic impacts and risks, and possible response options. The IPCC was established in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) and was later endorsed by the United Nations General Assembly. Membership is open to all members of the WMO and UN. The IPCC produces reports that contribute to the work of the United Nations Framework Convention on Climate Change (UNFCCC), the main international treaty on climate change.

PRACTICE SET - 13

1. 1.The difference of two numbers is 5. If their product is 336, find the sum of the numbers.
(a) 21 (b) 37
(c) 28 (d) 51

2. Two bus tickets from city P to Q and three tickets from city P to R cost ₹99, but three tickets from city P to Q and two tickets from city P to R cost ₹91. What are the respective fares from city P to Q and from city P to R.
(a) ₹23, ₹15 (b) ₹51, ₹32
(c) ₹15, ₹23 (d) ₹32, ₹51

3. Which of the following numbers has a terminating decimal?
$\frac{15}{600}, \frac{29}{343}, \frac{7}{2^2 \times 7^2}, \frac{77}{210}$
(a) $\frac{7}{2^2 \times 7^2}$ (b) $\frac{29}{343}$
(c) $\frac{15}{600}$ (d) $\frac{77}{210}$

4. Find the value of $\frac{1}{1.4}+\frac{1}{4.7}+\frac{1}{7.10}+....+\frac{1}{47.50}$
(a) $\frac{49}{50}$ (b) $\frac{47}{150}$
(c) $\frac{47}{50}$ (d) $\frac{49}{150}$

5. Which of the fractions given below, when added to $\frac{5}{8}$, gives 1?
(a) $\frac{6}{24}$ (b) $\frac{5}{2}$
(c) $\frac{6}{16}$ (d) $\frac{6}{3}$

6. When the numerator of a fraction increases by 6, the fraction increases by three-fourth. The denominator of the fraction is :
(a) 8 (b) 10
(c) 12 (d) 6

7. Find the least number which divided by 20, 25, 35 and 40 leaves remainder 14, 19, 29 and 34 respectively?
(a) 1364 (b) 1394
(c) 1384 (d) 1374

8. The LCM of fractions is calculated as $\frac{\text{LCM of the numerators}}{\text{HCF of denomination}}$. Find the LCM of $\frac{5}{6}, \frac{6}{5}$, and $\frac{3}{2}$,
(a) 20 (b) 15
(c) 30 (d) 25

9. The sum of the LCM and the HCF of two numbers is 372. If LCM is equal to 92 times of HCF and one number is 368, find the other number.
(a) 360 (b) 4
(c) 92 (d) 96

10. Find the number between 300 and 500 which will be exactly divisible by 6, 8, 10 and 12:
(a) 320 (b) 340
(c) 490 (d) 360

11. If $\frac{1}{3}$ of A = $\frac{3}{4}$ of B = $\frac{1}{6}$ of C, then what is A : B : C ?
(a) 9 : 18 : 4 (b) 4 : 9 : 18
(c) 9 : 4 : 18 (d) 18 : 9 : 4

12. If (a + b) : (b + c) : (c + a) is 6 : 7 : 8 and also a + b + c = 14, then what is the value of c?
(a) 8 (b) 10
(c) 6 (d) 12

13. 25% of a number is 7 more than 30% of another number. The difference between the numbers is 29. What are the numbers?
(a) 39 and 10 (b) 40 and 11
(c) 34 and 5 (d) 37 and 8

14. In an election, 90% of those entitled to vote cast their ballot, 80% of the votes cast was valid. The winner got 60% of the valid votes. If the winner got 64800 votes, what was the number of people entitled to vote ?
(a) 150000 (b) 125000
(c) 200000 (d) 175000

15. The area of the square field is 196 m^2. Its each side is:
(a) 16 m (b) 17 m
(c) 14 m (d) 13 m

16. If the volume of sphere is given as 4851 cm^3, then find its diameter?
$\left[\text{Use } \pi = \frac{22}{7}\right]$
(a) 42 cm (b) 21 cm
(c) 28 cm (d) 10.5 cm

17. 2 men and 3 boys can complete a piece of work in 18 days while 3 men and 2 boys can complete the same work in 15 days. In how many days will 4 men and 2 boys complete the work?
(a) $11\frac{16}{19}$ days (b) $1\frac{1}{19}$ days
(c) $11\frac{6}{19}$ days (d) $1\frac{16}{19}$ days

18. A can complete a task in 20 days. B is 75% more efficient than A. The number of days B will take to complete the same work is:

(a) $10\frac{3}{7}$ days (b) $11\frac{3}{7}$ days

(c) $1\frac{3}{17}$ days (d) $1\frac{3}{7}$ days

19. **A car travels at a speed of 62 km/h for $2\frac{1}{2}$ hours and 68 km/h for $1\frac{1}{4}$ hours. What will be its average speed in total distance travelled?**

(a) 65 (b) 64

(c) 63 (d) 61

20. **A train crosses a 155 metre long platform in 16 seconds and a 195 metre long platform in 18 seconds. What is the average speed of train?**

(a) 66 km/h (b) 72 km/h

(c) 75 km/h (d) 69 km/h

21. **A sum of money amount to 3 time the original sum in 15 years. In how many years will the original sum amount to 5 times of itself at the same rate of simple interest.**

(a) 35 (b) 30

(c) 25 (d) 20

22. **If an investment of ₹1000 amounts to ₹1,440 in 2 years when compounded annually, then what is the rate of compound interest?**

(a) 0.2% (b) 40%

(c) 30% (d) 20%

23. **By selling an article for 1,785, a dealer loses 15%. At what price should he sell the article to gain 15%?**

(a) ₹2,415 (b) ₹1,785

(c) ₹2,100 (d) ₹2,205

24. **When 90 chocolates are sold at ₹160 then a chocolate trader suffers a loss of 20%. In order to earn a profit of 20% how many chocolate should be sale at ₹96?**

(a) 45 (b) 36

(c) 54 (d) 28

25. **If $a^2+b^2=82$ and $ab=9$, find the value of a^3+b^3**

(a) 750 (b) 730

(c) 720 (d) 830

26. **Please read the following information carefully and answer the given question. In a group of 140 people, 75 people like to watch cricket and 60 people like to watch football. 35 people like to watch both the games. How many people like to watch at least one sports?**

(a) 100 (b) 110

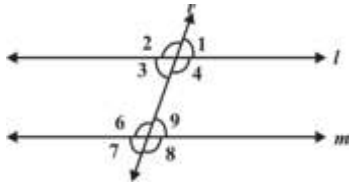
(c) 95 (d) 90

27. **tan 100° + tan 125° + tan 100° tan 125° is equal to:**

(a) 0 (b) –1

(c) 1/2 (d) 1

28. **In the given figure, 1 || m and t is a transversal. If ∠1 and ∠2 are in the ratio 4 : 11, the measures of the angles ∠7 and ∠8, respectively, are :**



(a) 110° and 70° (b) 87° and 93°

(c) 132° and 48° (d) 65° and 115°

29. **Calculate the standard deviation for the following data.**

3, 4, 5, 6, 7

(a) $\sqrt{2}$ (b) $\sqrt{6}$

(c) 2 (d) $\sqrt{3}$

30. **One black, one red and one green dice are thrown together, what is the probability of sum of three numbers is ≥17**

(a) 7/216 (b) 5/216

(c) 1/54 (d) 1/36

31. **Select the option that is related to the third term in the same way as the second term is related to the first term.**

Giraffe : Height :: Tiger :?

(a) Claws (b) Whisker

(c) Stripe (d) Hunter

32. **Lion is related to Roar, in the same way as Horse is related to_____.**

(a) Hiss (b) Neigh

(c) Bray (d) Hoot

33. **In the given letter-cluster pairs, the first letter-cluster is related to the second letter-cluster following a certain logic. Study the given pairs carefully and from the given options, select the pair that following the same logic.**

TSRA : ZIHG

OLEV : EVOL

(a) KVRA : ZIEQ (b) ARNI : RMIZ

(c) CRVF : VEIX (d) JPMN : ONKQ

34. **RYG is related YRT by a certain logic. Following the same logic, EPB is related to PEY. Which of the given options follows the same logic?**

(a) ASI-SAR (b) ASJ-SAP

(c) ASI-SAP (d) ASJ-SAR

35. **If DIRTY is written in certain code 24759 and FOAM is written as 1863. ARID will be written as.**

(a) 6742 (b) 9165

(c) 1579 (d) 2489

36. **In a certain language:**
'Stairs going up' means 'QEW ADS ZCX'
'How many Stairs' means 'PIO LJK ADS'
'He is going' means 'QEW RYT FHG'
Which of the following options will mean 'up'?
(a) QEW (b) ZCX
(c) ADS (d) LJK

37. **In a certain code language MADRAS is written as NBESBT then how is ASSAM written in that code?**
(a) BTTBN (b) BTBNT
(c) BTBTN (d) BTNTB

38. **Among the four words listed, three are alike in some manner and one is different. Select the odd one.**
(a) Adjective (b) Verb
(c) Noun (d) Sentence

39. **Three of the following four words are alike in a certain way and one is different. Pick the odd word out.**
Capsicum, Brinjal, Potato, Ladyfinger
(a) Brinjal (b) Ladyfinger
(c) Capsicum (d) Potato

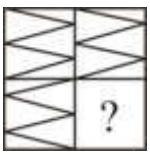
40. **Identify odd one out of the given figures.**
(a)  (b) 
(c)  (d) 

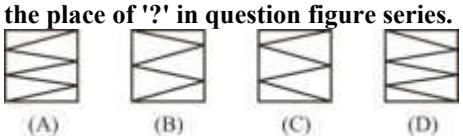
41. **Select the option that will fill in the blank and complete the series.**
PE_{11}, QD_2, RC_9, SB_4, ____
(a) TA_7 (b) TA_6
(c) RA_6 (d) BA_7

42. **Select the number that come in the place of question mark from following options.**

13	12	5
17	15	8
25	24	?
29	21	20

(a) 7 (b) 9
(c) 15 (d) 11

43.


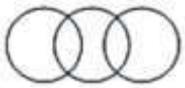
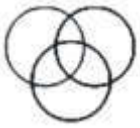
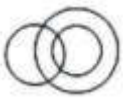
Select that answer figure which will come in the place of '?' in question figure series.


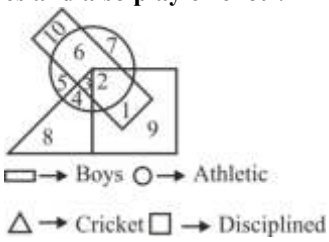
(a) B (b) A
(c) D (d) C

44. **Raghu walks straight from his house to go to bus stop. After walking some distance, he turned toward left and reached to the bus stop, which is in the East direction. Find the direction of the bus stop from his house.**
(a) South-West (b) North-West
(c) North-East (d) South-East

45. **Sitesh and Suresh are maternal cousins. the mother of Suresh, Gita has a daughter Samiksha. Anjali is Samiksha's paternal aunt. How is Anjali related to Gita?**
(a) Husband's sister (b) Mother's sister
(c) Brother's wife (d) Paternal Aunt

46. **If '+' means '×', '–' means '÷', '×' means '+' and '÷' means '–' then what will be the value of**
$225 \div 5 + 96 - 3 \times 31$?
(a) 86 (b) 96
(c) 106 (d) 116

47. **Choose the most suitable Venn diagram for the following words-**
Shoes, Car, Bicycle
(a)  (b) 
(c)  (d) 

48. **According to the given Venn diagram, which number represents 'Boys who participate in athletics and also play cricket'?**


(a) 1 (b) 3
(c) 2 (d) 11

49. **Read the given information carefully and answer the question that follows.**
- **There are four persons P, Q, R and S.**
- **One of them is a doctor and plays football and cricket.**
- **P and Q are teachers.**
- **P plays Badminton.**

- **The Lawyer and both the Teachers are Swimmers.**
- **One of them also plays Tennis.**
- **S plays Carrom and is a Lawyer.**
- **All the four persons play two games each and follow one profession.**

Who plays Carrom and is a Swimmer?

(a) P (b) S
(c) Q (d) R

50. Consider the given statements and decide which of the given assumptions is/are not implicit in the statements.

Some Grass is Green.

All Green is Red.

(a) Some Green is Grass
(b) All Red is Green
(c) Some Grass is Red and Green
(d) Some Grass is Red

51. Statement :

I. All instruments are metals.

II. Some solids are metals.

Conclusions:

1. All metals are instruments.

2. Some metals are solid.

(a) Only conclusion 1 follows
(b) Neither conclusion 1 nor 2 follows
(c) Both conclusion 1 and 2 follows
(d) Only conclusion 2 follows

52. Statement:

Majority is ruled by democracy.

Conclusion:

1. In a democracy, candidates are selected by a majority vote.

2. In a democracy the laws are amended by the majority in the Parliament.

(a) Both conclusion I and II follows.
(b) Only conclusion II follows.
(c) Only conclusion I follows.
(d) Neither conclusion I nor II follows.

53. Read the given statements and decide if the given conclusion is true, false or irrelevant with respect to the statements.

Statements :

I. A is the sister of B.

II. B is the daughter of C.

Conclusion :

B is the enemy of C.

(a) Conclusion drawn is definitely false
(b) Conclusion drawn is probably true
(c) Conclusion drawn is definitely true
(d) Conclusion cannot be drawn

54. Statement:

The coffee cup on the table is very hot.

Assumption:

(I) The cup has tea.

(II) The cup is on the table.

(a) Both I and II implicit
(b) Neither I nor II implicit
(c) Only II implicit
(d) Only I implicit

55. A question is given followed by two statements labeled I and II Identify which of the statements is are sufficient to answer the question.

Question:

In which year was Dheeraj born?

Statements:

(I) Dheeraj at present is 35 years younger to his mother Parvati.

(II) Dheeraj's brother Shan, who was born in 1998, is 45 years younger to his mother Parvati.

(a) I alone is sufficient, while II alone is not sufficient
(b) Both I and II together are sufficient
(c) Either I alone or II alone is sufficient
(d) II alone is sufficient, while I alone is not sufficient

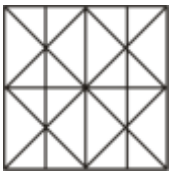
56. In which of the given letter-clusters is the letters skipped between adjacent letters in the order 2^1, 2^2,2^3.

(a) BEJS (b) AEJS
(c) CFIS (d) EIRZ

57. If 29 Q 8 R 56 = 176 and 84 R 5 Q 13 = 19, then 51 Q 3 R 46 = ?

(a) 94 (b) 109
(c) 132 (d) 107

58. How many straight lines are there in the given figure?

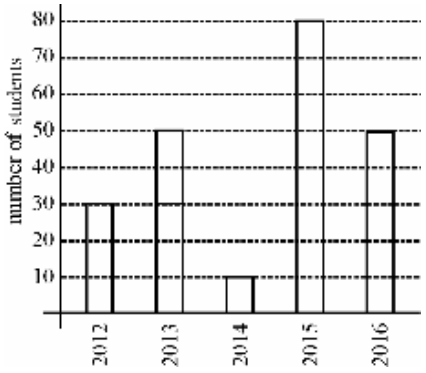


(a) 19 (b) 16
(c) 23 (d) 14

59. If the number 1 on the clock is replaced by the letter 'M', the number 2 is replaced by 'N' and so on, then when the time is 21:00 p.m. the hour hand will be at _____ letter.

(a) S (b) T
(c) U (d) V

60. The following bar graph gives information about the students who passed the institute ABC in the national level entrance examination in last 5 years.



How many students passed from the institute in 2016?

(a) 40 (b) 50
(c) 30 (d) 60

61. Why were stupas built?

(a) They contained sacred relics
(b) To hold religious meetings
(c) To worship the Buddha
(d) To keep Buddhist scriptures

62. Who was the author of the Sanskrit epic Mahabharata ?

(a) Maharishi Veda Vyasa
(b) Maharishi Valmiki
(c) Shree Krishna
(d) Shree Sukhdevji

63. Who is believed to be the first person to bring Christianity to India?

(a) Vasco Da Gama (b) Queen Victoria
(c) Queen Elizabeth (d) Saint Thomas

64. In which session of the Congress did Mahatma Gandhi convince other leaders to start a non-cooperation movement in support of Khilafat as well as swaraj?

(a) Nagpur Session (b) Bombay Session
(c) Calcutta Session (d) Lucknow Session

65. The Tibetan Plateau is the best example of a/an ____.

(a) Volcanic Plateau (b) Erosional Plateau
(c) Intermontane Plateau (d) Doomed Plateau

66. How many zodiac sign in Astronomy?

(a) 9 (b) 10
(c) 11 (d) 12

67. The Sone river belongs to which river system?

(a) Ganga (b) Godavari
(c) Mahanadi (d) Narmada

68. Which of the following Articles of the Constitution of India lays down that the State shall take steps to organise village panchayats?

(a) Article 40 (b) Article 41
(c) Article 43 (d) Article 42

69. Which Amendment of the Constitution of India envisages the Gram Sabha as the foundation of the Panchayat Raj System to perform functions and powers entrusted to it by the State Legislatures?

(a) 71st (b) 63rd
(c) 73rd (d) 54th

70. Brahmos-II is a _____ currently under joint development by the Russia's NPO Mashinostroyenia and India's defence research and development organisation.

(a) Subsonic cruise Missile
(b) Light combat Aircraft
(c) Main battle Tank 1
(d) Hypersonic Cruise Missile

71. In which year was the International Labour Organisation (ILO) established?

(a) 1921 (b) 1931
(c) 1919 (d) 1909

72. What is full form of IRCTC?

(a) Indian Railway Central Tourism Corporation
(b) Indian Railway Catering and Transport Corporation
(c) Indian Railway Catering and Tourism Corporation
(d) Indian Railway Central Transport Corporation

73. Who was elected to the post of speaker of the 18th Lok Sabha on 26th June 2024 ?

(a) Om Birla (b) K. Suresh
(c) Rajnath Singh (d) Amit Shah

74. Who developed the theory of 'population growth' ?

(a) Plato (b) Aristotle
(c) Malthus (d) Darwin

75. Who was appointed the New Secretary General of NATO in 26th June, 2024 ?

(a) James Stoltenberg
(b) Mark Rute
(c) Lilly Band
(d) None of the above

76. Which among the following place is not included in the list of UNESCO World Heritage Site in India?

(a) Rani Ki Vav, Gujarat
(b) Chhatrapati Shivaji Terminal, Maharashtra
(c) Bhimbetka Caves, Madhya Pradesh
(d) Bara Imambara, Uttar Pradesh

77. In which year did Jawaharlal Nehru lay the foundation stone of the National Museum in New Delhi ?

(a) 1965 (b) 1950
(c) 1960 (d) 1955

78. Which of the following is a popular dance and music combination of Andhra Pradesh that is similar to the stick dance?

(a) Neuleu (b) Kolannalu
(c) Villu Pattu (d) Dandiya

79. Which is not an agency of United Nations?

(a) Red Cross international Committee
(b) International Labour Organization
(c) World Health Organization
(d) Food and Agriculture Organization

80. **Who is the author of the book 'Indira Gandhi : A Life in Nature'?**
(a) Natwer Singh (b) Priyanka Vadra
(c) Jairam Ramesh (d) Sonia Gandhi

81. **Who among the following is NOT a Nobel Prize winner?**
(a) Mahatma Gandhi (b) Kailash Satyarthi
(c) Rabindranath Tagore (d) Amartya Sen

82. **Slash and Burn method of farming in Andaman & Nicobar Islands is known as .....?**
(a) Milpa (b) Dipa
(c) Jhumming (d) Pamlou

83. **What is the ranking of India in the 'Global Energy Transition Index 2024' released by the World Economic Forum on 19 June 2024 ?**
(a) 60^{th} (b) 62^{nd}
(c) 63^{rd} (d) 64^{th}

84. **Where has a new species of blue ants been discovered recently ?**
(a) Assam (b) Meghalaya
(c) Arunachal Pradesh (d) Gujarat

85. **What does WCCB stand for in the context of Environment and Forest?**
(a) Wildlife Crime Control Bureau
(b) World Crime Control Bureau
(c) Wildlife Conservation Control Bureau
(d) World Conservation Control Bureau

86. **When a beam of pure white light passes through a prism, what happened then?**
(a) The ray will be reflected
(b) The ray will converge
(c) The beam will flicker
(d) The beam will be scattered

87. **A voltmeter is an instrument which can detect the presence of .....**
(a) Heat (b) Vibrations
(c) Magnetic field (d) Potential difference

88. **Which of the following types of rays do not enter the Earth's atmosphere?**
(a) visible light (b) X-rays
(c) radio waves (d) ultraviolet rays

89. **Who was awarded the first American patent for the invention of the designated type of sewing machine?**
(a) Elias Howe (b) Alejandro Volta
(c) Ernest Rutherford (d) John Napier

90. **Which of the following element is a greenish yellow gas with a characteristic odor at room temperature?**
(a) Iodine (b) Chlorine
(c) Carbon monoxide (d) Hydrogen sulphide

91. **With which substance does silver react and turn black?**
(a) Zinc (b) Magnesium
(c) Carbon (d) Sulphur

92. **Antiseptic properties in soap are found due to one of the following mixtures.**
(a) Bithional
(b) sodium lauryl sulphate
(c) Resins
(d) Sodium dodecylbazine sulphonate bithional

93. **Where are involuntary muscles located in a human body?**
(a) Limb (b) Brain
(c) Heart (d) Tongue

94. **Which of the following statements is incorrect about AIDS?**
(a) The virus can pass on to person from an infected person by sharing the syringes used for injecting drugs.
(b) The virus can be transmitted through sexual content with a person infected with HIV.
(c) The virus can be transmitted to an infant from the infected mother through her milk.
(d) The virus can be transmitted by shaking hands with a person infected with HIV.

95. **If a person has difficulty in seeing distant objects clearly, what condition him suffering from and how can it is corrected?**
(a) Myopia, using convex lens
(b) Myopia, using concave lens
(c) Hypermetropia, using convex lens
(d) Hypermetropia, using concave lens

96. **In which of the following plant groups does the seeds develop inside an ovary which then ripens to become a fruit?**
(a) Pteridophyta (b) Gymnosperms
(c) Thallophyta (d) Angiosperms

97. **Pollination is …… .**
(a) Transmission of pollen from stigma to anther
(b) Production of pollen in plants
(c) Transmission of pollen from anther to stigma
(d) Development of pollen tube in spore.

98. **In HTTP, P stands for:**
(a) Pattern (b) Protocol
(c) Program (d) Policy

99. **What is the default alignment of numbers in an Excel worksheet?**
(a) Left (b) Justify
(c) Center (d) Right

100. **Which of the following green house gas is not included under the Kyoto Protocol?**
(a) CO_2 (Carbon dioxide)
(b) O_3 (Ozone)
(c) CH_4 (Methane)
(d) N_2O (Nitrous oxide)

SOLUTION : PRACTICE SET- 13

ANSWER KEY

1. (b)	11. (c)	21. (b)	31. (c)	41. (a)	51. (d)	61. (a)	71. (c)	81. (a)	91. (d)
2. (c)	12. (c)	22.(d)	32. (b)	42. (a)	52. (a)	62. (a)	72. (c)	82. (b)	92. (a)
3. (c)	13. (c)	23. (a)	33. (b)	43. (d)	53. (d)	63. (d)	73. (a)	83. (c)	93. (c)
4. (d)	14. (a)	24.(b)	34. (a)	44. (d)	54. (c)	64. (c)	74. (c)	84. (c)	94. (d)
5. (c)	15. (c)	25.(b)	35. (a)	45. (a)	55. (b)	65. (c)	75. (b)	85. (a)	95.(b)
6. (a)	16. (b)	26. (a)	36. (b)	46. (b)	56. (a)	66. (d)	76. (d)	86. (d)	96. (d)
7. (b)	17. (a)	27. (d)	37. (a)	47. (b)	57. (d)	67.(a)	77. (d)	87. (d)	97. (c)
8. (c)	18. (b)	28. (c)	38. (d)	48. (b)	58. (d)	68. (a)	78. (b)	88. (d)	98. (b)
9. (b)	19.(b)	29. (a)	39. (d)	49. (b)	59. (c)	69. (c)	79. (a)	89.(a)	99. (d)
10. (d)	20.(b)	30. (c)	40. (a)	50. (b)	60. (b)	70. (d)	80. (c)	90. (b)	100. (b)

SOLUTION

1. (b)

Let the numbers be x and y respectively.

$x - y = 5$ (i)

$xy = 336$ (ii)

$(x + y)^2 = (x-y)^2 + 4xy$

From equation (i) and (ii),

$(x + y)^2 = (5)^2 + 4 \times 336$

$(x + y)^2 = 25 + 1344$

$(x + y)^2 = 1369$

$(x + y) = \sqrt{1369}$

$x + y = 37$

Hence, the required sum of the numbers =37

2. (c)

Let the fares from city P to Q = ₹x

and the fares from city P to R = ₹y

According to the question,

$2x + 3y = 99$ ...(i)

$3x + 2y = 91$ ...(ii)

On multiplying by 3 in equation (i) and 2 in equation (ii)

$6x + 9y = 297$ ...(iii)

$6x + 4y = 182$ ...(iv)

From equation (iii) & (iv) we have –

$5y = 115$

$\boxed{y = ₹23}$

On putting the value of y in equation (i),

$2x + 3 \times 23 = 99$

$2x + 69 = 99$

$2x = 99 - 69$

$x = \frac{30}{2}$

$\boxed{x = ₹15}$

Hence the fares from city P to Q and the fares from city P to R are ₹15, ₹23 respectively.

3. (c)

In according to options, converting the fractions into decimals

(a) $\frac{7}{2^2 \times 7^2} = \frac{7}{196} = 0.0357.....$

(b) $\frac{29}{343} = 0.0845.....$

(c) $\frac{15}{600} = 0.025$

(d) $\frac{77}{210} = 0.3\overline{6}$

Hence, from above $\frac{15}{600}$ is terminating decimal.

4. (d)

$$\frac{1}{1.4} + \frac{1}{4.7} + \frac{1}{7.10} + ... + \frac{1}{47.50}$$

Given expression 1, 4, 7, ….47, and 4, 7, 10, …..50 are in arithmetic series whose difference is 3. In this case sum of given term–

$$\frac{1}{\text{Difference}}\left(\frac{1}{\text{First term}} - \frac{1}{\text{Last term}}\right)$$

$$= \frac{1}{3}\left(\frac{1}{1} - \frac{1}{50}\right)$$

$$= \frac{1}{3} \times \frac{49}{50}$$

$$= \frac{49}{150}$$

5. (c)

Let the fraction be x.

According to the question,

$\frac{5}{8} + x = 1$

$x = 1 - \frac{5}{8}$ $x = \frac{3}{8}$

$x = \frac{3 \times 2}{8 \times 2}$

$x = \frac{6}{16}$

Hence the required fraction is = $\frac{6}{16}$.

6. (a)

If fraction is $\frac{x}{y}$

$\Rightarrow \quad \frac{x+6}{y} = \frac{x}{y} + \frac{3}{4}$

$\Rightarrow \quad \frac{x+6}{y} - \frac{x}{y} = \frac{3}{4}$

$\Rightarrow \quad \frac{6}{y} = \frac{3}{4}$

$\Rightarrow \quad y = 8$

7. (b)

According to the question,

$20 - 14 = 6$

$25 - 19 = 6$

$35 - 29 = 6$

$40 - 34 = 6$

Hence, the required number

= (LCM of 20, 25, 35 and 40) – 6

2	20	25	35	40
2	10	25	35	20
2	5	25	35	10
5	5	25	35	5
5	1	5	7	1
7	1	1	7	1
	1	1	1	1

$= (2\times2\times2\times5\times5\times7) - 6 = 1400 - 6 = 1394$

8. (c)

LCM of fractions $= \frac{\text{LCM of the numerators}}{\text{HCF of denominator}}$

LCM of $\frac{5}{6}, \frac{6}{5}$ and $\frac{3}{2} = \frac{\text{LCM of 5, 6 and 3}}{\text{HCF of 6, 5 and 2}}$

$= \frac{30}{1}$

$= 30$

9. (b)

Let HCF = x

Then LCM = 92x

LCM + HCF = 372

92 x + x = 372

$x = \frac{372}{93}$

$x = 4$

LCM × HCF = First number × Second number

$92x \times x = 368 \times$ Second number

Second number $= \frac{92\times x\times x}{368} = \frac{92\times4\times4}{368} = 4$

10. (d)

LCM of 6, 8, 10 and 12,

$6 = 2 \times 3$

$8 = 2 \times 2 \times 2$

$10 = 2 \times 5$

$12 = 2 \times 2 \times 3$

$LCM = 2 \times 2 \times 2 \times 3 \times 5 = 120$

So, the required number

= Multiples of 120 between 300 and 500.

= 360 and 480.

11. (c)

Let,

$\frac{1}{3}$ of A $= \frac{3}{4}$ of B $= \frac{1}{6}$ of C $= K$

$\frac{A}{3} = \frac{3B}{4} = \frac{C}{6} = K$

then, $A = 3K$

$B = \frac{4}{3}K$

$C = 6K$

Hence, $A : B : C = 3K : \frac{4}{3}K : 6K$

$= 9K : 4K : 18K$

$A : B : C = 9 : 4 : 18$

12. (c)

$(a+b):(b+c):(c+a) = 6 : 7 : 8$

a+ b +c = 14

Let $(a+b) = 6x$ ... (1)

$(b + c) = 7x$ ... (2)

$(c + a) = 8x$ ... (3)

On adding equation (1), (2) and (3) –

$(a+b)+(b+c)+(c+a) = 6x + 7x + 8x$

$2(a+b+c) = 21x$

$a + b + c = \frac{21}{2}x$

$6x + c = \frac{21}{2}x$ (from equation (1) ... (4)

$a + b + c = 14$ (Given)

$\frac{21}{2}x = 14$

$\boxed{x = \frac{28}{21}}$

On putting the value of x in equation (4)

$$6\times\frac{28}{21}+c=\frac{21}{2}\times\frac{28}{21}$$

$$c=\frac{21}{2}\times\frac{28}{21}-6\times\frac{28}{21}$$

$$c=\frac{28}{21}\left[\frac{21}{2}-6\right]$$

$$c=\frac{28}{21}\times\frac{9}{2}$$

$c = 6$

13. (c)

Let the two numbers x and y

$\therefore$ According to the question,

$$25\%\times x = y\times 30\%+7$$

$$\frac{25\times x}{100}=\frac{y\times 30}{100}+7$$

$$\frac{x}{4}=\frac{3y}{10}+7$$

$$\frac{x}{4}=\frac{3y+70}{10}$$

$$5x = 6y+140$$

$$5x-6y = 140 \text{ ..... (1)}$$

Again,

According to the question,

$\because$ $x-y = 29$ ..... (2)

From equation (1) and (2) × 5

$$5x - 6y = 140$$

$$\underline{5x - 5y = 145}$$

$$y = 5$$

On putting the value of y in equation (2),

$$x - y = 29$$

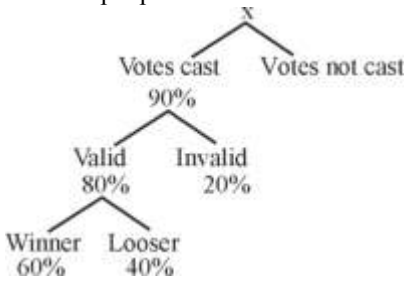
$$x - 5 = 29$$

$$x = 34$$

Hence the numbers are 34 and 5

14. (a)

Let the number of people entitled to vote = x



Then,

According to the question,

$$x\times 90\%\times 80\%\times 60\% = 64800$$

$$x\times\frac{90}{100}\times\frac{80}{100}\times\frac{60}{100}=64800$$

$$\frac{x\times 9\times 4\times 3}{10\times 5\times 5}=64800$$

$$x=\frac{16200000}{108}$$

Hence, the number of people entitled to vote is x = 150000

15. (c)

Area of the square field = $(\text{side})^2$

$196 = (\text{side})^2$

Side = $\sqrt{196} = \sqrt{14\times 14}$

Side = 14 m

16. (b)

$\because$ Volume of sphere = $\frac{4}{3}\pi r^3$

$$\frac{4}{3}\times\frac{22}{7}\times r^3 = 4851$$

$$r^3=\frac{441\times 21}{4\times 2}$$

$$r^3=\frac{21\times 21\times 21}{2\times 2\times 2}$$

$$r=\frac{21}{2}$$

Diameter $(2r)=\frac{21}{2}\times 2 = 21$ cm

17. (a)

According to the question,

$(2M+3B)\times 18 = (3M+2B)\times 15$

{Where M = Man, B = Boy}

$36M + 54B = 45M + 30B$

$24B = 9M$

$$B=\frac{3}{8}M$$

Let 4 men and 2 boys can complete the work in x days

Now, $(4M + 2B)x = (3M + 2B)\times 15$

$$(4M+\frac{6}{8}M)x=(3M+\frac{6}{8}M)\times 15$$

$$38x = 30\times 15$$

$$x=\frac{225}{19}$$

$$x = 11\frac{16}{19} \text{ days}$$

18. (b)

Let, efficiency of A = 100

Then, efficiency of B = 175

Ratio of efficiency of A and B

$$\Rightarrow \frac{A}{B}=\frac{100}{175}=\frac{4}{7}$$

Let B can complete the work in x days.

The ratio of the number of days required by A and B to complete the work

$$\Rightarrow \frac{A}{B}=\frac{20}{x}$$

$\because$ Efficiency is inversely proportional to the number of days.

$$\therefore \frac{4}{7}=\frac{x}{20}$$

$$\Rightarrow x = 11\frac{3}{7}$$

Hence, B will complete the same work in $11\frac{3}{7}$ days.

19.(b)

Total distance covered by car

$$= 62 \times \frac{5}{2} + 68 \times \frac{5}{4} \quad (\because \text{Distance} = \text{Speed} \times \text{Time})$$

$$= 31 \times 5 + 17 \times 5$$

$$= 155 + 85 = 240 \text{ km.}$$

$$\text{Average speed of car} = \frac{\text{Total Distance}}{\text{Total Time}}$$

$$= \frac{240}{5/2 + 5/4} \Rightarrow \frac{240 \times 4}{10 + 5}$$

$$= \frac{240 \times 4}{15} \Rightarrow 16 \times 4 = 64 \text{ Km./hr.}$$

20.(b)

Let the length of train is l metre and speed of train = x m./sec.

$l + 155 = x \times 16$ ..... (i)

$l + 195 = x \times 18$ ..... (ii)

From equation (i) ÷ equation (ii)

$$\frac{l+155}{l+195} = \frac{16x}{18x}$$

$$\frac{l+155}{l+195} = \frac{8}{9}$$

$9l + 1395 = 8l + 1560$

$l = 165$ metre

from equation (i),

$$x = \frac{l+155}{16} = \frac{165+155}{16} = 20 \text{ metre/ second}$$

$$= 20 \times \frac{18}{5} = 72 \text{ km/hr.}$$

21. (b)

Let the Principal = ₹ P,

T = 15 years, Amount = 3P

SI = Amount – Principal

= 3P – P = 2P

According to the question,

$$SI = \frac{P \times R \times T}{100}$$

$$2P = \frac{P \times R \times 15}{100}$$

$$R = \frac{40}{3}\%$$

Again, $SI = \frac{P \times R \times T}{100}$

$$4P = P \times \frac{40}{3} \times \frac{T}{100}$$

$T = 30$ years

22.(d)

Given,

Principal (P) = ₹1000

Amount (A) = ₹1440

Time (t) = 2 years

Rate (R) = ?

$$\text{Amount} = P\left(1 + \frac{R}{100}\right)^t$$

$$1440 = 1000\left(1 + \frac{R}{100}\right)^2$$

$$\left(1 + \frac{R}{100}\right)^2 = \frac{1440}{1000}$$

$$1 + \frac{R}{100} = \frac{12}{10}$$

$$\frac{100 + R}{100} = \frac{12}{10}$$

R = 120 - 100

$\boxed{R = 20\%}$

23. (a)

Let- Cost price (CP) = ₹x

Selling price (SP) = ₹1785, Loss = 15%

$$\because \quad CP \times \frac{85}{100} = 1785$$

$$CP = \frac{1785 \times 100}{85} = ₹2100$$

If profit is 15% then,

$$CP \times \frac{115}{100} = SP$$

$$2100 \times \frac{115}{100} = SP$$

Hence, SP = ₹2415

24.(b)

$\because$ Selling price of 90 chocolates = ₹ 160

$$\therefore \text{ Selling price of 1 chocolate} = ₹\frac{160}{90} = ₹\ \frac{16}{9}$$

$$\text{Cost price of 1 chocolate} = \frac{16}{9} \times \frac{100}{(100-20)}$$

$$= \frac{16}{9} \times \frac{100}{80} = ₹\frac{20}{9}$$

Selling price of 1 chocolate in order to earn 20% profit.

$$= \frac{20}{9} \times \frac{100+20}{100} = \frac{20}{9} \times \frac{120}{100}$$

$$\text{Selling price of 1 chocolate} = \frac{8}{3}$$

$$\text{No. of chocolates in ₹1} = \frac{3}{8}$$

$$\therefore \text{ No. of chocolate in ₹96} = 96 \times \frac{3}{8} = 36$$

25.(b)

Given-

$a^2 + b^2 = 82$

$ab = 9$

On adding 2ab both sides,

$a^2 + b^2 + 2ab = 82 + 2ab \qquad (\because ab = 9)$

$(a+b)^2 = 82 + 18$

$(a+b)^2 = 100$

$a + b = 10$

By cubing both sides

$(a+b)^3 = (10)^3$

$a^3 + b^3 + 3ab(a+b) = 1000$

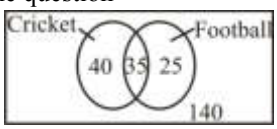
$a^3 + b^3 + 3\times 9(10) = 1000$

$a^3 + b^3 = 1000 - 270$

$a^3 + b^3 = 730$

26. (a)

According to the question-



So, those people who like to watch at least one game

$= 40 + 35 + 25$

$= 100$

27. (d)

$\tan 100^\circ + \tan 125^\circ + \tan 100^\circ \tan 125^\circ = ?$

$\tan(A+B) = \dfrac{\tan A + \tan B}{1 - \tan A \cdot \tan B}$

$\tan(100 + 125^\circ) = \dfrac{\tan 100^\circ + \tan 125^\circ}{1 - \tan 100^\circ \cdot \tan 125^\circ}$

$\tan(225^\circ) = \dfrac{\tan 100^\circ + \tan 125^\circ}{1 - \tan 100^\circ \cdot \tan 125^\circ}$

$\tan(180^\circ + 45^\circ) = \dfrac{\tan(100^\circ) + \tan 125^\circ}{1 - \tan 100 \cdot \tan 125}$

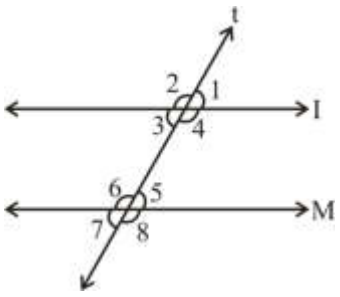
$\{\tan(180+\theta) = \tan\theta\}$

$\tan 45^\circ = \dfrac{\tan 100^\circ + \tan 125^\circ}{1 - \tan 100 \tan 125^\circ}$

$1 - \tan 100^\circ . \tan 125^\circ = \tan 100^\circ + \tan 125^\circ$

$1 = \tan 100^\circ + \tan 125^\circ + \tan 100^\circ \tan 125^\circ$

28. (c)



$\angle 1 : \angle 2 = 4 : 11$

Let $\angle 1 = 4x$

and, $\angle 2 = 11x$

$\angle 1 + \angle 2 = 180^0$

$4x + 11x = 180^0$

$15x = 180^0$

$x = 12^0$

$\angle 1 = 4 \times 12^0 = 48^0$

$\angle 2 = 11 \times 12^0 = 132^0$

$\therefore \angle 2 + \angle 7 = 180$

$\angle 7 = 180^0 - 132^0$

$= 48^0$

and,

$\angle 1 + \angle 8 = 180^0$

$\angle 8 = 180^0 - 48^0$

$= 132^0$

Hence, $\angle 7$ and $\angle 8$ का माप $= 48^\circ$ and 132°

29. (a)

Standard deviation $= \sqrt{\dfrac{\sum |x - \bar{x}|^2}{n}}$

where $x \rightarrow$ term

$\bar{x} \rightarrow$ mean

$n \rightarrow$ number of terms

mean $(\bar{x}) = \dfrac{\text{Sum of total terms}}{\text{Total number of terms}}$

$\bar{x} = \dfrac{3+4+5+6+7}{5} = \dfrac{25}{5} = 5$

$= \sqrt{\dfrac{\sum |x - \bar{x}|^2}{n}}$

$= \sqrt{\dfrac{(3-5)^2 + (4-5)^2 + (5-5)^2 + (6-5)^2 + (7-5)^2}{5}}$

$= \sqrt{\dfrac{4+1+0+1+4}{5}}$

$= \sqrt{\dfrac{10}{5}} = \sqrt{2}$

30. (c)

The probability of the sum of the numbers exceeding from 17 or 17 when throwing all three passes together—

Favourable events = (5, 6, 6), (6, 5, 6), (6, 6, 5), (6,6,6)

Total events $= 6 \times 6 \times 6 = 216$

$\therefore$ Intended probability $= \dfrac{4}{216} = \dfrac{1}{54}$

31. (c)

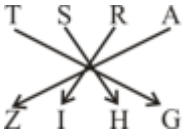
Just as, Giraffe is highest in animal which is known for his height and length of neck. Same as, stripes are found in body of Tigers.

32. (b)

Just as, 'Lion' is related to 'Roar', in the same way as 'Horse' is related to 'Neigh.

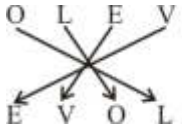
33. (b)

Just as,



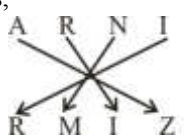
(Opposite letters)

and,



(Opposite letters)

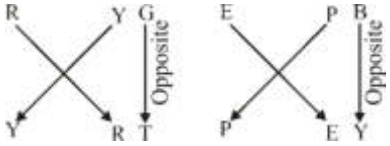
Same as,



(Opposite letters)

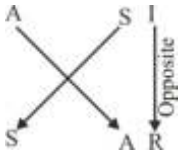
34. (a)

Just as, and



Similarly,

From option (a)



∴ Option (a) follows the given logic.

35. (a) From the above code

Such as,

D I R T Y

↓ ↓ ↓ ↓ ↓

2 4 7 5 9

and,

F O A M

↓ ↓ ↓ ↓

1 8 6 3

Similarly,

A R I D

↓ ↓ ↓ ↓

6	7	4	2

36. (b)

Given,

Stairs going up → QEW ADS ZCX

How many Stairs → PIO LJK ADS

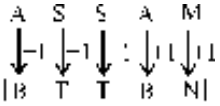
He is going → QEW RYT FHG

Hence, 'ZCX' will mean 'up'.

37. (a)

Just as,

Similarly,



38. (d)

Adjective, Verb and Noun are the form of parts of speech whereas a sentence is a combination of all these.

Hence, option (d) is different from other options.

39. (d)

Capsicum, Brinjal and Ladyfinger grown above the ground while potato is grown underground.

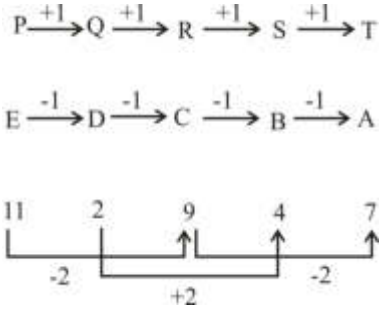
Hence, option (d) is odd one.

40. (a)

Except the option (a) in all other options the black circle inside the square is connected to a diagonal of the square by a line while the circle inside the option figure (a) is connected to the side of the square by line. Hence, it is clear that figure (a) is different from all others.

41. (a)

The given series is as follows–



Hence the option (a) will complete the series.

42. (a)

Just as,

$13^2 = 12^2 + 5^2 = 144 + 25 = 169$

$17^2 = 15^2 + 8^2 = 225 + 64 = 289$

$29^2 = 21^2 + 20^2 = 441 + 400 = 841$

Similarly,

$25^2 = 24^2 + x^2$

$x^2 = 625 - 576 = 49$

$x = 7$

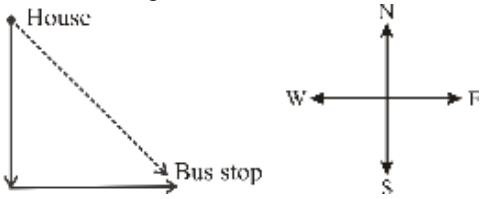
Hence, $\boxed{? = 7}$

43. (d)

Answer figure C will come in place of the question mark (?). So, option (d) is correct.

44. (d)

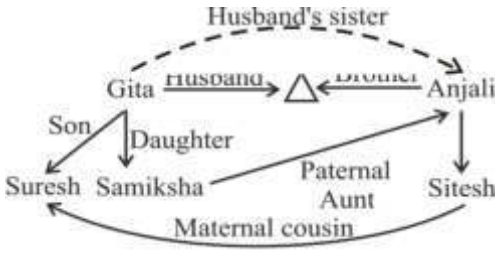
Raghu's movement path is as follows:



Hence, it is clear from the diagram that the bus stop from Raghu's house is in the South-East direction.

45. (a)

According to the question, the blood relation diagram is as follows:



Hence, Anjali is Gita's husband's sister.

46. (b)

Given,

$225 \div 5 + 96 - 3 \times 31 = ?$

On changing the symbols,

$= 225 - 5 \times 96 \div 3 + 31$

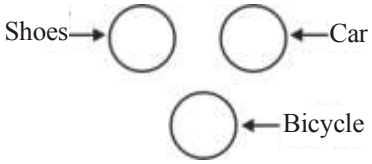
$= 225 - 5 \times 32 + 31$

$= 225 - 160 + 31$

$= 96$

47. (b)

Shoes, Car and Bicycle are different from each other.



Hence, option (b) is correct.

48. (b)

It is clear from the given diagram that boys who participate in athletics and also play cricket = 3.

49. (b)

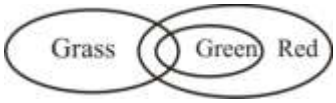
According to the question-

Person	Occupation	Sport-1	Sport-2
R	Doctor	Football	Cricket
P	Teacher	Badminton	Swimmer
Q	Teacher	Tennis	Swimmer
S	Lawyer	Carrom	Swimmer

Hence, it is clear from the table that 'S' plays Carrom and is a Swimmer.

50. (b)

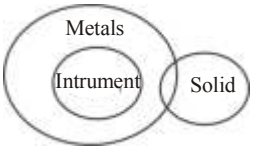
From the statement Venn diagram relation as follow.



Assumption of option (b) not implicit in the statement.

51. (d)

On making the diagram as per the statement.



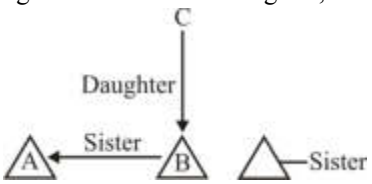
Hence, only conclusion 2 follows.

52. (a)

In the context of the statement, both conclusion I and conclusion II follows.

53. (d)

On making the blood relation diagram,



Conclusion cannot be drawn because in the statement it is said that B is the daughter of C, while the enemy is not mentioned in the statements.

54. (c)

It is clear from the statement that the cup is quite full and the cup is placed on a table. So only assumption II is implicit in the following statement.

55. (b)

Dheeraj's brother Shan was born in 1998.

According to the question,

Birth year of Dheeraj's mother = 1998 – 45

= 1953

Birth year of Dheeraj = 1953 + 35 = 1988

Hence, it is clear in which year Dheeraj was born.

Hence, both statements (I) and (II) are sufficient to answer the question.

56. (a)

From option (a)

B C D E F G H I J K L M N O P Q R S

Hence, the given letter cluster in option (a) is the letters skipped between adjacent letters in the order 2^1, 2^2, 2^3.

57. (d)

Just as,

$29 \times 8 - 56 = 232 - 56 = 176$ $\left[\because Q = \times,\ R = -\right]$

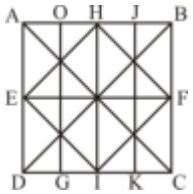
and $84 - 5 \times 13 = 84 - 65 = 19$

Similarly,

$51 \times 3 - 46 = 153 - 46 = 107$

58. (d)

From figure,

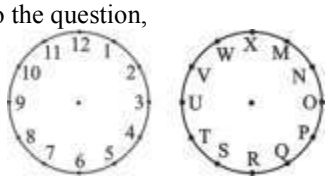


Straight lines – AB, BC, CD, DA, EF, OG, HI, JK, DB, AC, EH, HF, FI, EI = 14

The total number of straight lines in the given figure will be 14.

59. (c)

According to the question,



It is clear from the picture that at 21:00 (9:00) the hourly hand will be on the letter 'U'.

60. (b)
It is clear from the given bar graph that the number of students passed from institute ABC in the year 2016 = 50

61. (a)
Buddhist stupas were originally built to house the ashes or remains of the Buddha and his associates. Stupas were built because the relics of Buddha such as his bodily remains or objects used by him were buried there.

62. (a)
The famous epic Mahabharata was written by the Krishna Dvaipayana (Maharishi Veda Vyasa). Mahabharata is also known as fifth Veda, it is a major book of Hindus. It is considered to be the longest epic ever written. Its longest version consists of over 100,000 shloka or over 200,000 individual verse lines. Mahabharata and Ramayana are the two major Sanskrit epics of ancient India.

63. (d)
Saint Thomas is believed to be the first person to bring Christianity to India. Saint Thomas was one of the 12 apostles of Jesus and the man Largely credited with bringing Christianity to Indian through the Malabar coast in 52 AD. According to certain inscription the 7th century, there were Christion-Indian communities living in Kerala.

64. (c)
Mahatma Gandhi felt the need to launch a more broad-based movement in India. But he was certain that no movement could be organised without bringing the Hindus and Muslims closer together. One way of doing this, he felt, was to take up the Khilafat issue. The First World War had ended with the defeat of Ottoman Turkey. And there were rumours that a harsh peace treaty was going to be imposed on the Ottoman emperor the spiritual head of the Islamic World (the Khalifa). To defend the Khalifa's temporal powers, a Khilafat Committee was formed in Bombay in March 1919. A young generation of Muslim leaders like the brothers Muhammad Ali and Shaukat Ali, began discussing with Mahatma Gandhi about the possibility of a united mass action on the issue. Gandhiji saw this as an opportunity to bring Muslims under the umbrella of a unified national movement. At the Calcutta Session of the Congress in September 1920, he convinced other leaders to start a non-cooperation movement in support of Khilafat as well as for Swaraj.

65. (c)
The Tibetan Plateau is the best example of an intermontane Plateau. When plateaus are enclosed by hills and mountains almost from all sides, they are known as intermontane plateau. e.g. Tibetan plateau (known as the roof of the world) between the Himalayas and the Kunlun Mountain and Bolivian plateau between two ranges of Andes.

Vocanic plateau are formed by the deposition of huge amount of lava flows. eg. Columbia - Snake plateau (USA).

Erosional plateau also called Dissected Plateau is formed by continual process of weathering, for example Scottish Highlands.

Doomed plateau is formed when the landmass is uplifted is such a manner that the middle portion is upward and the sides are rounded. eg. Ozark plateau (USA).

66. (d)
In Astronomy, the zodiac is divided into twelve signs as following as–Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius Capricorn, Aquarius and Pisces.

67.(a)
Son river, the south bank tributary of Ganga river, originating in the Amarkantak Plateau. After forming a series of waterfall at the edge of the plateau, it reaches Arrah, west of Patna, to join the Ganga. Ganga river system extends across Bangladesh, Nepal, Tibet and India. It makes up nearly one fourth of India total land area and the country's largest river system.

68. (a)
Article 40- Organisation of village panchayats.
Article 41- the State shall within the limits of its economic capacity and development, make effective provision for securing the right to work, to education and to public assistance in certain cases.
Article 42- Provision for securing just and humane conditions of work and maternity relief
Article 43- Living wage, etc, for workers

69. (c)
The 73rd and 74th Amendments 1992 to the Indian Constitution provide for elections of local bodies after every five years. 73rd Amendment added part IX titled "The Panchyats" and 74th Amendment added part IX-A titled "The Municipalities".

70. (d)
Brahmos-II is a hypersonic cruise missile currently under joint development by Russia's NPO Mashinostroyenia and India's Defence Research and Development Organization. Brahmos Aerospace named the missle Brahmos-II in honour of the former President of India's APJ Abdul Kalam.

71. (c)
International Labour Organization (ILO) is a specialized agency of the United Nations. It is the only tripartite UN agency. Established in 1919 by the treaty of Versailles as an affiliated agency of the League of Nations. ILO brings together governments, employers and workers representative of 187 member states, to set labour standards, develop policies and devise programmes promoting decent work for all women and man. Its headquarters is situated in Geneva, Switzerland.

72. (c)
The full form of IRCTC is the Indian Railways Catering and Tourism Corporation. It was established on 27 September 1999. It is an Indian Railway subsidiary established by the Ministry of Railways to manage Indian railway catering, online ticketing and tourism operations. IRCTC headquarters is located in New Delhi, India.

73. (a)
On June 26, 2024 for the second consecutive time, Lok Sabha member 'Om Birla' from Kota, Rajasthan was elected as the speaker of the Lok Sabha. According to the Article 93 of the Indian Constitution, the Lok Sabha elects the Speaker and Deputy Speaker. Rahul Gandhi was elected as the leader of the opposition in the 18th Lok Sabha.

74. (c)
Thomas Robert Malthus was a famous 18th-century British economist known for the population growth philosophy outlined in his 1798 book "An Essay on the Principle of Population." In this, Malthus theorized that populations would continue expanding until growth is stopped or reversed by disease, famine, war, or calamity. Malthus specifically stated that the human population increases geometrically, while food production increases arithmetically. Under this paradigm, humans would eventually be unable to produce enough food to sustain themselves.

75. (b)
Mark Rutte (former Prime Minister of Netherlands) was appointed as the new Secretary General of NATO in June 2024. He replaced James Stoltenberg. As of May 2024, there are a total of 32 member countries in the NATO organisation.

76. (d)
Bara Imambara is not listed in UNESCO World Heritage Site. It is based in the Lucknow of Uttar Pradesh. It was built by Nawab Asaf-ud-Daula in 1784 and its designer was Kifayat-ullah who is said to be a relative of the architect of the Taj Mahal.

Rani Ki Vav is a step well situated in the town of Patan in Gujarat. It is located on the banks of Saraswati River. Its construction is attributed to Udayamati, queen of the 11th century Solanki dynasty and spouse of Bhima I.

Bhimbetka rock shelters exhibits the earliest traces of human life in India and evidence of stone age starting at the site and referred to as a Buddhist site as well.

The Chhatrapati Shivaji Terminus is located in Mumbai. It was designed by British born architectural engineer Frederick William Stevens. Now it is the headquarters of India's Central Railway.

77. (d)
The foundation stone or the corner stone of the National Museum of India, New Delhi was laid by the former Prime Minister Jawahar Lal Nehru on 12 May, 1955. It was prepared by the Maurice Gwyer Committee in May 1946.

78. (b)
Kolannalu or Kolkolannalu is a popular dance and music combination of Andhara Pradesh. This is a popular stick dance. It is equivalent to the famous Dandiya dance of Gujarat. Women folks use two sticks to formulate the beats and dance according to the time of song sung. Dancers usually move in the angular motion and go about striking the sticks of their fellow dancers.

79. (a)
Major specialized agencies and related organs of the UN include the International Labour Organisation (ILO) established in 1919 and headquartered in Geneva, The Food and Agriculture Organization of the United Nations (FAO) established in 1945 and headquartered in Rome, The United Nations Educational, Scientific and Cultural Organization (UNESCO) established in 1945 and headquartered in Paris, and the World Health Organization (WHO) established in 1948 and headquartered in Geneva.

80. (c)
Jairam Ramesh is an Indian economist and Politician belonging to congress party. A chequered Brilliance: The many lives of V.K. Menon and Indira Gandhi: A life in nature was written by Jairam.

81. (a)
Mahatma Gandhi was not as noble Prize winner. Rabindranath Tagore was the first Indian citizen to be awarded Nobel Prize in the field of Literature, and also first Asian to be awarded in 1913.

Here is the list of the nine Indian Nobel Prize winners till date:

1. Abhijit Banerjee for Economics, 2019
2. Kailash Satyarthi for Peace, 2014
3. Venkatraman Ramakrishnan for Chemistry, 2009
4. Amartya Sen for Economics, 1998
5. Subrahmanyan Chandrasekhar for Physics, 1983
6. Mother Teresa for Peace, 1979
7. Hargobind Khorana for Medicine, 1968
8. CV Raman for Physics, 1930

Note: The Nobel Prize is awarded in six categories each year -- Physics, Chemistry, Medicine, Literature, Economics, and Peace.

82. (b)
Slash and Burn agriculture is also known as fire–fallow cultivation which is a cultivating technique that includes the cutting and burning of plants in a backwoods or forest to make a field called a 'swidden'.

'Slash and Burn Agriculture' is known by a specific name in different states of India. These are:

- **Jhumming**- Assam, Meghalaya, Mizoram and Nagaland
- **Pamlou**- Manipur
- **Dipa**- Bastar (Chhattisgarh) and Andaman & Nicobar Islands

83. (c)
As per the Global Energy Transition Index, 2024 released by world economic forum, out of the 120 nations surveyed under the aforesaid Index, India has been placed at the 63rd spot.

84. (c)
In Siyong Valley Arunachal Pradesh a new species of blue ants has been discovered. This species is related to rare breed (Linage)– Paraparatrachina. Therefore it's name has been christened as 'Paraparatrachina. It is a tiny ant whose length is less than 2 mm.

85. (a)
In the context of Environment and Forest WCCB stands for Wildlife Crime Control Bureau. It was established on 4 September 2006 by amending Wildlife (Protection) Act (WLPA), 1972 to protect the wildlife and fauna in India. It is headquartered in New Delhi.

86. (d)
When a beam of pure white light passes through a prism then the beam will be scattered and we get a spectrum on the other side of the prism.

87. (d)
A voltmeter is an instrument used for measuring electric potential difference between two points in an electric circuit. It is connected in parallel. It usually has a high resistance so that it takes negligible current from the circuit.

88. (d)
Ultra-violet rays do not enter the earth's atmosphere due to ozone layer of atmosphere. An ultraviolet rays is a form of electromagnetic radiation with wavelength from 100 nm to 400 nm. It is shorter than visible light but longer than X-ray.

89.(a)
Elias Howe (born July 9, 1819) was an American businessman, who was awarded the first US Patent Award in 1846 AD for the loestitch design of sewing machines. He started his career as an apprentice in a US textile company.

90. (b)
Chlorine is a greenish yellow gas with a characteristic odor at room temperature. It's a chemical element whose atomic number is 17 and has chemical symbol "Cl". It is present in simple salt Nacl (Sodium Chloride).

91. (d)
Silver turns black when kept in the air because silver reacts with sulphur compounds such as hydrogen sulphide (H_2S) present in air and forms silver sulphide.

92. (a)
The antiseptic properties in soap are due to the mixture of bithionol. Bithionol is used in soaps and cosmetics due to its antibacterial and antihelmetic properties.

93. (c)
The involuntary muscles are located in heart of a human body. On the basis of structure and function, there are three types of muscle tissue recognized in vertebrates:

(1) Voluntary muscles: They anchored to bone by tendons,that is why they are also called Skeletal muscles. They are used to effect skeletal movement in activities such as locomotion and maintaining posture. These muscles are responsible to react to conscious control of human, so they are known as voluntary muscles.

(2) Involuntary muscles: Involuntary muscles include all muscles whose activity is independent and not affected by voluntary nerve activity.

(3) Cardiac muscles: Cardiac muscles are striated muscles that is present only in the walls of heart under involuntary action.

94. (d)
Acquired Immuno deficiency syndrome (AIDS) is a chronic, potentially life-threatening condition caused by the human immunodeficiency virus (HIV). HIV is a sexually transmitted infection. It can also be spread by contact with infected blood and from illicit injection drug users or sharing needles. It can also be spread from mother to child during pregnancy, child birth or breastfeeding. Hence, option (d) the virus can be transmitted by shaking hands with person infected with HIV statement is incorrect about AIDS.

95.(b)
A person with myopia (near-sightedness) can see nearby objects clearly but cannot see distant objects distinctly. A person with this defect has the far point nearer than infinity. Such a person may see clearly upto a distance of a few metres. In a myopic eye, the image of a distant object is formed in front of the retina and not at the retina itself. This defect may arise due to excessive curvature of the eye lens, or elongation of the eyeball. This defect can be corrected by using a concave lens of suitable power.

96. (d)
Pteridophyta is a division of the plant kingdom, comprising the vascular cryptogams. They are flowerless plants exhibiting an alternation of two distinct and dissimilar generations. The first is a non-sexual, spore-bearing, sporophyte generation. In gymnosperms (conifers and allies) the ovules lie uncovered on the scales of the cone. In angiosperms (flowering plants), one or more ovules are enclosed by the ovary, which develops into the fruit

97. (c)
Pollination is the transfer of pollen grains from the anther of one flower to the stigma of the same or another flower. Pollination occurs in two ways -
(1) Self–Pollination
(2) Cross–Pollination

98. (b)
In HTTP, the P is used for the protocol. The full form of HTTP is Hyper Text Transfer Protocol, a technology that is used to create a better connection between a web server and a web user. This protocol is also the basis for large multifunction and multi input protocols because of this, no web works without communication process.

99. (d)
Align or alignment is a term used to describe how text is placed on the screen. In an excel worksheet the numbers are align to the right while the texts are align to the left by default.

100. (b)
Ozone gas (O_3) is not included under Kyoto Protocol. Kyoto Protocol is an international treaty to reduce green house gas emissions. It was adopted in Kyoto, Japan on 11 December 1997. It applies to 6 green house gases:- Carbon dioxide, Methane, Nitrous oxide, Hydrofluorocarbons, Fluoro-carbons and Sulfur hexafluoride.

PRACTICE SET - 14

1. The sum of two numbers is 22. Five times of one number is equal to 6 times the other. Find the larger of the two numbers.
(a) 12 (b) 15
(c) 10 (d) 16

2. In a school picnic group, $2/9^{th}$ part were adults and the number of children was more than adults by 95. How many children were present there?
(a) 95 (b) 133
(c) 190 (d) 103

3. Which of the following will give terminating decimal?
(a) $\frac{12}{72}$ (b) $\frac{6}{72}$
(c) $\frac{9}{72}$ (d) $\frac{3}{72}$

4. Which of the following fractions is not equivalent to 4/11?
(a) $\frac{64}{176}$ (b) $\frac{20}{55}$
(c) $\frac{84}{209}$ (d) $\frac{32}{88}$

5. Find the sum of the place value of 5 and 4 in $\frac{6}{8}$ and $\frac{6}{25}$ respectively.
(a) $\frac{8}{100}$ (b) $\frac{99}{100}$
(c) $\frac{9}{100}$ (d) $\frac{88}{100}$

6. A cake is shared among five friends. Four of them get the share of the cake $\frac{1}{8}, \frac{1}{6}, \frac{5}{12}, \frac{1}{12}$ respectively. What is the 5^{th}'s share of the cake?
(a) $\frac{1}{6}$ (b) $\frac{5}{24}$
(c) $\frac{1}{4}$ (d) $\frac{3}{8}$

7. If $x = 2^3 \times 3^2 \times 5 \times 7^3$, $y = 2^2 \times 3^3 \times 5^2 \times 7^2$, and $z = 2^4 \times 3 \times 5^3 \times 7$. Then the HCF of x, y and z is:
(a) 1260 (b) 840
(c) 420 (d) 630

8. What is the LCM of $\frac{6}{25}, \frac{4}{45}$ and $\frac{3}{35}$?
(a) $\frac{1}{5}$ (b) $\frac{12}{5}$
(c) $\frac{210}{12}$ (d) $\frac{12}{210}$

9. Three numbers in the ratio 3:4:5 have the LCM 2400. What is the HCF of these number?
(a) 80 (b) 40
(c) 120 (d) 200

10. What is the smallest 5-digit number which is exactly divisible by 12, 24, 48, 60 and 96?
(a) 10000 (b) 10024
(c) 10160 (d) 10080

11. Two numbers are in the ratio 3 : 2. If 8 is subtracted from the first number and 6 is subtracted from the second number, the ratio becomes 5 : 4. The numbers are:
(a) 24, 16 (b) 3, 2
(c) 2, 3 (d) 16, 24

12. If a, b, c and d are in continued proportion, then $(ma^3 + nb^3 - rc^3) : (mb^3 + nc^3 - rd^3) = ?$
(a) d : a (b) b : c
(c) a : d (d) c : b

13. The difference of two numbers is 20% of the larger number. If the smaller number is 40, then find the larger number?
(a) 50 (b) 40
(c) 60 (d) 45

14. In an election between two candidates, 75% of the voters enrolled in the election to cast their votes, out of which 2% were declared invalid. A candidate got 9261 votes, which were 75% of the valid votes. The total number of voters enrolled in that election were.
(a) 18000 (b) 16400
(c) 16000 (d) 16800

15. The length of a rectangular plot is 60% more than its breadth. If the difference between the length and the breadth of that rectangle is 30 cm, what is the perimeter of that rectangle ?
(a) 300 cm (b) 260 cm
(c) 330 cm (d) 270 cm

16. A solid cylinder made of glass is 1 m high and the diameter of its base is 1.5 m wide. It is melted and turned into a solid sphere. The diameter of the sphere is.
(a) 1.5 m (b) 1 m
(c) 0.5 m (d) 2.5 m

17. 3 boys and 5 girls can finish a project in 6 days, while 2 boys and 7 girls can finish it in 8 days. In how many days will 8 girls complete it?
(a) 33 (b) 30
(c) 36 (d) 35

18. P and Q can separately do a work in 6 and 8 days respectively with the help of R they complete the work in 3 days. If total wages is Rs. 3200 then what is the amount given to R?
(a) Rs. 320 (b) Rs. 1200
(c) Rs. 400 (d) Rs. 375

19. The total distance between the two stations is 390 km, a train completes 182 km of this distance at a speed of 56 km/h and 108 km at a speed of 72 km/h. The remaining distance is completed by the train in 1¼ hours. Find the average speed of the train during the entire journey.
(a) 65 Km./hr. (b) 75 Km./hr.
(c) 60 Km./hr. (d) 70 Km./hr.

20. A train covers a certain distance at a speed of 240 km/h in 5 hours. If a flight has to cover the same distance in 45 mins, it must travel at a speed of:
(a) 1250 km/h (b) 1600 km/h
(c) 1440 km/h (d) 1200 km/h

21. A trader owes a merchant ₹8,000 due in one year. The trader wants to settle the account after 2 months. If the rate of interest is 9% per annum, then how much should be pay (rounded off value)?
(a) ₹7,442 (b) ₹4,774
(c) ₹7,244 (d) ₹7,424

22. A sum of money doubles itself at a compound interest in 15 years. In how many years will it become 8 times the original amount?
(a) 58 years (b) 40 years
(c) 52 years (d) 45 years

23. On selling a product at ₹360, shopkeeper makes a loss of 10%. Find the selling price at which he makes a profit of 30%.
(a) ₹600 (b) ₹480
(c) ₹520 (d) ₹740

24. If the discount and percentage profit are both 20%, then by what percentage is the marked price above the cost price?
(a) 50% (b) 40%
(c) 70% (d) 60%

25. If $x + y = 9$, $x^2 + y^2 = 41$, then find the value of $x^3 + y^3$
(a) 189 (b) 249
(c) 289 (d) 100

26. There are 21 persons and there languages – French, German and Japanese. 10 persons speak German, 12 persons speak Japanese, and 10 persons speak French. 4 can speak only French and 5 can speak only Japanese. 4 can speak French as well as German. 3 persons can speak all language. How many persons speak Japanese and German?
(a) 3 (b) 2
(c) 4 (d) 1

27. If $5\tan\theta = 4$, find the value of $(3\sin\theta - 2\cos\theta) \div (2\sin\theta + 3\cos\theta)$.
(a) 6/23 (b) 2/23
(c) 4/23 (d) 5/23

28. An equilateral triangle is constructed in such a way that the two end of the triangle are placed on the diameter of the circle and the third is placed on the circle. If the area of the circle is 48π then what will be the side of the triangle.
(a) 8 (b) 4
(c) $8/\sqrt{3}$ (d) $4\sqrt{3}$

29. In an observations $x_1, x_2, x_3, \ldots\ldots x_n$, frequency will be given as $f_1, f_2, f_3 \ldots\ldots f_x$. What will be the standard deviation $\bar{x}$
(a) $\sqrt{\frac{\sum_{i=1}^{n} f_i(x_i - \bar{x})}{\sum_{i=1}^{n} f_i}}$ (b) $\sqrt{\frac{\sum_{i=1}^{n} f_i(x_i - \bar{x})^2}{\sum_{i=1}^{n} f_i}}$
(c) $\sqrt{\frac{\sum_{i=1}^{n} f_i(x_i^2 - \bar{x})}{\sum_{i=1}^{n} f_i}}$ (d) $\sqrt{\sum_{i=1}^{n} f_i(x_i - \bar{x})}$

30. What will be the probability to remove face card from card dick?
(a) $\frac{6}{13}$ (b) $\frac{12}{13}$
(c) $\frac{3}{13}$ (d) $\frac{3}{26}$

31. Select the pair from given alternative that are related like the words of the first pair
Mountain : Height : ……. : …….
(a) River : Water (b) Cave : Depth
(c) Valley : Beauty (d) Moon : Shadow

32. Solar is related to sun in the same way lunar is related to.
(a) Lunatic (b) Planet
(c) Moon (d) Star

33. In the given letter-cluster pairs, the first letter-cluster is related to the second letter-cluster following a certain logic. Study the given pairs carefully and from the given options, select the pair that follows the same logic.
GKV : IMX
PLR : RNT
(a) UKM : TPJ (b) EMH : VXR
(c) WDZ : JAP (d) JWO : LYQ

34. **Select the word from the options that is similar to the given set of words in a certain way.**
Bokaro, Bhilai, Rourkela?
(a) Baroda (b) Kanpur
(c) Lucknow (d) Durgapur

35. **In a certain code EXACT is written as 91685 and MILK is written as 7243, how will MELT be written?**
(a) 7945 (b) 9285
(c) 5384 (d) 8794

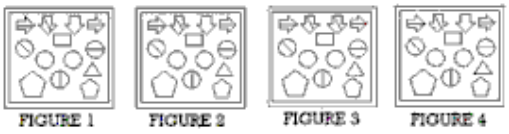
36. **In a certain code language 'she is fine' is written as 'li qi si' and ' is sam healthy' is witten as ' oi ti li', Find the code for 'is',**
(a) qi (b) si
(c) li (d) oi

37. **In a certain code language ENOUGH is written as ONEHGU then how is EXCESS written in that code?**
(a) CXESSE (b) CXSESE
(c) ESEXCS (d) CXEESE

38. **Four words have been given, out of which three are alike in some manner and one is different, select the odd one.**
(a) Reduce (b) Enhance
(c) Raise (d) Increase

39. **Four animals name have been given, out of which three are alike in some manner and one is different. Select the odd one.**
(a) Lion (b) Leopard
(c) Tiger (d) Fox

40. **Which of the following figures is different from the rest?**



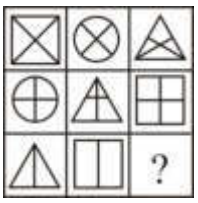
(a) Figure-2 (b) Figure-4
(c) Figure-1 (d) Figure-3

41. **Select the alphanumeric-cluster from among the given options that can replace the question mark (?) in the following series.**
3d16, 6e14, 9f12, 12g10, 15h8, ?
(a) 27i6 (b) 18i6
(c) 18i4 (d) 21i6

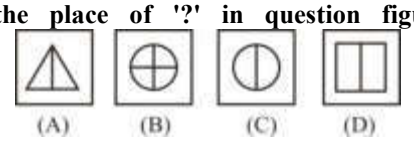
42. **Which is best suited to be placed in place of question mark in the figure?**

(a) 34 (b) 38
(c) 39 (d) 36

43.



Select that answer figure which will come in the place of '?' in question figure series



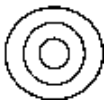
(a) C (b) B
(c) D (d) A

44. **Three friends P, Q and R are living in the same area. Q's house is to the east of P's house and R's house is to the South of P's house. What is the direction of R's house with respect to the house of Q?**
(a) South-West (b) North-West
(c) South (d) North

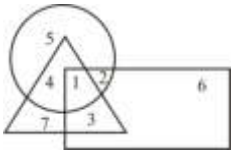
45. **Pointing to a person Nayan says, "His only brother is the father of my daughter's father." How is the person related to Nayan?**
(a) Father (b) Grandfather
(c) Uncle (d) Brother-in-law

46. **If '+' means '×', '×' means '÷', '÷' means '–' and '–' means '+' then which is the value of 15 + 16 × 16 ÷ 15 = ?**
(a) 10 (b) 5
(c) 1 (d) 0

47. **Choose the most suitable Venn diagram for the following words-**
Mathematics, Physics, Chemistry

(a) 
(b) 
(c) 
(d) 

48. **In the given figure, the circle represents the editors, the triangles represents the directors and the rectangles represents the singers. Which field represents individuals who are editors and singers but not directors?**



(a) 4 (b) 2
(c) 3 (d) 1

49. **Six persons A, B, C, D, E and F are working in different offices K, L, M, N, O and P, not necessarily in the same order. Out of these three are male and three female. B is wife of E and working in office N. No female is working in office L or P. C is sister of D and working in office K. F is working is the office M, D is working in office L. No male is working in the office O. Who among the following is working in office P ?**

(a) F (b) A
(c) E (d) B

50. **Read the given statements and conclusions carefully and decide which of the conclusions logically follow from the statement.**

Statements:

1. All birds are animals.

2. Some animals are men.

Conclusions:

1. No men is animal.

2. All animals are birds.

3. Some men are animals.

4. Some men are birds.

(a) Only conclusion 1 follows
(b) Only conclusion 3 follows
(c) Only conclusion 2 follows
(d) Only conclusion 4 follows

51. **Statement :**

Some jaguars are cheetahs. All jaguars are leopard. Some leopards are panthers.

Conclusion

1. Some leopards are jaguars.

2. Some panthers are cheetahs.

(a) Both conclusion 1 and 2 follow
(b) Only conclusion 1 follows
(c) Only conclusion 2 follows
(d) Either conclusion 1 or 2 follows

52. **Statement:**

To get involved in a long and intriguing dispute, one must be very wise because they are talkative and boring.

Conclusion:

I. All wise people are boring.

II. All the wise people are quite enable to handle long and intriguing disputes.

(a) Only conclusion II follows.
(b) Only conclusion I follows.
(c) Neither conclusion I nor II follows.
(d) Either conclusion I or II follows.

53. **Without assuming anything beyond the information given, select the correct nature of relationship between the two events A and B.**

Event A: Ronit went to the dentist.

Event B: Ronit had a toothache.

(a) Event A is the effect and event B is its immediate and principal cause
(b) Event B is the effect but event A is not its immediate and principal cause
(c) Event A is the effect but event B is not its immediate and principal cause
(d) Event B is the effect and event A is its immediate and principal cause

54. **Statement:**

All the species of plants and animals are part of biodiversity and ecosystems. All of these contribute collectively to the conservation of the environment.

Assumption:

I. Protect or create the environment by protecting the surrounding trees at the time of constructing the buildings or roads.

II. One of the major goals of sustainability is to preserve biodiversity. All life on earth is connected through the flow of energy (planetary food web) and each time species become endangered or lost to extinction, one more part of that energy flow is lost.

(a) Only assumption I is implicit
(b) Neither I nor II is implicit
(c) Only II is implicit
(d) Both I and II are implicit

55. **A question is given, followed by two arguments. Decide which of the arguments is/are strong with respect to the question.**

Question:

Should the sale and use of tobacco be completely banned in India?

Arguments:

I. Yes. Tobacco causes oral cancer and other diseases.

II. No. Millions of workers will lose their jobs.

(a) Only argument (II) is strong
(b) Both, (I) and (II) is strong
(c) Only argument (I) is strong
(d) neither (I) nor (II) is strong

56. **If $9 \div 5 + 3 \times 7 = 22$ and $4 \div 7 + 2 \times 15 = 29$, then find the value of $14 \div 5 + 35 \times 9$.**

(a) 36 (b) 15
(c) 11 (d) 7

57. **1. Banana price is more than that of lychee.**

2. Banana price is less than that of kiwi.

3. Kiwi Price is more than that of banana and lychee.

If both, 1 and 2 statements are true, and then third are:

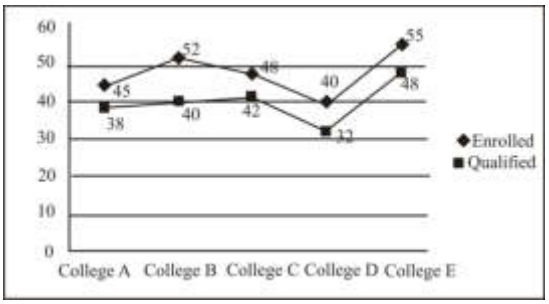
(a) vague (b) uncertain
(c) false (d) true

58. **How many straight lines are there in the given figure?**

(a) 9 (b) 10
(c) 15 (d) 13

59. **Select the word from the options, which is similar to the given words in a certain manner**
Stable, Burrow, Nest
(a) Slum (b) City
(c) Herd (d) Den

60. **The following graph represents the number of students enrolled and the number of qualified in five colleges during a particular year.**
What is the ratio of enrolled to quallified students across all colleges.



(a) 13:3 (b) 6:7
(c) 6:5 (d) 3:7

61. **At which of the following places did Gautam Buddha attain self-enlightenment?**
(a) Khushinagar (b) Lumbini
(c) Bodhgaya (d) Sarnath

62. **Which subject is dealt with in 'Sushruta Samhita'?**
(a) Astrology
(b) Medicine and Surgery
(c) Mathematics
(d) Religion and Mythology

63. **Pinjore Garden, Also known as Yadvindra garden is located at a distance of 20 kilometer from ___.**
(a) Chandigarh (b) Delhi
(c) Panipat (d) Sri nagar

64. **Karachi session of Indian National Congress was held in 1931. It was presided over by:**
(a) Jawaharlal Nehru (b) Sardar Patel
(c) Mahatma Gandhi (d) Dr. BR Ambedkar

65. **Which canal connects the Pacific Ocean and the Atlantic Ocean?**
(a) Corinth Canal (b) Kiel Canal
(c) Panama Canal (d) Suez Canal

66. **To whom does the Khyber pass connect Pakistan?**
(a) India (b) Afghanistan
(c) Iran (d) Uzbekistan

67. **The tributaries of the Ganges and the Brahmaputra Rivers together form the Ganges-Brahmaputra basin in the Indian subcontinent. Which of the following is not a feature of the river basin?**
(a) It is a fertile region that covers most of northern and eastern India
(b) It is surrounded by the Himalayan mountains and hills in the north.
(c) Gokhur (OX-bow) lakes are found on flat places.
(d) To its south lies the Sundarbans delta.

68. **Which of the following fundamental duties is added by the 86th Amendment of the constitution in 2002?**
(a) To cherish and follow the noble ideals which inspired our national struggle for freedom
(b) To safeguard public property and to abjure violence
(c) Who is a parent or guardian, to provide opportunities for education to his child, or as the case may be, ward between the age of six and fourteen years
(d) To defend the country and render national service when called upon to do so

69. **When was the first General Election of Independent India held?**
(a) 1950 (b) 1951–52
(c) 1947–48 (d) 1953

70. **For what purpose was Rustom-2 developed by DRDO.**
(a) Under water missile launcher
(b) Unmanned combat aerial vehicles
(c) Anti-satellite missile
(d) Untraceable by Radar

71. **Which of the following institutions supported Neeranchal National Watershed Project to improve watershed management program?**
(a) ADB (b) World Bank
(c) WHO (d) FAO of the UN

72. **The engine of the……., is the oldest working steam locomotive in the world.**
(a) Fairy queen (b) Golden Chariot
(c) Place on wheels (d) Maharaja Express

73. **Which of the following depict the characteristics of the Reserve Bank of India?**
A. It issue the currency of the country
B. It controls money supply of the country through various methods.
C. It acts as a banker to the government.

D. It accepts deposits from the public and lends out part of these funds to those who want to borrow.

(a) A, B and D (b) A, B and C
(c) B, C and D (d) A, C and D

74. According to the 2014 Rangarajan Committee regarding national poverty lines in India, which of the following statements is correct?

(a) A person who has a monthly per capita consumption of less than ₹1,407 living in the urban areas should be considered poor.
(b) A person who has a monthly per capita consumption of less than ₹872 living in the urban areas should be considered poor.
(c) A person who has a monthly per capita consumption expenditure of less than ₹2,407 living in the ruban areas should be considered poor.
(d) A person who has a monthly per capita consumption of less than ₹1,272 living in the rural areas should be considered poor

75. The Ministry of Labour and Employment has developed eSHRAM portal for ————.

(a) creating a National Database of Unorganised Workers (NDUW)
(b) creating a National Database of Organised Workers (NDOW)
(c) creating a National Database of Public Sector Undertakings Workers (NDPSUW)
(d) creating a National Database of Government Workers (NDGW)

76. Which two Indian cities were added to the creative city network of UNESCO in December 2015?

(a) Varanasi and Jaipur
(b) Ayodhya and Gwalior
(c) Dwarka and Vallabhi
(d) Madurai and Ujjain

77. In which of the following cities is the Indian National Centre for Ocean Information Services (INCOIS) located?

(a) New Delhi (b) Chennai
(c) Kolkata (d) Hyderabad

78. Match a column A (type of dance) and column B. (States).

Column A	Column B
P. Bihu	1. Gujarat
Q. Garba	2. Uttar Pradesh
R. Tamasha	3. Assam
S. Nautanki	4. Maharashtra

(a) P–4, Q–1, R–2, S–3
(b) P–3, Q–1, R–4, S–2
(c) P–3, Q–1, R–2, S–4
(d) P–1, Q–4, R–2, S–3

79. Which UN body directly deals with reproductive health of population?

(a) WIPO (b) UNDP
(c) UNFPA (d) IFAD

80. What is the name of the author of the book 'One Indian girl'?

(a) Chetan Bhagat (b) Mark Tuli
(c) Brad Stone (d) Ashwin Sanghi

81. Which former Prime Minister of India was awarded the Bharat Ratna posthumously?

(a) Rajiv Gandhi
(b) P.V. Narshimbha Rao
(c) Moraji Desai
(d) I.K. Gujral

82. Which of the following states has the largest deposits of jet black granite?

(a) Odisha (b) Rajasthan
(c) Madya Pradesh (d) Karnataka

83. Where was the '10th International Yoga Mahotsav' organized on 21 June, 2024 ?

(a) Uttrakhand
(b) Himachal Pradesh
(c) Leh
(d) Sri Nagar

84. Who has been appointed as first woman DGP of North-East India, on 11 May, 2024 ?

(a) Kanchan Choudhary Bhattacharya
(b) Idashisha Nongrang
(c) Uttkal Ranjan Sagu
(d) None of the above

85. In which year was the project Tiger, India's most famous wildlife and conservation project launched to conserve the declining population of Indian tigers?

(a) 1975 (b) 1973
(c) 1978 (d) 1982

86. Which type of mirror is used by dentists to see large image of patients' teeth?

(a) Spherical and convex mirror
(b) Spherical mirror
(c) Concave mirror
(d) Convex mirror

87. The working principle of power transformer is based on …….

(a) Hooke's law (b) Newton's law
(c) Einstein's theory (d) Faraday's law

88. Which of the following is used as a fuel in nuclear reactors?

(a) Iodine (b) Uranium
(c) Cobalt (d) Copper

89. If a burning candle is covered with a glass tumbler, the flame gets extinguished after some time. What is the reason for this ?
(a) Due to limited sulphur the covered candle got extinguished after some time
(b) Due to limited nitrogen the covered candle got extinguished after some time
(c) Due to limited carbon dioxide the covered candle got extinguished after some time
(d) Due to limited oxygen the covered candle got extinguished after some time

90. What is the eye irritating compound when cutting onions?
(a) carbon (b) nitrogen
(c) sulphur (d) hydrogen

91. A cryogenic engine makes use of which of the following as its fuel?
(a) Liquid oxygen
(b) Liquid oxygen and liquid hydrogen
(c) Oxygen and hydrogen
(d) Liquid hydrogen

92. What does gunpowder mainly consist of?
(a) calcium sulphate (b) potassium nitrate
(c) lead sulphide (d) zinc sulphide

93. Which of the following glands produces insulin hormone?
(a) Adrenal (b) Thymus
(c) Parathyroid (d) Pancreas

94. Which of the following is main women sex hormone?
(a) Chromatin (b) Nucleosome
(c) Estrogen (d) Testosterone

95. Penicillium is a/an _____
(a) Virus (b) Fungi
(c) Bacteria (d) Algae

96. Ginger, a rhizome used as cooking and flavoring agent, is an ……
(a) Underground stem (b) Underground root
(c) Aerial stem (d) Aerial root

97. Which plant is called 'Green Gold'?
(a) Neem (b) Tulsi
(c) Bamboo (d) Ginger

98. A shared network within an organisation that enables all its employees to communicate with one another is called:
(a) extranet (b) intranet
(c) delnet (d) internet

99. Which of the following is an example of a spreadsheet?
(a) Microsoft Excel
(b) Microsoft Outlook
(c) Microsoft Power Point
(d) Microsoft Word

100. Which of the following activity is not responsible for greenhouse effect?
(a) Use of solar car for transport
(b) Emission from thermal power plant
(c) Use of wood as fuel
(d) Use of petrol vehicles for transport

SOLUTION : PRACTICE SET- 14

ANSWER KEY

1. (a)	11. (b)	21. (a)	31. (b)	41. (b)	51. (b)	61. (c)	71. (b)	81. (a)	91. (b)
2. (b)	12. (c)	22. (d)	32. (c)	42. (d)	52. (a)	62. (b)	72. (a)	82. (d)	92. (b)
3. (c)	13. (a)	23. (c)	33. (d)	43. (a)	53. (a)	63. (a)	73. (b)	83. (d)	93.(d)
4. (c)	14. (d)	24. (a)	34. (d)	44. (a)	54. (a)	64. (b)	74. (a)	84. (b)	94. (c)
5. (c)	15. (b)	25. (a)	35. (a)	45. (c)	55. (b)	65. (c)	75 (a)	85.(b)	95. (b)
6. (b)	16. (a)	26. (b)	36. (c)	46. (d)	56. (c)	66. (b)	76. (a)	86. (c)	96. (a)
7. (c)	17. (a)	27. (b)	37. (a)	47. (c)	57. (d)	67. (d)	77. (d)	87. (d)	97. (c)
8. (b)	18. (c)	28. (a)	38. (a)	48. (b)	58. (a)	68. (c)	78. (b)	88. (b)	98. (b)
9. (b)	19. (a)	29. (b)	39. (d)	49. (c)	59. (d)	69. (b)	79. (c)	89. (d)	99. (a)
10. (d)	20. (b)	30. (c)	40. (d)	50. (b)	60. (c)	70. (b)	80. (a)	90. (c)	100. (a)

SOLUTION

1. (a)
Let the numbers are x and y,
According to the question,
$x + y = 22$ .....(i)
and $5x = 6y$ .....(ii)

$$x = \frac{6}{5}y$$

Putting the value of x in equation (i) -

$$\frac{6}{5}y + y = 22$$

$$\frac{11}{5}y = 22$$

$$y = \frac{22 \times 5}{11} = 10$$

$y = 10$

$$\therefore \quad x = \frac{6}{5} \times 10 = 12$$

Hence, the larger number is 12.

2. (b)
Let the total number of people in the group = x

$$\text{The number of adults} = x \times \frac{2}{9} = \frac{2x}{9}$$

$$\text{The number of children} = x - \frac{2x}{9} = \frac{9x-2x}{9} = \frac{7x}{9}$$

$$\frac{7x}{9} - \frac{2x}{9} = 95$$

$$\frac{7x-2x}{9} = 95$$

$$\frac{5x}{9} = 95$$

$$x = 171$$

Hence, the number of children $= \frac{7x}{9} = \frac{7}{9} \times 171 = 133$

3. (c) From options,

$$\frac{12}{72} = \frac{1}{6} = 0.166666---$$

$$\frac{6}{72} = \frac{1}{12} = 0.083333---$$

$$\frac{9}{72} = \frac{1}{8} = 0.125$$

$$\frac{3}{72} = \frac{1}{24} = 0.041666----$$

Hence, option (c) $\frac{9}{72} = \frac{1}{8} = 0.125$ is correct.

4. (c)
From options–

(a) $\frac{64}{176} = \frac{4}{11}$ (b) $\frac{20}{55} = \frac{4}{11}$

(c) $\frac{84}{209} = 0.401$ (d) $\frac{32}{88} = \frac{4}{11}$

Hence, option (c) is not equivalent to 4/11.

5. (c)

$$\frac{6}{8} = 0.75$$

The place value of 5, in 0.75 = $0.05 = \frac{5}{100}$

and, $\frac{6}{25} = 0.24$

The place value of 4, in 0.24 = $0.04 = \frac{4}{100}$

So, the required sum of both values

$$= \frac{5}{100} + \frac{4}{100} = \frac{9}{100}$$

6. (b)
The share of the cake all four get

$$= \frac{1}{8} + \frac{1}{6} + \frac{5}{12} + \frac{1}{12}$$

$$= \frac{6+8+20+4}{48} = \frac{38}{48} = \frac{19}{24}$$

Hence, the 5th's share of the cake $= 1 - \frac{19}{24} = \frac{5}{24}$

7. (c)
Given,

$x = 2^3 \times 3^2 \times 5 \times 7^3$

$y = 2^2 \times 3^3 \times 5^2 \times 7^2$

$z = 2^4 \times 3 \times 5^3 \times 7$

HCF of x, y and $z = 2^2 \times 3 \times 5 \times 7$

$= 4 \times 3 \times 5 \times 7$

$= 420$

8. (b)

Given fractions $= \frac{6}{25}, \frac{4}{45}, \frac{3}{35}$

$$\text{L.C.M. of fractions} = \frac{\text{L.C.M. of Numerator}}{\text{H.C.F. of Denominator}}$$

L.C.M. of Numerator

$6 = 2 \times 3$

$4 = 2 \times 2$

$3 = 1 \times 3$

L.C.M. $= 2 \times 2 \times 3 = 12$

H.C.F. of Denominator

$25 = 5 \times 5$

$45 = 5 \times 3 \times 3$

$35 = 5 \times 7$

HCF $= 5$

Hence, L.C.M. of given fraction $= \frac{12}{5}$

9. (b)
Let the three numbers are 3x, 4x and 5x respectively.
So, the LCM of 3x, 4x and 5x = 60x

$\Rightarrow$ $60x = 2400$

$\Rightarrow$ $x = 40$

So, the numbers = 120, 160, 200

HCF of 120, 160, 200

$120 \Rightarrow 2 \times 2 \times 2 \times 3 \times 5$

$160 \Rightarrow 2 \times 2 \times 2 \times 2 \times 2 \times 5$

$200 \Rightarrow 2 \times 2 \times 2 \times 5 \times 5$

Hence, HCF = $2 \times 2 \times 2 \times 5 =$ **40**

10. (d)
LCM of given numbers,

2	12,	24,	48,	60,	96
2	6,	12,	24,	30,	48
2	3,	6,	12,	15,	24
2	3,	3,	6,	15,	12
2	3,	3,	3,	15,	6
3	3,	3,	3,	15,	3
5	1,	1,	1,	5,	1
	1,	1,	1,	1,	1

LCM = 2×2×2×2×2×3×5 = 480

The smallest 5-digit number = 10000

480)10000(20

9600

400

So, the required number = 10000 + (480 – 400)

= 10080

11. (b)

Let the first number and second number are 3x and 2x respectively.

According to the question,

$$\frac{3x-8}{2x-6}=\frac{5}{4}$$

$$12x-32=10x-30$$

$$12x-10x=-30+32$$

$$2x=2$$

$$x=1$$

Hence the numbers $3x = 3\times1 = 3$

$2x = 2\times1 = 2$

12. (c)

a, b, c and d are in continued proportion.

Let-

$$\frac{a}{b}=\frac{b}{c}=\frac{c}{d}=k$$

then $c = dk$, $b = ck$, $a = bk$

$b = (dk)\,k$

$b = dk^2$

$\because a = bk$

$$\Rightarrow a=\left(dk^2\right)k$$

$$\frac{a}{d}=k^3 \text{.....(i)}$$

Now,

$$\frac{ma^3+nb^3-rc^3}{mb^3+nc^3-rd^3}=\frac{m\left(dk^3\right)^3+n\left(dk^2\right)^3-r\left(dk\right)^3}{m\left(dk^2\right)^3+n\left(dk\right)^3-rd^3}$$

$$=\frac{d^3k^3\left(mk^6+nk^3-r\right)}{d^3\left(mk^6+nk^3-r\right)}$$

$$\frac{ma^3+nb^3-rc^3}{mb^3+nc^3-rd^3}=k^3$$

$\because$ From equation (i)-

Hence $\dfrac{ma^3+nb^3-rc^3}{mb^3+nc^3-rd^3}=\dfrac{a}{d}=a:d$

13. (a)

Let the largest number be x and the smallest number be y.

As per the question

$$x-y=\frac{x\times20}{100}$$

$$x-40=\frac{x\times20}{100} \qquad \{\because y=40\}$$

$$x-40=\frac{x}{5}$$

$$5x-200=x$$

$$5x-x=200$$

$$4x=200$$

$$x=\frac{200}{4}=50$$

$\therefore$ Largest number will be 50.

14. (d)

Let total number of voter = x

$$\text{Number of cast votes}=x\times\frac{75}{100}=\frac{75x}{100}$$

$$\text{Valid votes}=\frac{75x}{100}\times\frac{98}{100}$$

According to the question,

$$9261=\frac{75x}{100}\times\frac{98}{100}\times\frac{75}{100}$$

$$9261=x\times\frac{3}{4}\times\frac{49}{50}\times\frac{3}{4}$$

$$\boxed{x=16800}$$

15. (b)

Let the breadth of rectangle = x cm

then the length of rectangle $= x\times\dfrac{160}{100}=1.6x$ cm

According to the question,

length breadth = 30

$1.6x - x = 30$

$0.6x = 30$

$\boxed{x = 50\text{cm}}$

Breadth = 50cm

$$\text{Length}=50\times\frac{160}{100}=80\text{cm}$$

Hence the perimeter of the rectangle

$= 2(\text{length} + \text{breadth})$

$= 2(80 + 50)$

$= 2\times130$

$= 260\text{cm}$

16. (a)

Volume of cylinder $= \pi r^2 h$

$$=\pi\left(\frac{1.5}{2}\right)^2\times1=\frac{2.25\pi}{4}\text{ cubic meter}$$

According to the question,

Volume of cylinder = Volume of sphere

$$\frac{2.25\pi}{4}=\frac{4}{3}\pi R^3$$

$$R^3=\frac{2.25\times3}{16}$$

$$= \frac{3\times3\times3\times0.5\times0.5}{2\times2\times2\times2} = \frac{3^3}{2^3\times2^3}$$

$$R = \frac{3}{4}\ \text{m}$$

So diameter of sphere $= 2R$

$$= 2\times\frac{3}{4} = \frac{3}{2}\ \text{m} = 1.5\ \text{m}$$

17. (a)

According to the question,

$(3B + 5G) \times 6 = (2B + 7G) \times 8$

$18B + 30G = 16B + 56G$

$2B = 26G$

$\frac{B}{G} = \frac{13}{1}$ [efficiency]

$\therefore$ Total work $= (3\times13+5\times1)\times6$

$= (39+5)\times6$

$= 44\times6 = 264$ unit

$\therefore$ Time taken by 8 girls to complete the work

$$= \frac{264}{8\times1} = 33\,\text{days}$$

18. (c)

One day work of P $= \frac{1}{6}$ part

One day work of Q $= \frac{1}{8}$ part

According to the question,

$$\frac{1}{P}+\frac{1}{Q}+\frac{1}{R}=\frac{1}{3}$$

$$\Rightarrow \frac{1}{6}+\frac{1}{8}+\frac{1}{R}=\frac{1}{3}$$

$$\Rightarrow \frac{1}{R}=\frac{1}{3}-\left(\frac{7}{24}\right)$$

$$\frac{1}{R}=\frac{1}{24}$$

Efficiency ratio of P, Q and R $= \frac{1}{6}:\frac{1}{8}:\frac{1}{24} = \frac{4:3:1}{24}$

P : Q : R = 4 : 3 : 1

Wages of R $= 3200\times\frac{1}{8} =$ Rs. 400

19. (a)

Total distance = 390 km

Distance travelled by first train = 182 km

Speed = 56 Km./hr.

Distance travelled by second train = 108 km

Speed = 72 Km./hr.

Remaining Distance = 390 – (182+108) = 100 km

Time $= \frac{5}{4}$ hours

$$\text{Average speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$

$$= \frac{390}{\frac{182}{56}+\frac{108}{72}+\frac{5}{4}} = \frac{390}{\frac{13}{4}+\frac{6}{4}+\frac{5}{4}}$$

$$= \frac{390\times4}{13+6+5} = \frac{390\times4}{24}$$

$= 65\,\text{km/hr}$

20. (b)

Let the speed of flight is *x* km/h.

According to the question,

$$5\times240 = x\times45\times\frac{1}{60}$$

$$x = \frac{5\times240\times60}{45}$$

x = 1600 km/h

21. (a)

Let the principal amount be ₹P. Amount after 1year = ₹ 8000

According to the question,

$$\text{Amount} = P+\frac{P\times R\times T}{100}$$

$$= P+\frac{P\times9\times1}{100} = 8000 \Rightarrow P = \frac{8000\times100}{109}$$

P = ₹ 7339.44

Again, to clear debt in 2 month,

$$\text{Amount to be paid} = 7339.44+\frac{7339.44\times2\times9}{100\times12}$$

= 7339.44+110.09

= 7449.53 = ₹ 7442 (Approx.)

22. (d)

According to the question,

A = 2P , t = 15, Rate = R%

$$\because A = P\left(1+\frac{R}{100}\right)^t$$

$$2P = P\left(1+\frac{R}{100}\right)^{15}$$

$$2 = \left(1+\frac{R}{100}\right)^{15}$$

On cubed both sides–

$$(2)^3 = \left[\left(1+\frac{R}{100}\right)^{15}\right]^3$$

$$8 = \left(1+\frac{R}{100}\right)^{45}$$

On multiplying by P both sides,

$$8P = P\left(1+\frac{R}{100}\right)^{45}$$

Hence, principal amount will become 8 times in 45 years

23. (c)

Cost price of the article

$$= \text{Selling price} \times \frac{100}{(100 - \text{Loss }\%)}$$

$$\text{Cost price} = 360 \times \frac{100}{90}$$

$= 4 \times 100$

Cost price $= ₹400$

$\because$ To get 30% profit

$$\therefore \text{ Selling price of the article} = 400 \times \frac{130}{100} = ₹520$$

24. (a)

Given that

Discount = 20%

Profit % = 20%

Let, marked price = 100

$$\text{Selling Price} = \frac{100 \times 80}{100} = ₹80$$

$$\text{Cost price} = \frac{\text{Selling price} \times 100}{100 + \text{profit}} = \frac{80 \times 100}{120} = ₹\ \frac{200}{3}$$

Marked price increased relatively to cost price

$$= 100 - \frac{200}{3} = ₹\ \frac{100}{3}$$

$$\text{Required \%} = \frac{\frac{100}{3}}{\frac{200}{3}} \times 100$$

$$\text{Required \%} = \frac{100 \times 100 \times 3}{3 \times 200}\% = 50\%$$

25. (a)

Given by-

$x + y = 9$

$x^2 + y^2 = 41$

$x^3 + y^3 = ?$

$(x + y)^2 = (9)^2$

$x^2 + y^2 + 2xy = 81$

$41 + 2xy = 81$

$xy = 20$

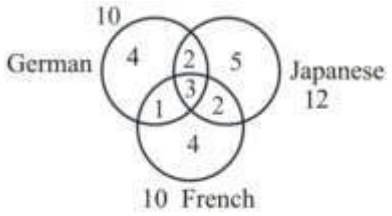
$(x + y)^3 = x^3 + y^3 + 3xy\,(x + y)$

$(9)^3 = x^3 + y^3 + 3 \times 20 \times 9$

$x^3 + y^3 = 729 - 540$

$x^3 + y^3 = 189$

26. (b)



From the above Venn diagram number of people speaking both Japanese and German language = 2.

27. (b)

Given-

$$5\tan\theta = 4 \Rightarrow \tan\theta = \frac{4}{5}$$

$$\frac{3\sin\theta - 2\cos\theta}{2\sin\theta + 3\cos\theta}$$

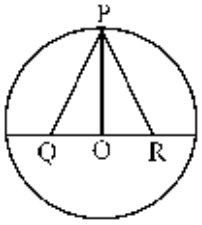
$$= \frac{3\left(\frac{\sin\theta}{\cos\theta}\right) - 2\left(\frac{\cos\theta}{\cos\theta}\right)}{2\left(\frac{\sin\theta}{\cos\theta}\right) + 3\left(\frac{\cos\theta}{\cos\theta}\right)}$$

(On dividing the numerator and denominator by cosθ)

$$= \frac{3\tan\theta - 2 \times 1}{2\tan\theta + 3} = \frac{3 \times \frac{4}{5} - 2}{2 \times \frac{4}{5} + 3} = \frac{\frac{12 - 10}{5}}{\frac{8 + 15}{5}} = \frac{2}{23}$$

28. (a)

From the figure,



Let the radius of the circle = r

$\therefore$ Area of circle = πr^2

$= 48\pi = \pi r^2$

$r = \sqrt{48} = 4\sqrt{3}$

Radius = length of OP which is perpendicular of equilateral triangle PQR.

$$\Rightarrow 4\sqrt{3} = \frac{\sqrt{3}}{2}a$$

$\therefore a = 4 \times 2 = 8$

Hence, the length of side of triangle a = 8

29. (b)

$$\text{Standard deviation} = \sqrt{\frac{\sum_{i=1}^{n} f_i (x_i - \bar{x})^2}{\sum_{i=1}^{n} f_i}}$$

where $\bar{x}$ = mean

30. (c)

Total number of cards = 52

Number of face card = 12

so probability of face card= $\frac{12}{52} = \frac{3}{13}$

31. (b)

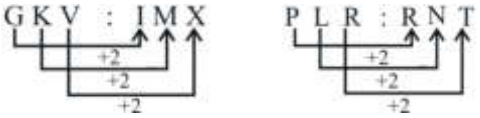
Just as, mountain is known for its height. Same as, cave is known for its depth.

32. (c)

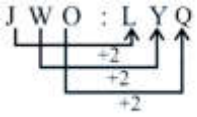
The way Solar is related to Sun in the same way Lunar is related to Moon.

33. (d)

Given,



Same as,



34. (d)

Just as, Bokaro, Bhilai, Rourkela are steel plants. Similarly, Durgapur is a steel plant.

35. (a)

Such as,

E X A C T
↓ ↓ ↓ ↓ ↓
9 1 6 8 5

and

M I L K
↓ ↓ ↓ ↓
7 2 4 3

Similarly,

M E L T
↓ ↓ ↓ ↓
7 9 4 5

36. (c)

she (is) fine → (li) qi si

(is) sam healty → oi ti (li)

Thus, 'is' will be written as 'li'.

37. (a)

Just as,

Similarly,

38. (a)

In the given alternatives, it is clear from the meaning of the words increase, enhance and raise that they are synonymous with each other whereas reduce is the opposite word of all them. Hence option (a) will be odd.

39. (d)

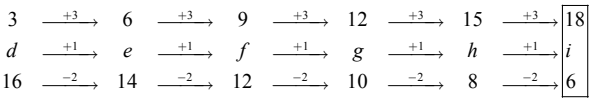
Lion, Leopard and Tiger all three comes under cats like species while Fox is not. Hence, option (d) is odd one.

40. (d)

In the given figures, the patterns of figure (1), (2) & (4) are all same while in the third figure the third pattern of the first line makes it different from all. Hence, the third figure is different from all.

41. (b)

The given series is as follows-



Hence, $\boxed{?=18i6}$

42. (d)

Just as,

$\Rightarrow 7 + 2^2 = 11$

$\Rightarrow 11 + 3^2 = 20$

Similarly,

$\Rightarrow 20 + 4^2 = \boxed{36}$

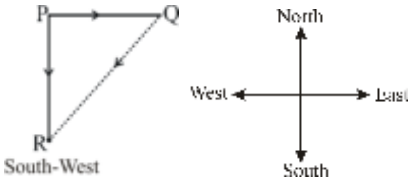
43. (a)

According to the question, answer figure C will come in place of the question mark.

Hence, option (a) is correct.

44. (a)

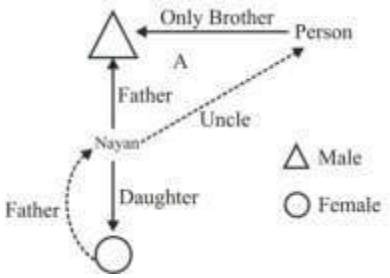
According to the question,



Hence, it is clear that the house of 'R' is in the South-West direction with respect to the house of 'Q'.

45. (c)

According to the question the blood relation diagram is as follows:



Hence, the person is Nayan's uncle.

46. (d)

Given,

$15 + 16 \times 16 \div 15 = ?$

On changing the symbols,

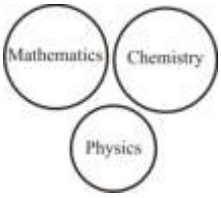
$= 15 \times 16 \div 16 - 15$

$= 15 \times 1 - 15$

$= 15 - 15 = 0$

47. (c)

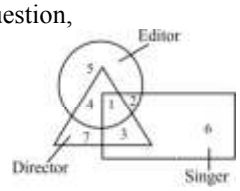
Mathematics, Physics and Chemistry are different from each other.



Hence, option (c) is correct.

48. (b)

According to question,



So, it is clear that region 2 represents the editor and the singer, but not director.

49. (c)

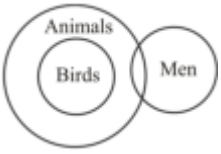
According to the question,

Men	K	L	M	N	O	P
A-(Female)	×	×	×	×	✓	×
B-(Female)	×	×	×	✓	×	×
C-(Female)	✓	×	×	×	×	×
D-(Male)	×	✓	×	×	×	×
E-(Male)	×	×	×	×	×	✓
F-(Male)	×	×	✓	×	×	×

It is clear from above data that person E is working in office P.

50. (b)

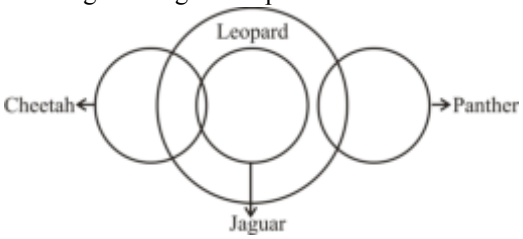
According to the statements



It is clear from the Venn diagram that only conclusion 3 logically follows from the statements.

51. (b)

On making the diagram as per the statement.



Hence, it is clear the Venn-diagram only conclusion 1 follows.

52. (a)

Only conclusion II follows. It is clear from the statement that to get involve in a long and complicated dispute one must be wise.

53. (a)

Ronit went to the dentist because of pain in his tooth. Hence, event B is its immediate and principal cause and event A is its effect.

54. (a)

It is clear from the statement that only assumption I is implicit.

55. (b)

According to the assumption, it is clear that arguments I and II follows.

56. (c)

Given that

$9 \div 5 + 3 \times 7 = 22$ and $4 \div 7 + 2 \times 15 = 29$

$\div \rightarrow \times$

$+ \rightarrow \div$

$\times \rightarrow +$

$9 \div 5 + 3 \times 7 = 9 \times 5 \div 3 + 7 = 22$

$4 \div 7 + 2 \times 15 = 4 \times 7 \div 2 + 15 = 29$

Hence, $14 \div 5 + 35 \times 9$

$= 14 \times 5 \div 35 + 9 = 11$

57. (d)

According to the question-

Bananas > Lychee _____ (i)

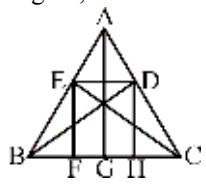
Kiwi > Bananas _____ (ii)

Now the decreasing order of price of Kiwi Banana and Lychee, Kiwi > Bananas > Lychee _____ (iii)

If both statement 1 and 2 are true then the third statement will also be true.

58. (a)

According to the figure,



Straight lines in the given figure-

AB, BC, CA, EF, ED, DH, AG, BD, CE

So, there are 9 straight lines in the figure.

59. (d)

In the given alternatives the words are same as given in the original words, because the stables are for animals (domestic), nest for birds, burrows for rats, snakes etc and dens for lions.

60. (c)

Total number of Enrolled Students

= 45+52+48+40+55+ = 240

Total number of qualified students = 38+40+42+32+48 = 200

Required Ratio = 240 : 200

6 : 5

61. (c)
Gautama Buddha is regarded as the founder of the religion of Buddhism. He was born in 563 BC. Bodhgaya is famous as it is the place where Gautama Buddha, is said to have attained enlightenment (Pali: Bodhi) under the Bodhi Tree at the age of 35.

62. (b)
The Sushruta Samhita mainly deals with Medicine and Surgery and it is a treatise in Sanskrit language. Sushruta is known as 'Father of Indian Surgery', 'Father of Plastic Surgery" and "Father of Brain Surgery' in India. He is a most famous historical physician and surgeon of the Gupta era, known for his erudite over medicine and surgery.

63. (a)
Pinjor Garden is also known as Yadvindra Garden located in Pinjore. It is situated on Kalka-Baddi road, on the way to Himachal Pradesh. It is located at a distance of 20 km from Chandigarh. Pinjore garden is an enchanting Mughal style garden. It was constructed by the architect Nawab Fidai Khan during the reign of Aurangzeb and refurbished during the era of emperor Yadavindra Singh.

64. (b)
The session of India National Congress was held in Karachi on 29 March 1931, which was presided over by Sardar Vallabhbhai Patel. In this session, the 'Delhi Pact' i.e. Gandhi -Irwin Pact was approved. The goal of 'Purna Swaraj' was reiterated and the valor and sacrifice of Bhagat Singh, Rajguru and Sukhdev were praised. However, the congress also reiterated its policy of not supporting any form of political violence. In this session, the Congress adopted two main resolutions, one related to fundamental political rights and the other related to national economic programs. These are as follows-

(1) Complete freedom of expression and press.
(2) Freedom to form organization
(3) Freedom to hold meetings
(4) Freedom from rent to unprofitable holdings.

65. (c)
The Panama Canal is one of the most important canals in the western region and it provides a link between the Pacific and Atlantic oceans across the Isthmus of Panama, a narrow strip separating the Caribbean from the Pacific ocean.

Major Canals of the World:-

Suez Canal - It is an artificaial sea-level waterway in Egypt, connecting the mediterranean sea to Red sea.

The Kiel Canal connects the North Sea (canal entrance at the mouth of the Elbe River estuary) to the Baltic Sea at the Kiel Fjord.

Corinth Canal (Greece) connects the central Mediterranean Sea (via the Gulf of Corinth) to the Aegean Sea (via the Saronic Gulf).

66. (b)
Khyber pass is a historical pass in the white coat mountain range of Hindu Kush between the border of north-west Pakistan and Kabulistan plain of Afghanistan. Throughout ancient time, it has been an important trade route between central Asia and Indian sub-continent.

67. (d)
Regarding the Ganga-Brahmaputra basin the region is mostly fertile due to depositional work of both rivers. In north we may clearly see the Himalayas, being boundary of it. Also it's a plain region, hence oxbows will be a characterized landform of the rivers in this region. But in reference to the basin the Sunderban Delta won't be exactly in south, but will be in south east Hence, option 'd' will be incorrect.

68. (c)
The 11 Fundamental duties given in the constitution of India are follows:

(a) To abide by the constitution and respect its ideal and institutions, the National Flag and the National Anthem,
(b) To cherish and follow the noble ideals that inspired the national struggle for freedom,
(c) To uphold and protect the sovereignty, unity and integrity of India,
(d) To defend the country and the render national service when called upon to do so,
(e) To promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities and to renounce practices derogatory to the dignity of women,
(f) To value and preserve the rich heritage of the country's composite culture,
(g) To protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures,
(h) To develop scientific temper, humanism and the spirit of inquiry and reform,
(i) To safeguard public property and to abjure violence,
(j) To strive towards excellence in all spheres of individual and collective activity so that the national constantly rises to higher levels of Endeavour and achievement, and
(k) To provide opportunities for education to his child or ward between the age of six and fourteen years (added by the 86th constitutional Amendment Act, 2002. These fundamental duties were added in Constitution on the recommendation of Swaran Singh Committee (42nd Constitutional Amendment 1976).

69. (b)
The first General elections were in independent India between 25 October, 1951 and 21 February, 1952. It was conducted under the provisions of the Indian Constitution, which was adopted by the constituent Assembly on 26 November, 1949. The Indian National Congress (INC) won a landslide victory by winning 364 of the 489 seats, and Jawaharlal Nehru was elected as the first prime minister of india.

70. (b)
TAPAS - BH-201 also known as Rustom-2, is a medium - altitude long- endurance unmanned aerial vehicle (UAV) designed by DRDO to carry out surviellance and reconnaissance roles for the Indian armed force. It can fly for 24 hours and fly up to 22,000 feet.

71. (b)
The World Bank has supported the Neeranchal National Watershed Project to improve the watershed management program. The objective of this project is to provide technical support for the adoption of technologies outcomes of communities in selected sites. The beneficiary states under this project are Andhra Pradesh, Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan and Telangana.

72. (a)
The engine of Fairy Queen, is the oldest working steam locomotive in the world.This engine was built in 1855. Fairy Queen operates at a speed of 30 to 40 km/h. The name of this engine has also been recorded in the Guinness Book of World Records.

73. (b)
The mains characteristics of the Reserve Bank of India are as follows : It issues the currency of the country, controls money supply of the country through various methods, and acts as a banker of the government.

74. (a)
The Expert Group under the Chairmanship of Dr. C. Rangarajan to review the Methodology for Measurement of poverty in the country constituted by the Planning Commission of India in June 2012 has submitted its report on 30th June 2014. In a written reply to a question in the Rajya Sabha, the Minister of State (Independent Charge) for Planning, Statistics and Programme Implementation and Defence Shri Rao Inderjit Singh has said that as per the report, poverty line is estimated as Monthly Per Capita Expenditure of Rs. 1407 in urban areas and Rs. 972 in rural areas.

75 (a)
The Ministry of Labour and Employment has developed eSHRAM portal for creating a National Database of Unorganised Workers (NDUW)

76. (a)
Two Indian cities, Varanasi and Jaipur on 11th December 2015 ware added to the creative city network of the United Nations Education, Scientific and Cultural Organization (UNESCO) for the first time ever.
Varanasi is UNESCO city of music while Jaipur is the city of crafts and Folk Arts.

77. (d)
INCOIS (The Indian National Centre for Ocean Information Services) is an autonomous organization of the Government of India under the Ministry of Earth Sciences, located in Hyderabad. INCOIS is mandated to provide the best possible ocean information and advisory services to society, industry government agencies and the scientific community through sustained ocean observation.

78. (b)
The correct match is as follows:

Column A (Type of dance)		**Column B (States)**
Bihu	-	Assam
Garba	-	Gujarat
Tamasha	-	Maharashtra
Nautanki	-	Uttar Pradesh

79. (c)
United Nations Population Fund (UNFPA), formerly the United Nations Fund for Population Activities, is a UN agency aimed at improving reproductive and maternal health worldwide. Its work includes developing national healthcare strategies and protocols, increasing access to birth control, and leading campaigns against child marriage, gender-based violence, obstetric fistula, and female genital mutilation.The agency began operations in 1969 as the United Nations Fund For Population Activities under the administration of the United Nations Development Fund. Its headquarter is situated in New York.

80. (a)
Chetan Bhagat is an Indian author and Columnist. Five point someone, The 3 Mistakes of My Life, 2 States, Half Girlfriend, One Indian Girl and Making India Awesome are famous books of Chetan Bhagat.

81. (a)
Rajiv Gandhi, former Prime Minister of India, was awarded the Bharat Ratna posthumously. Seven former Prime Ministers have so far been awarded the Bharat Ratna in India. Their names are Jawahar Lal Nehru (1955), Lal Bahadur Shastri (1966), Indira Gandhi (1971), Morarji Desai (1991), Rajiv Gandhi (1991-posthumously), Gulzarilal Nanda (1997) and Atal Bihari Vajpayee (2015).

82. (d)
Jet Black granite, which has a great demand in the USA, Europe and China markets, are used as flaring mortals and for landscaping and as ornamental stones. The Kollegul region in Karnataka has the largest deposit of Jet Black granite in India spread outer Chamarnjanagar, Mysore and Mandya districts. Jet Black granite is an absolute black colour intrusive igneous rock which is granular and phaneritic in texture.

83. (d)
Prime Minister Narendra Modi led the nation in organising a joint Yog-Protocol session on the occastion of 10th International Yoga Day, on 21st June 2024. Prime Minister Modi who came on a 2 day visit of J & K and performed 'Yoga' along with other important dignitaries at the Sher-e-Kashmir International Convention Centre of Srinagar.

84. (b)
IPS officer Idashisha Nongrang has been appointed as India's first women Director General of Police (DGP). She is related to 'Kashi' community.

85.(b)
One of the most intensive conservation efforts in India, Project Tiger was launched in 1973. It envisaged the setting of tiger reserves to help in maintaining the population of tigers.

86. (c)
In order to have big images of teeth, dentists use concave mirror. A concave mirror gives the dentist a magnified reflection of the mouth while also refracting a bit of light.

87. (d)
A transformer is a device used in the power transmission of electric energy. The transformer current is AC. It is commonly used to increase or decrease these supply voltage without change in frequency of AC between circuits. The transformer works on basic principles of electromagnetic induction and mutual induction which is proposed by Michael Faraday.

88. (b)
Uranium is the most widely used fuel by nuclear power plants for nuclear fission. Nuclear power plants use a certain type of uranium—U-235—as fuel because its atoms are easily split apart.

89. (d)
When a burning candle is covered with a glass tumbler, the oxygen supply gets cut-off. Oxygen is a necessary gas for combustion to take place. It is a supporter of combustion. Hence the candle gets extinguished after sometime.

90. (c)
The compound that irritates the eye when cutting onions is sulphur. Sulphur is abundant in nature in both free and combined states. The percentage of sulphur on the crust is 0.05%. Sulphur is also found in onions, garlic, eggs, mustard oil etc. Sulphur is obtained by the Folch method and the Sicilian method.

91. (b)
Cryogenic Engine makes use of Liquid Oxygen (LOX) and Liquid Hydrogen (LH_2) as propellants which liquefy at (-183) degree celsius and (-253) degree celsius respectively. LOX and LH_2 are stored in their respective tanks.

92. (b)
Potassium nitrate is a chemical compound with its molecule KNO_3. It is an ionic salt. It is one of the three components of gunpowder (sulphur, KNO_3 and coal powder). KNO_3 has been in use for food preservation since the Middle Ages.

93.(d)
Insulin is a hormone which is made by beta cells in our pancreas, which allows glucose to enter the body's cells to provide energy.

94. (c)
Estrogen is the main women sex hormones. It helps to develop and maintain both the reproductive system and female characteristics such as breasts and pubic hair. The woman's ovaries make most estrogen hormones, Men have estrogen, too, but in smaller amounts.

95. (b)
Penicillin, derived from the Penicillium fungi became the first mass-produced antibiotic in the 1940s. There are more than 300 species of Penicillium fungi-organism found in everything from soil to cheese.

96. (a)
Ginger, turmeric, potatoes are as rhizome used as cooking and flavoring agent, is an underground stem.

97. (c)
Bamboo is called 'Green Gold' because it is becoming increasingly more valuable in the global economy. It belongs to the grass family and it is one of the fastest growing plant. Millions of Indians rely on bamboo for a part of their entire livelihoods. India is the world's second largest cultivator of bomboo after China.

98. (b)
A shared network within an organisation which enables all its employees to communicate with one another is called intranet. There are private networks which is highly secured and can be only access to that particular company's employees.

99. (a)
Full form of MS Excel is Microsoft Excel. It is a spreadsheet program developed by Microsoft Corporation. MS Excel provides the facility to organize data and make calculations, decisions, report preparation etc.

100. (a)
Emissions from thermal power plant, use of wood as fuel and use of petrol vehicles for transport are responsible for green house effect because these activities emit green house gases while use of solar car for transport is not responsible for green house effect because solar energy is a renewable source of energy .The main gases responsible for the greenhouse effect include carbon dioxide, methane, nitrous oxide, and water vapor (which occur naturally), and fluorinated gases (which are synthetic). Greenhouse gases have different chemical properties and are removed from the atmosphere, over time, by different processes.

PRACTICE SET - 15

1. The sum of two numbers is 9. The sum of their reciprocals is 1/2. One of the number is.
(a) 2 (b) 4
(c) 5 (d) 6

2. ₹ 150 of Amit's Pocket money was spent on a pair of shoes and ₹ 75 on a watch. The total amount spent was three-fourth of his total pocket money. What was the amount received by Amit as pocket money?
(a) ₹ 300 (b) ₹ 400
(c) ₹ 375 (d) ₹ 250

3. Which of the following vulgar fractions, when written as a decimal, its value will not be found in a terminating decimal?
(a) $\frac{27}{480}$ (b) $\frac{21}{640}$
(c) $\frac{81}{450}$ (d) $\frac{240}{450}$

4. Simplify : $\frac{3}{7\frac{1}{3}}+\frac{3}{3\frac{1}{7}}$
(a) $1\frac{3}{11}$ (b) $1\frac{4}{11}$
(c) $2\frac{3}{7}$ (d) $2\frac{4}{7}$

5. Find the value of x.
$\frac{484}{4.84}=\frac{48.4}{x}$
(a) 0.484 (b) 0.00484
(c) 0.0484 (d) 4.84

6. If $\frac{60}{75}$ is equivalent to $\frac{4}{x}$ then the value of x is :
(a) 15 (b) 4
(c) 18 (d) 5

7. The HCF of 64, 48 and y is 8. Which of the options below cannot be a possible value of y?
(a) 96 (b) 104
(c) 88 (d) 72

8. Find the HCF of $\frac{2}{9},\frac{16}{81},\frac{32}{117}$ and $\frac{54}{189}$
(a) $\frac{4}{6459}$ (b) $\frac{4}{1899}$
(c) $\frac{2}{7371}$ (d) $\frac{8}{8483}$

9. The division of two numbers gives 6 and their product is 96. Find the product of the sum and the difference of these numbers.
(a) 540 (b) 560
(c) 592 (d) 9180

10. What is the smallest of five digit number that is exactly divisible by 12, 18, 20 and 25?
(a) 10000 (b) 10800
(c) 11250 (d) 10680

11. The ratio of A's salary to that of B was 4 : 5. A's salary got increased by 10% and B's salary got increased by 20%. What is the ratio of A's salary to that of B now?
(a) 15 : 14 (b) 14 : 11
(c) 11 : 14 (d) 11 : 15

12. The ratio of the working efficiencies of P, Q, R and S in doing a work is 2 : 3 : 5 : 4. The wages given for task is ₹ 4200, who got the highest amount and how much?
(a) P, ₹ 2000 (b) Q, ₹ 2000
(c) S, ₹ 1600 (d) R, ₹ 1500

13. If 5% of A + 4% of B = 2/3 (6% of A + 8% of B), then find A : B.
(a) 1 : 1 (b) 4 : 3
(c) 1 : 2 (d) 5 : 4

14. A candidate won with 75% valid votes, in an election. 15% votes were invalid out of 560000 votes. What is the number of valid votes which the winner candidate got?
(a) 350000 (b) 280000
(c) 275000 (d) 357000

15. Find the perimeter of the rectangle whose length is 5 m more than its breadth, and the value of the perimeter is one thrice of its area.
(a) 60 m (b) 50 m
(c) 40 m (d) 45 m

16. A tent is cylindrical upto a height of 6 m and conical above it. The diameter of the base is 90 m and the height of the conical part is 28 m. What is the area (in m^2) of canvas used in making it?
(a) 2925π (b) 2905π
(c) 2895π (d) 2940π

17. 10 men and 5 women complete a work in 60 days. If a man can do the work of two women, then how much time will 5 men and 20 women take to complete half of that work?
(a) 25 (b) 36
(c) 27 (d) 50

18. P, Q and R can do a work separately in 10, 12 and 15 days respectively. They start working together and after 2 days P quits working. Q quit working 3 days before the work was completed. In how many days will the work be completed?
(a) 6 (b) 7
(c) 5 (d) 8

19. A certain distance (d) is covered by a cyclist at a certain speed. If a jogger covers half the distance in double the time (t), then the ratio of speed of the cyclist to the speed of the jogger is:
(a) 3 : 1 (b) 2 : 1
(c) 4 : 1 (d) 1 : 2

20. A train crosses a pole in 20 seconds and it crosses a cycling man whose speed is 5 km/hr coming from the opposite direction in 18 seconds. Find the speed of the train?
(a) 40 km/hr (b) 62 km/hr
(c) 45 km/hr (d) 65 km/hr

21. If the simple interest is 12.5% more than the principal and the number of years. (n) and the rate (r) is numerically in a ratio of 2:1 then find the value of n and r.
(a) n = 12, r = 6% (b) n = 15, r = $7\frac{1}{2}\%$
(c) n=20, r=10% (d) n= 14, r = 7%

22. Sita borrowed ₹180000 at a simple interest rate of 10% per annum. On the same day, she gave that amount to her friend at an annual compound interest rate. How much rupee did she gain at the end of 2 years?
(a) ₹ 2,000 (b) ₹ 1,600
(c) ₹ 2,200 (d) ₹ 1,800

23. K buys a car for ₹ 4.50 lacs and spends ₹ 1.25 lacs on its accessories. He sold the car at a loss of 20%. Find the selling price of the car.
(a) ₹4.00 lacs (b) ₹4.20 lacs
(c) ₹4.40 lacs (d) ₹4.60 lacs

24. A man buys a land for ₹3 lacs. He sells its 25% part at 25% loss and 40% part at 25% profit. In order to earn a total profit of 15% for how much money should he sell the remaining part of the land.
(a) ₹1,37,500 (b) ₹1,38,750
(c) ₹1,34,500 (d) ₹1,45,000

25. When $x^2 + ax + b$ is divided by $x - 7$ the remainder left is 35 and when $x^2 + bx + a$ is divided by x - 7, the remainder left is 31. Then a + b is equal to-
(a) 3 (b) 4
(c) –3 (d) –4

26. If $\frac{x}{2}+\frac{2}{y}=1$ and $\frac{y}{2}+\frac{2}{z}=1$, then the value of $\frac{z}{2}+\frac{2}{x}$ is:
(a) –1 (b) 1
(c) 0 (d) 2

27. If $p \sin^2\beta + q \cos^2\beta = r$ then find the value of $\cot^2\beta$
(a) $\frac{p-r}{r-q}$ (b) $\frac{r-q}{r-p}$
(c) $\frac{r-q}{p-r}$ (d) $\frac{r-p}{r-q}$

28. There are two vertical pillars of heights 8 m and 12 m. One rope is drawn from the top of both the pillars to the bottom of the other. At what height from the ground do the ropes cut each other?
(a) 24/5 m (b) 22/7 m
(c) 29/6 m (d) 31/8 m

29. The mean of three numbers is 20. The range of this data set is 12, while the difference between two smallest numbers is 3. Find the largest number.
(a) 28 (b) 25
(c) 27 (d) 24

30. When a coin is tossed once, what are the probability of coming Head?
(a) 1 (b) 1/2
(c) 2 (d) Zero

31. Which word would best complete the relation given below ?
Hotel : Menu :: Library : ?
(a) Librarian (b) Book
(c) Shelf (d) Catalogue

32. Shoes is related to Slipper in the same way Coat is related to.
(a) Shirt (b) Pen
(c) Socks (d) Tie

33. Select the option that is related to the fifth letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster and the fourth letter-cluster is related to the third letter-cluster.
SMILE : ELIMS :: MASTE : ETSAM :: STARV : ?
(a) SRVAT (b) VRATS
(c) VTARS (d) VRTAS

34. Select the option that is related to the third term in the same way as the second term is related to the first term.
Cricket : 11 :: Kabaddi :?
(a) 5 (b) 6
(c) 8 (d) 7

35. In a certain code language, 'RAHUL' is written as '60'. How will 'ARUN' be written as in that language ?
(a) 45 (b) 56
(c) 52 (d) 54

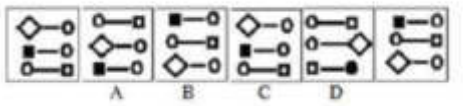
36. In a certain code language, 257 means 'I like you', 746 mean 'you are good' and 263 means 'I am good'. What number is coded for 'are'?
(a) 3 (b) 6
(c) 5 (d) 4

37. In a certain code language MAT is written as TAM, RENT is written as TNER then how is FEST written in that code?
(a) TSEF (b) FTES
(c) FSET (d) TESF

38. Which of the following is different from the rest?
Venus, Mars, Iapetus, Jupiter
(a) Mars (b) Venus
(c) Iapetus (d) Jupiter

39. Out of the four words listed, three are alike in some manner and one is different. Select the odd one.
(a) Keyboard (b) Motherboard
(c) Intel (d) Printer

40. **The following six figures from a logical series, but of the A,B, C and D is wrong figure in the series. Identify the wrong figure.**



(a) D (b) B
(c) C (d) A

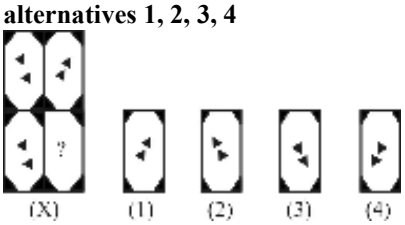
41. **Find the missing term in given number.**
L-169, J-196, ?, F-256
(a) F-140 (b) S-101
(c) H-225 (d) T-92

42. **Which is best suited to be placed in place of question mark in the figure.**

4	3	1
3	6	8
2	5	7
23	40	?

(a) 51 (b) 54
(c) 58 (d) 47

43. **Complete the Figure X from the given alternatives 1, 2, 3, 4**



(a) 1 (b) 2
(c) 3 (d) 4

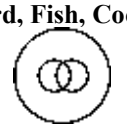
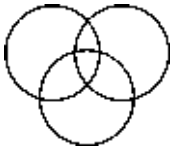
44. **Mukesh was facing the south. He walked 5 km straight and from there he turned at a 90° angle to his right and walked 5 km. Then he turned at a 45° angle to his left and walked 3 km. Where will he be from his actual position?**
(a) South–west direction
(b) South–east direction
(c) North–west direction
(d) South direction

45. **Puni is the daughter of Avani and Amit is the son of Avani's brother. How is Amit's father related to Puni?**
(a) Father (b) Cousin
(c) Brother (d) Maternal uncle

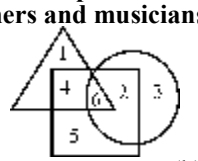
46. **If '+' means '÷' and '–' means '×', '÷' means '+' and '×' means '–' then 36 × 12 + 4 ÷ 6 + 2 – 3 = ?**
(a) 1 (b) 39
(c) 40 (d) 42

47. **Which of the following diagrams correctly represents the relationship between the given classes?**

Bird, Fish, Cock

(a) 
(b) 
(c) 
(d) 

48. **In the given figure, the circle represents the philosophers. The triangle denotes the scientists and the square denotes the musicians. Which field represents individuals who are philosophers and musicians, but not scientists?**



(a) 2 (b) 5
(c) 4 (d) 3

49. **Read the given information carefully and answer the question that follows.**
Akash and Puru are good in English and Hindi. Sumit and Akash are good in Hindi and Economics. Sumit, Aryan and Mayank are good in Economics and Botany. Mayank and Sumit are good in Economics and Zoology. Aryan and Puru are good in Botany and English.
Who is good in English, Hindi and Botany?
(a) Sumit (b) Akash
(c) Aryan (d) Puru

50. **Statement :**
Some doors are cupboards. All cupboards are windows.
Conclusion : I. Some doors are windows
II. No cupboards is door.
(a) Only conclusion I follows
(b) Only conclusion II follows
(c) Either conclusion I or II follows
(d) Neither conclusion I nor II follows

51. **Statement followed by some conclusions are given below.**
Statements :
1. Some electricians are plumbers
2. Not all electrician are mechanics
Conclusions:
I. Some mechanics are electricians or plumbers
II. Not all electricians are mechanics
Find which of the given conclusions logically follows from the given statements.
(a) Only conclusion I follows
(b) Only conclusion II follows
(c) Both conclusion I and II follows
(d) Neither conclusion I nor II follows

52. **Statement:**
In a T-20 cricket match between India and Sri Lanka, the total run made by India is 250 of these, 180 runs were made by the bowlers.

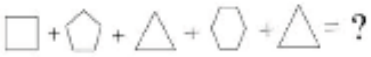
Conclusion:
I. 70% of the team is made up of bowlers.
II. The strike batsman was the bowler.
(a) Only conclusion II follows.
(b) Either conclusion I or II follows.
(c) Neither conclusion I nor II follows.
(d) Only conclusion I follows.

53. Read the given statement and decisions carefully and decide which of the given decisions logically follow(s) from the statement.
Statement:
The sale of a particular product has gone down market due to a change in the trend causing great concern to the company.
Decisions:
I. The price of the product should be reduced and the quality should be improved.
II. The company should make a study of customer choices and market competition in the market.
(a) Neither decision I nor II follow.
(b) Only decision I follows.
(c) Only decision II follows.
(d) Both decision I and II follow.

54. Statement:
The traffic police has devised a new way to warn traffic offenders. He has made a play in which they shows that Yama, the god of death is carrying a noose for the culprit.
Assumptions :
I. Police want to create awareness through demonstration that non adherence to traffic rules can lead to their lives.
II. In this innovative way, it will be better to follow the traffic rules in public.
(a) Only I is implicit
(b) Only II is implicit
(c) Both I and II are implicit
(d) Neither I nor II is implicit

55. A question is given followed by two arguments. Decide which of the arguments is/are strong with respect to the question.
Question:
Should Hollywood movies be banned in India because they corrupt the values of children and youth in India?
Arguments:
(i) No, they make them familiar with different cultures and different values
(ii) Yes, Hollywood movies decrease the viewership of Bollybood movies
(a) None of the arguments is strong
(b) Both the arguments are strong
(c) Only argument (ii) is strong
(d) Only argument (i) is strong

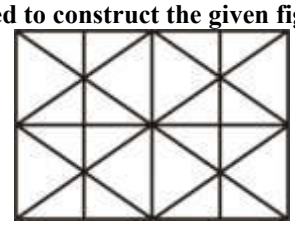
56. Study the given pattern carefully and select the number from among the given options that can replace the question mark (?).



(a) 19 (b) 20
(c) 13 (d) 21

57. Study the given pattern carefully and select the number that can replace the question mark (?) in it.
(The same relationship exists among the numbers in each row.)
A. 25, 39, 14
B. 18, 51, ?
C. 63, 72, 9
(a) 33 (b) 42
(c) 29 (d) 38

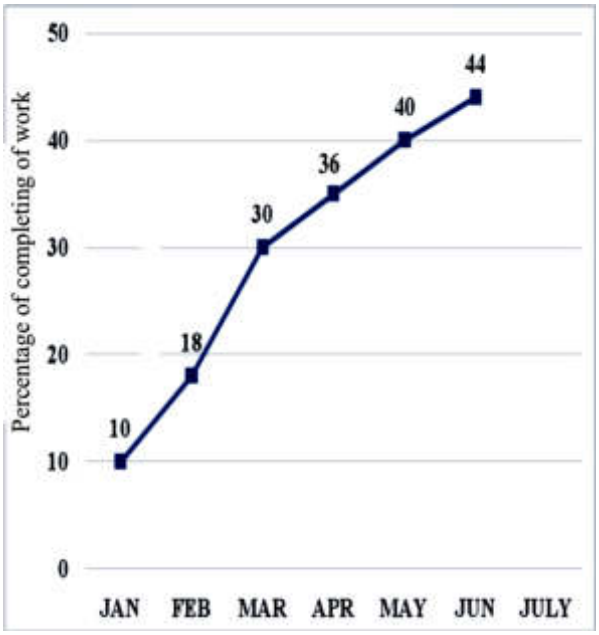
58. The minimum number of straight lines required to construct the given figure is ……



(a) 14 (b) 12
(c) 15 (d) 13

59. Select the time that would depict the correct mirror image of 9:30 on a clock.
(a) 2:30 (b) 6:30
(c) 7:30 (d) 4:30

60. The following graph shows the month wise cumulative progress in the constructions of a dam. If the progress in July is equal to that of the highest progress recorded in any month in the given period, how much work will be completed by the end of July?



(a) 54% (b) 52%
(c) 56% (d) 50%

61. **Gautama Buddha used the language of the common people in his teachings-**
(a) Magadhi (b) Sanskrit
(c) Prakrit (d) Pali

62. **Who is the compiler of the famous book 'Tirukkural'?**
(a) Kalidasa (b) Tiruvalluvar
(c) Kabir (d) Meerabai

63. **Which traveller from Uzbekistan visited India in the 11th century?**
(a) Mahmud Wali Balkhi (b) Al-Beruni
(c) Seydi Ali Reis (d) Ibn Battuta

64. **The 1943 Karachi session of Muslim League adopted the slogan:**
(a) Jai Jawan Jai Kisan (b) Divide and Rule
(c) Divide and Quit (d) Karo ya Maro

65. **The world's largest drainage basin is:**
(a) Amazon Basin (b) Ganga Basin
(c) Nile Basin (d) Mississippi Basin

66. **The Cape Canaveral, is the place from which spacecraft are launched, is located on the coast of _____.**
(a) North Carolina (b) South carolina
(c) Florida (d) Verginia

67. **Which of the following is NOT correct in the context of PSU's and their year of establishment?**
(a) Airports Authority of India in 1995
(b) Balmer Lawrie & Co. Ltd. in 1867
(c) Damodar Valley Corporation in 1946
(d) Oil and Natural Gas Corporation in 1956

68. **Which Article of the Indian Constitution provides for the process of impeachment of the President?**
(a) Article -59 (b) Article -61
(c) Article -42 (d) Article -48

69. **Hindi was declared as the official language of Union under Article _____ of Indian Constitution.**
(a) 333 (b) 343 (c) 345 (d) 334

70. **Who is the supreme commander of the Indian Armed forces.**
(a) Narendra Modi
(b) Sumitra Mahajan
(c) Pranab Mukherjee
(d) Lieutenant General Dalbir Singh

71. **Where is the world bank headquarters is situated.**
(a) Russia (b) U.S.A.
(c) Japan (d) England

72. **Which statement regarding the "Green Rail Corridor" (launched in Tamil Nadu) is NOT correct?**
(a) The stretch of the green rail corridor is 114 km
(b) It is India's first green rail corridor
(c) The trains under green rail corridor are equipped with bio toilets.
(d) It was inaugurated by Prime Minister Narendra Modi

73. **SHG- Bank linkage programme (SHG-BLP) is a bank- led microfinance scheme in India which was initiated by……**
(a) SIDBI (b) NABARD
(c) LIC (d) EXIM Bank

74. **The balance of exports and imports of goods is referred to as :**
(a) current account
(b) trade balance
(c) current account deficit
(d) current account balance

75. **Which office of the Government of India is the executive department of Nuclear energy ?**
(a) Home Minister's Office
(b) Ministry of Power
(c) Office of the Defence Minister
(d) Prime Minister Office

76. **Which of the following city is architecturally planned city?**
(a) New Delhi (b) Bengaluru
(c) Mumbai (d) Chandigarh

77. **In which of the following Indian states is the Central Institute of Indian Languages (CIIL) situated?**
(a) Madhya Pradesh (b) Uttar pradesh
(c) Karnataka (d) Tamil Nadu

78. **Four places have been given below of which three are same in some way and one is different choose the odd one out.**
(a) Kathak - North India (b) Garba - Gujarat
(c) Bhangra - Punjab (d) Bihu - Assam

79. **Which of the following is NOT a correct pair of a UN organ and its headquaters?**
(a) The International Court of Justice (ICJ)-The Hague
(b) World Health Organization (WHO) - New York
(c) United Nations Educational, Scientific and Cultural Organization (UNESCO) - Paris
(d) International Atomic Energy Agency (IAEA) - Vienna

80. **Who is the author of the book 'Lone Fox Dancing: My Autobiography?**
(a) Ruskin Bond (b) Arundhati Roy
(c) Shobha De (d) V.S. Naipaul

81. **Who was the first winner of the Jnanpith Award?**
(a) Uma Shankar Joshi (b) Amrita Pritam
(c) G Sankara Kurup (d) Ashapurna Devi

82. **Which among the following places is famous for Uranium Mines ?**
(a) Raniganj (b) Korba
(c) Jaduguda (d) Panna

83. **What rank is given to India among 119 countries in the 'Travel Tourism Development Index 2024 released by the World Economic Forum on 21 May 2024 ?**
(a) 37^{th} (b) 38^{th}
(c) 39^{th} (d) 41^{th}

84. **Which country gave the name of storm 'Remal' that caused devastation in the coastal area of West Bengal and Bangladesh in 2024 ?**

(a) UAE (b) Saudi Arabia
(c) Oman (d) Yaman

85. Which of following biomes is known for its coniferous (cone-bearing evergreen) forests?
(a) Boreal forest (b) Tropical rain-forest
(c) Savanna Forest (d) Chaparral forest

86. Travelers in deserts often tend to have an optical illusion of a sheet of water where none actually exists. What is this called ?
(a) Mirage (b) Reflection
(c) Diversion (d) Scattering

87. Which of the following does not have magnetic properties like a permanent magnet?
(a) nickel (b) iron
(c) aluminium (d) magnet stone

88. ..... invented Atom Bomb.
(a) J Robert Oppenheimer
(b) John Bau â Ning
(c) Samuel Cohan
(d) Samuel Colt

89. MRI - What is an abbreviation for?
(a) Medical Research Information
(b) Magnetic Resonance Imaging
(c) Media Research Information
(d) Medical Research Imaging

90. Diamonds can be synthesized by subjecting pure carbon to :
(a) Very high pressure and low temperature
(b) Very low pressure and high temperature
(c) Very high pressure and high temperature
(d) Very low pressure and low temperature

91. What is the abundant constituent, available flammable natural gas?
(a) Propane (b) Methane
(c) Ethane (d) Butane

92. Ethanol is formed during:
(a) Aerobic respiration in muscles
(b) Anaerobic respiration in yeasts
(c) Anaerobic respiration in muscles
(d) Aerobic respiration in yeasts

93. Human growth hormone is secreted by which gland?
(a) Posterior lobe of pituitary gland
(b) Anterior lobe of pituitary gland
(c) Thyroid gland
(d) Pancreas

94. Cyanocobalamin is a man-made form of ____ vitamin.
(a) B_{12} (b) B_6
(c) B_2 (d) B_1

95. Which of the following Biomass are rich in proteins and are used as food supplements by space travelers?
(A) Spirulina (B) Spirogyra
(C) Chlorella (D) Funaria
(a) A & C (b) B & D
(c) B & C (d) A & B

96. Which of the following is not commonly used as a fruit?
(a) Strawberry (b) Grapes
(c) Pear (d) Tomato

97. Separating cotton from the seeds by combing is called____.
(a) Ginning (b) Thermoforming
(c) Molding (d) Yarning

98. What is the extension of URL in computer terminology?
(a) User Remote Location
(b) Universal Radio Laboratory
(c) User Random List
(d) Uniform Resource Locator

99. Alt + tab is a shortcut .....
(a) to open the edit menu options in the current program
(b) to open the File menu options in the current program
(c) To cut selected object.
(d) switch between open programs

100. Where is the Wildlife Institute of India located?
(a) Nagpur (b) Gangtok
(c) Dehradun (d) brick city

SOLUTION : PRACTICE SET- 15

ANSWER KEY

1. (d)	11. (d)	21. (b)	31. (d)	41. (c)	51. (c)	61. (d)	71. (b)	81. (c)	91. (b)
2. (a)	12. (d)	22. (d)	32. (a)	42. (c)	52. (c)	62. (b)	72. (d)	82. (c)	92. (b)
3. (d)	13. (b)	23. (d)	33. (b)	43. (a)	53. (c)	63. (b)	73. (b)	83. (c)	93.(b)
4. (b)	14. (d)	24. (b)	34. (d)	44. (a)	54. (c)	64. (c)	74. (b)	84. (c)	94. (a)
5. (a)	15. (b)	25. (d)	35. (d)	45. (d)	55. (d)	65. (a)	75. (d)	85. (a)	95. (a)
6. (d)	16. (a)	26.(b)	36. (d)	46. (d)	56. (d)	66. (c)	76. (d)	86. (a)	96.(d)
7. (a)	17. (a)	27. (a)	37. (a)	47. (c)	57. (a)	67. (c)	77. (c)	87. (d)	97. (a)
8. (c)	18. (b)	28. (a)	38. (c)	48. (a)	58. (a)	68. (b)	78. (a)	88.(a)	98.(d)
9. (b)	19. (c)	29. (c)	39. (c)	49.(d)	59. (a)	69. (b)	79. (b)	89.(b)	99. (d)
10. (b)	20. (c)	30.(b)	40. (a)	50. (a)	60. (c)	70. (c)	80. (a)	90. (c)	100. (c)

SOLUTION

1. (d)

Let the first number be x and the second number be y.

According to the question,

$$x + y = 9 \quad .....(i)$$

$$\frac{1}{x}+\frac{1}{y}=\frac{1}{2} \quad ..... (ii)$$

From equation (i),

$$x + y = 9$$

$$y = 9 - x$$

From equation (ii)

$$\frac{1}{x}+\frac{1}{y}=\frac{1}{2}$$

$$\frac{x+y}{xy}=\frac{1}{2}$$

$$\frac{9\times 2}{xy}=1$$

$$2 \times 9 = xy$$

On putting the value of y,

$$18 = x (9 - x)$$

$$18 = 9x - x^2$$

$$x^2 - 9x + 18 = 0$$

$$x^2 - 6x - 3x + 18 = 0$$

$$x(x - 6) - 3(x - 6) = 0$$

$$(x - 3) (x - 6) = 0$$

$$(x - 3) = 0 \text{ or } x = 3$$

$$(x - 6) = 0 \text{ or } x = 6$$

2. (a)

Amount spent on shoes = ₹ 150

Amount spent on watch = ₹ 75

Let Amit's pocket money = ₹ x

According to the question,

$$\frac{3x}{4}=150+75$$

$$3x = 4\times 225$$

$$x = \frac{900}{3}$$

$$x = ₹\ 300$$

So, Amit got the amount for pocket money = ₹ 300

3. (d)

$$\text{(a) } \frac{27}{480} = 0.05625$$

$$\text{(b) } \frac{21}{640} = 0.0328125$$

$$\text{(c) } \frac{81}{450} = 0.18$$

$$\text{(d) } \frac{240}{450} = 0.5333 = 0.5\bar{3}$$

Hence, it is clear that option (d) $\frac{240}{450} = 0.5333 = 0.5\bar{3}$ is not giving a value in terminating decimal.

4. (b)

$$\frac{3}{7\frac{1}{3}}+\frac{3}{3\frac{1}{7}}=\frac{3}{\frac{22}{3}}+\frac{3}{\frac{22}{7}}$$

$$=\frac{9}{22}+\frac{21}{22}$$

$$=\frac{30}{22}$$

$$=\frac{15}{11}=1\frac{4}{11}$$

5. (a)

$$\frac{484}{4.84}=\frac{48.4}{x}$$

$$\Rightarrow \quad x\times 484 = 48.4\times 4.84$$

$$\Rightarrow \quad x = \frac{484\times 484}{484\times 1000}$$

Hence, x = 0.484

6. (d)

According to the question,

$$\frac{60}{75}=\frac{4}{x}$$

$$\Rightarrow \quad x = \frac{4\times 75}{60}$$

$$\Rightarrow \quad x = 5$$

Hence, the value of x is 5.

7. (a)

$$64 = 2\times 2\times 2\times 2\times 2\times 2$$

$$48 = 2\times 2\times 2\times 2\times 3$$

$$HCF = 8$$

From the given options -

(a) 96 = 2 × 2 × 2 × 2 × 2 × 3

(b) 104 = 13 × 8

(c) 88 = 11 × 8

(d) 72 = 9 × 8

So the possible value of y cannot be 96.

8. (c)

According to the question,

$$\text{HCF of } \frac{2}{9},\frac{16}{81},\frac{32}{117},\frac{54}{189} = \frac{2\times 1}{9},\frac{2\times 8}{9\times 9},\frac{2\times 16}{13\times 9},\frac{2\times 27}{9\times 21}$$

$$\text{HCF of fraction} = \frac{\text{HCF of numerator}}{\text{LCM of denominator}}$$

$$=\frac{2}{27\times 13\times 21}=\frac{2}{7371}$$

9. (b)

Let the numbers are x and y.

According to the question,

$$\frac{x}{y}=6\Rightarrow x = 6y -----(i)$$

$$xy = 96 -----(ii)$$

On putting the value of equation (i) in equation(ii),

$6y.y = 96$

$6y^2 = 96$

$y^2 = 16$

$y = 4$

$\therefore x = 6 \times 4 = 24$

So, the required value,

$(x+y)(x-y) = (24+4) \times (24-4)$

$= 28 \times 20 = 560$

10. (b)

On finding the LCM of given numbers,

2	12	18	20	25
2	6	9	10	25
3	3	9	5	25
3	1	3	5	25
5	1	1	5	25
5	1	1	1	5
	1	1	1	1

LCM = $2 \times 2 \times 3 \times 3 \times 5 \times 5 = 900$

900 is the required three-digit,

so the product of 900 which is smallest 5-digit number = 900 × 12 = 10800

11. (d)

Let, A's salary = 4x

And B's salary = 5x

According to the question-

When A's salary is increased by 10%,

$= 4x + 4x \times \frac{10}{100}$

$= \frac{22}{5}x$

When B's salary is increased by 20%,

$= 5x + 5x \times \frac{20}{100}$

$= 6x$

Hence, required ratio $= \frac{\frac{22}{5}x}{6x} = 11/15$

$= 11 : 15$

12. (d)

Total wages = ₹ 4200

Share of P = $\frac{4200 \times 2}{2+3+5+4} = \frac{4200 \times 2}{14} = ₹\ 600$

Share of Q = $\frac{4200 \times 3}{14} = ₹\ 900$

Share of R = $\frac{4200 \times 5}{14} = ₹\ 1500$

Share of S = $\frac{4200 \times 4}{14} = ₹\ 1200$

So R got the highest amount of ₹ 1500.

13. (b)

Given,

5% of A + 4% of B = 2/3 (6% of A + 8% of B)

$\frac{A \times 5}{100} + \frac{B \times 4}{100} = \frac{2}{3}\left(\frac{6 \times A}{100} + \frac{8 \times B}{100}\right)$

$\frac{5A}{100} - \frac{12A}{300} = \frac{16B}{300} - \frac{4B}{100}$

$\frac{3A}{300} = \frac{4B}{300}$

$3A = 4B$

$\frac{A}{B} = \frac{4}{3}$, A : B = 4 : 3

14. (d)

Let the number of valid votes which the winner candidate got = x

Total votes = 560000

According to the question,

$x = 560000 \times \frac{75}{100} \times \frac{85}{100}$

$x = 560000 \times \frac{3}{4} \times \frac{17}{20}$

$x = 7000 \times 51$

$\boxed{x = 357000}$

15. (b)

Let-

Width of the rectangle = x m

Length = (x + 5) m

Perimeter of rectangle = 2(*l*+b)

= 2 (x + x +5)

=2 (2x + 5)

= 4x +10

According to the question,

Perimeter of the rectangle $= \frac{1}{3} \times$ Area of the rectangle

Hence, $4x + 10 = \frac{1}{3} \times (l \times b)$

$(4x+10) \times 3 = x \times (x+5)$

$12x + 30 = x^2 + 5x$

$x^2 - 7x - 30 = 0$

$x^2 - 10x + 3x - 30 = 0$

$x(x-10) + 3(x-10) = 0$

$(x-10)(x+3) = 0$

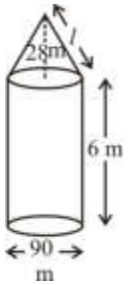
$x - 10 = 0$

$\boxed{x = 10}$

Perimeter of the rectangle = 2 (10+15)

= 50 m

16. (a)



Diameter (D) = 90 m

Radius (r) = $\frac{90}{2} = 45$ m

Slant height of cone $(l)^2 = h^2 + r^2$

$= (45)^2 + (28)^2$

$= \sqrt{2025 + 784}$

$= \sqrt{2809}$

$= 53$

Area of canvas used = curved surface area of cylinder + curved surface area of cone

$2\pi rh + \pi rl$

$= \pi r (2h + l)$

$= \pi \times 45 (12 + 53)$

$= \pi \times 45 \times 65$

$= 2925\ \pi\ m^2$

17. (a)

$\because \frac{M_1D_1}{W_1} = \frac{M_2D_2}{W_2}$

According to the question,

$$\frac{(10M + 5W)60}{1} = \frac{(5M + 20W) \times D_2}{\frac{1}{2}} \text{.....(i)}$$

$\because$ 1M = 2W (Given)

On putting, 1M = 2W in equation (i),

$$\frac{(10 \times 2W + 5W) \times 60}{1} = \frac{(5 \times 2W + 20W)2 \times D_2}{1}$$

$25W \times 60 = 30W \times 2 \times D_2$

$D_2 = 25$ days

18. (b)

Let total work will be completed in x days

According to the question,

$$\frac{2}{10} + \frac{x-3}{12} + \frac{x}{15} = 1$$

$$\frac{1}{5} + \frac{x-3}{12} + \frac{x}{15} = 1$$

$$\frac{5(x-3) + 4x}{60} = \frac{4}{5}$$

$9x - 15 = 48$

$9x = 63$

$x = 7$ days

So, work will be completed in 7 days

19. (c)

Let the speed of the cyclist is v_1 and the speed of the jogger is v_2.

According to the question,

$$v_1 = \frac{d}{t} \text{.....(i)}$$

$$v_2 = \frac{d/2}{2t} = \frac{d}{4t} \text{.....(ii)}$$

From eq^n (i) and (ii)

$$\frac{v_1}{v_2} = \frac{d/t}{d/4t}$$

$$\frac{v_1}{v_2} = \frac{4t \times d}{d \times t}$$

$$\frac{v_1}{v_2} = \frac{4}{1}$$

$v_1 : v_2 = 4 : 1$

Required ratio = 4 : 1

20. (c)

Let the speed of train = x km./hr.

Distance covered to cross the pole in 20 seconds

$$= \frac{x \times 20}{3600} \text{km} = \frac{x}{180} \text{km}$$

Speed of cycle = 5 km./hr.

Speed of cycle + Speed of train = (x + 5) km./hr.

Distance covered to cross the cycle = $\frac{(x+5) \times 18}{3600}$ km.

$$\frac{(x+5) \times 18}{3600} = \frac{x}{180}$$

$18x + 90 = 20x$

$2x = 90$

$x = 45$ km/hr.

21. (b)

Let Principal = ₹ P

Time = 2x Years, Rate = x%

$\therefore$ Simple interest = $\frac{112.5}{100} \times P$

Simple interest = $\frac{P \times R \times T}{100}$

$$\frac{112.5}{100} \times P = \frac{P \times 2x \times x}{100}$$

$112.5 = 2x^2$

$x^2 = 56.25$

$x = 7.5 = 7\frac{1}{2}$

Hence Rate $7\frac{1}{2}\%$ and Time (n) = $2 \times 7\frac{1}{2} = 15$ Years

22. (d)

Rate = 10%, Principal = ₹ 180000,

Time = 2 Years

Simple interest = $\frac{P \times R \times T}{100}$

$= \frac{180000 \times 10 \times 2}{100}$

= ₹ 36000

$$\text{Amount} = \text{Principal}\left(1 + \frac{\text{Rate}}{100}\right)^{\text{Time}}$$

$$\text{Amount} = 180000 \times \left(1 + \frac{10}{100}\right)^2$$

$$= 180000 \times \frac{11}{10} \times \frac{11}{10}$$
$$= 1800 \times 121$$
$$= ₹\ 217800$$

Compound interest = Amount - Principal
$= 217800 - 180000$
$= ₹\ 37800$

Gain profit in two years
= Compound interest – Simple interest
$= 37800 - 36000 = ₹\ 1800$

23. (d)

Total price of the car = 4.50 + 1.25 = ₹ 5.75 lacs

$$\therefore \text{ Selling price} = \frac{100 - \text{Loss}\%}{100} \times \text{Cost price}$$
$$= \left(\frac{100-20}{100}\right) \times 5.75$$
$$= \frac{80}{100} \times 5.75 = 4.600 = ₹4.60 \text{ lacs}$$

24. (b)

Total cost price = ₹3 lacs

To earn total 15% profit, the selling price
$$= 300000 \times \frac{115}{100} = 345000$$

Cost price of part I $= 300000 \times \frac{25}{100} = 75000$

Selling price of part I $= 75000 \times \frac{75}{100} = 56250$

Cost price of part II $= 300000 \times \frac{40}{100} = 120000$

Selling price of part II $= 120000 \times \frac{125}{100} = 150000$

Total selling price = Selling price–I + Selling price–II
= 56250 + 150000 = 206250

Remaining = 345000 – 206250 = ₹138750

Hence, in order to earn total 15% profit the rest part of the land has to be sold in ₹138750

25. (d)

Divide $x^2 + ax + b$ from x–7 remainder = 35

Putting, $x = 7$

$(7)^2 + 7a + b = 35$

$7a + b = 35 - 49$

$7a + b = -14$ -------(i)

Again divide $x^2 + bx + a$ from $x - 7$ remainder = 31

Putting, $x = 7$

$(7)^2 + 7b + a = 31$

$a + 7b = 31 - 49$

$a + 7b = -18$ -------(ii)

Adding equation (i) and (ii) –

$7a + b = -14$

$a + 7b = -18$

$8a + 8b = -32$

$8(a + b) = -32$

$\boxed{a + b = -4}$

26.(b)

Given,

$$\frac{x}{2} + \frac{2}{y} = 1$$
$$xy + 4 = 2y$$
$$2y - xy = 4$$
$$y = \frac{4}{2-x} \quad \text{_____(i)}$$
$$\frac{y}{2} + \frac{2}{z} = 1$$
$$yz + 4 = 2z \quad \text{_____(ii)}$$

On putting the value of y in equation (ii),

$$\frac{4}{(2-x)} \times z + 4 = 2z$$
$$4z + 8 - 4x = 4z - 2xz$$
$$8 - 4x = -2xz$$
$$4 - 2x = -xz$$
$$2x = 4 + xz$$
$$1 = \frac{4}{2x} + \frac{xz}{2x}$$

or $\frac{2}{x} + \frac{z}{2} = 1$

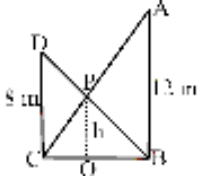
27. (a)

$$p\sin^2\beta + q\cos^2\beta = r$$
$$p\sin^2\beta + q(1 - \sin^2\beta) = r$$
$$p\sin^2\beta + q - q\sin^2\beta = r$$
$$(p-q)\sin^2\beta = r - q$$
$$\sin^2\beta = \frac{r-q}{p-q}$$
$$\cos^2\beta = 1 - \sin^2\beta$$
$$= 1 - \frac{(r-q)}{p-q}$$
$$= \frac{p-q-r+q}{p-q}$$
$$= \frac{p-r}{p-q}$$
$$\cot^2\beta = \frac{\cos^2\beta}{\sin^2\beta} = \frac{\frac{p-r}{p-q}}{\frac{r-q}{p-q}}$$
$$\boxed{\cot^2\beta = \frac{p-r}{r-q}}$$

28. (a)

Given-

heights of pillars = 8 m, 12 m



The rope cuts each other at a height of h meter from the ground.

From, $OP = \frac{AB \times CD}{AB + CD}$

$h = \frac{12 \times 8}{12 + 8} = \frac{12 \times 8}{20} = \frac{24}{5} m$

29. (c)

Suppose numbers = x, y, z where x < y < z

As per the question-

$x + y + z = 60 - (i)$

$z - x = 12 \Rightarrow z = 12 + x$ .....(ii)

$y - x = 3 \Rightarrow y = 3 + x$ .....(iii)

On solving equation (i),(ii) and (iii)

x + y + z = 60

x + 3 + x + 12 + x = 60

3x + 15 = 60

3x = 45

x = 15

y = 18

z = 12 + x

z = 12 + 15

z = 27

$\boxed{z = 27}$ largest number (z) = 27

30.(b)

Head favorable probability when a coin is tossed

Required probability $= \frac{\text{Favourable events}}{\text{total events}} = \frac{1}{2}$

So probability to come Head $= \frac{1}{2}$

31. (d)

Just as, a hotel has a menu. Same as, there are catalogue in the library.

32. (a)

Just as 'Shoes' is related to 'Slipper' in the same as 'Coat' is related to 'Shirt'.

33. (b)

Just as, 1 2 3 4 5 5 4 3 2 1

S M I L E → E L I M S

and, 1 2 3 4 5 5 4 3 2 1

M A S T E → E T S A M

Same as, 1 2 3 4 5 5 4 3 2 1

S T A R V → $\boxed{V R A T S}$

34. (d)

Just as,, number of players in Cricket is 11. Similarly, number of players in Kabaddi is 7.

35. (d)

Such as,

R A H U L

↓ ↓ ↓ ↓ ↓

18 + 1 + 8 + 21 + 12 = 60

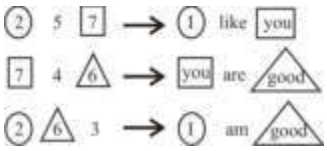
Same as,

A R U N

↓ ↓ ↓ ↓

1 + 18 + 21 + 14 = $\boxed{54}$

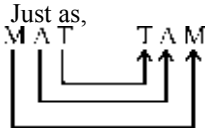
36. (d) According to the question-



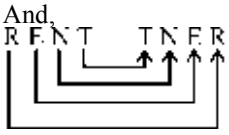
Hence, coded number for 'are' is 4.

37. (a)

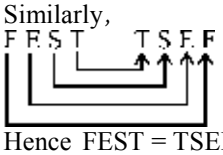
Just as,



And,



Similarly,



Hence FEST = TSEF

38. (c)

Venus, Mars and Jupiter are all planets while Iapetus is a satellite.

Hence, option (c) is different from others.

39. (c)

Keyboard, Motherboard and Printer are the parts of the computer, whereas Intel is a company. Hence, Intel is different from the other.

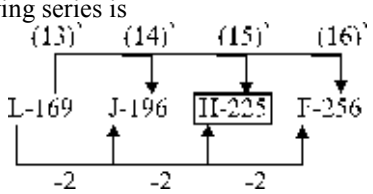
40. (a)

In the given figure series, figure D is wrong because in figure D the given pattern 'O' is shaded whereas the pattern of other figure is blank.

Hence, option (a) is correct answer.

41. (c)

Following series is



Questions mark will be replaced by H-225.

42. (c)

Just as,

From column I,

$(4)^2 + (3)^2 - 2 = 23$

16 + 9 – 2 = 23

23 = 23

From column II,

$(3)^2 + (6)^2 - 5 = 40$

9 + 36 – 5 = 40

40 = 40

Similarly,

From column III,

$(1)^2 + (8)^2 - 7 = ?$

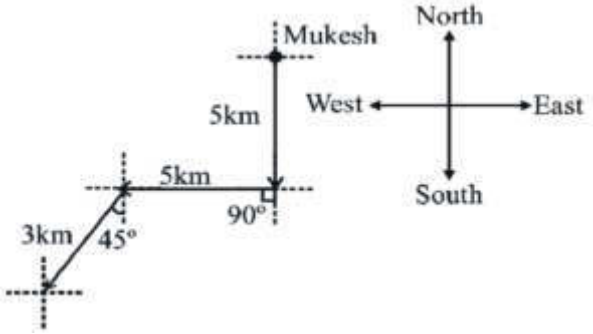
1 + 64 – 7 = 58

? = 58

43. (a)

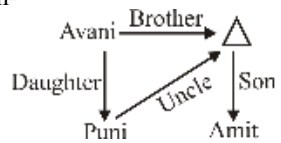
Just as on the left side, there is only one type of picture. Same as on the right side, there will be same type of picture.

44. (a)
According to the question,



Hence, it is clear that Mukesh will be in South-West direction in reference to his initial position.

45. (d)
As per question-



Hence, Amit's father is Maternal Uncle of Puni.

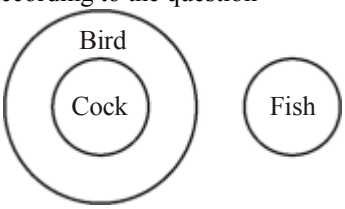
46. (d)
Given,

$$36 \times 12 + 4 \div 6 + 2 - 3 = ?$$

On changing the symbols,

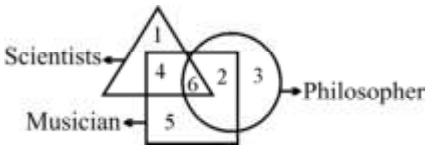
$$= 36 - 12 \div 4 + 6 \div 2 \times 3$$
$$= 36 - 3 + 3 \times 3$$
$$= 36 - 3 + 9$$
$$= 45 - 3 = 42$$

47. (c) According to the question-



Hence, option (c) is correct.

48. (a)



2 represents those who are philosophers and musicians but not scientists.

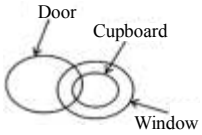
49.(d)

As per question,

	English	Hindi	Economics	Botany	Zoology
Akash	✓	✓	✓	✗	✗
Puru	✓	✓	✗	✓	✗
Sumit	✗	✓	✓	✓	✓
Aryan	✓	✗	✓	✓	✗
Mayank	✗	✗	✓	✓	✓

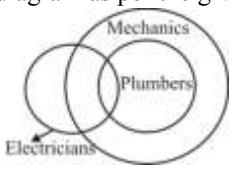
So, it is clear that puru is good in all three subjects namely English, Hindi and Botany.

50. (a)
On drawing the diagram as per the statement.



From the above Venn-diagram only conclusion I follows.

51. (c)
On drawing the diagram as per the given statement.



Hence, both conclusion I and II follows.

52. (c)
Neither conclusion I nor conclusion II follows the given statement.

53. (c)
It is clear from the above statement that the company should study the preferences of the customers and the competition in the market. So, only decision II follows.

54. (c)
It is clear from the above statement that both assumption I and II are implicit in the statement.

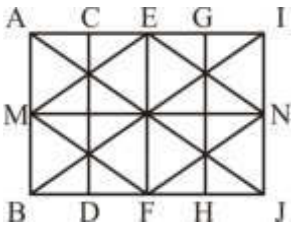
55. (d)
Only argument (i) substantiate because Hollywood movies introduce children and young people to different cultures and different values. Hence, Hollywood movies should not be banned in India.

56. (d)
On adding the sides of the figures in the given pattern,

$4 + 5 + 3 + 6 + 3 = ?$
$? = 21$
Hence option (d) will be correct.

57. (a)
Just as,
(a) $25 = 39 - 14$
$25 = 25$
(c) $63 = 72 - 9$
$63 = 63$
Similarly,
$18 = 51 - ?$
$? = 51 - 18$
Hence, $\boxed{? = 33}$

58. (a)



Minimum number of straight lines = 14 (AB, CD, EF, GH, IJ,AI,MN, BJ, ME, BI, FN, EN, AJ, MF)

59. (a)
Mirror image of 9 : 30 = 12 : 00 – 9 : 30
= 11 hour 60 min − 9 hours 30 min
= (11 – 9) hour, (60 – 30) min
= 2 hour, 30 min.
Hence, 2:30 is correct mirror image of 9:30.

60. (c)
Work progress in January = 10%
Work progress in February = (18−10) = 8%
Work progress in March = (30−18) = 12%
Work progress in April = (36−30) = 6%
Work progress in May = (40−36) = 4%
Work progress in June = (44−40) = 4%
∵ The highest work progress recorded in March.
∴ Work will be done by the end of July = (44+12) = 56%

61. (d)
Gautama Buddha used the Pali language in his sermons.

62. (b)
The compiler of famous book Tirukkural is Thiruvalluvar. This book is a collection of 1330 couplets organized into 133 chapters. Tirukkural is the masterpiece of Tamil literature. It is one of the most revered ancient works in the Tamil language.

63. (b)
Abu Rayhan Al-Biruni (973 AD – 1048 AD) better known simply as Al-Biruni, was an eminent Uzbek scholar and polymath. He travelled to the Indian subcontinent in 1017(11^{th} Century). He explored the Hindu faith practiced in India and authored a book of Indian culture named scholar of Kitab-ul-hind or Tahqiq-i-Hind (History of India). He was very learned regarding physics, astronomy, mathematics, and natural sciences. Other than a traveller, he is also known as a historian, linguist and chronologist. He accompanied Mahmud of Ghazni. He is considered as the Father of Indology.

64. (c)
Muslim League was founded in Dhaka in 1906. In the Karachi Session (December, 1943) of the Muslim League of resolution to demand Pakistan was presented and the slogan of 'Divide and Quit' was given. Muhammad Ali Jinnah was a prominent leader of the Muslim League. Pakistan Day was celebrated by the Muslim League on 23^{rd} March 1943.

65. (a)
As of 2021, the Amazon basin, located in northern South America, was the largest drainage basin in the world. The Amazon River and its tributaries drain an area nearly seven million square kilometers. The river system originates in the Andes Mountain of Peru and travels through Ecuador, colombia, Venezuela, Bolivia and Brazil before emptying into the Atlantic Ocean.

66. (c)
Cape Canaveral, the place from which spacecraft are launched, is located on the coast of Florida. Florida is situated the southeast part of U.S.A . It is 37^{th} founding state of U.S.A.

67. (c)
Damodar Valley Corporation was established in 1948 under the Damodar Valley Project Act of parliament based on the Tennessee Valley Authority of America. Under this project seven dams have to be constructed, among them 4 are as follows- Tilaiya, Maithan, Konar and Panchet were constructed Damodar Valley Project ranges in Jharkhand and West Bengal.

68. (b)
Article 61 of the Indian Constitution provides for the process of impeachment of the President. The President may be impeached by a house of parliament for violation of the provisions of the Constitution, but it is necessary that the President be given a written notice 14 days in advance, signed by one-fourth members of that house. Such resolution has been passed by a majority of not less than two thirds of the total membership of the both houses. When a charge has been so preferred by either house of parliament the other house shall be investigating the charge or cause the change to be investigated and the President shall have the right to appear and to be represented on such investigation.

69. (b)
Article 343 is about the Official language of the Union of India. According to this Article, it is to be Hindi in Devnagri script, and numerals should follow the international form of Indian numerals. It is noteworthy that on 14 September 1949, on the 50^{th} birthday of Beohar Rajendra Simha, Hindi was chosen as the official language of India by the Constituent Assembly. This decision came into effect with the coming into force of the Indian Constitution on 26 January 1950. Other than this, Article 351 gives power to the Union government to issue a directive for development of the Hindi language.

70. (c)
According to the article 53(2) of the Indian constitution the supreme commander of the Indian Armed forece is president of is India. In current Droupadi Murmu was the President of India.

71. (b)
World Bank headquarters is situated in Washington DC, United States. It was founded on July 1944 in Bretton Woods Conference along with the International Monetary Fund. It's objective is to provide loan and grants to government of low-and middle income countries for the purpose of pursuing capital projects.

72. (d)
The India's first Green Rail Corridor, a 114-km long Rameswaram-Manamadurai stretch in Tamil Nadu which ensures zero toilet discharge on rail tracks, was inaugurated by Railways Minister Suresh Prabhu in July, 2016.Trains in the section have been equipped with bio-toilets ensuring zero discharge of human waste on the rail tracks.

73. (b)

NABARD:- National Bank for Agriculture and Rural development came into existence on 12th July 1982 on the recommendations of B. Sivaramman committee.

SIDBI:- (Small Industries Development Bank of India) was established with the mission of Facilitating and strengthening the credit flow to MSMS sector.

EXIM Bank (Export-Import Bank of India) was established by an act of parliament in 1981.

LIC (Life Insurance Corporation) is a statutory body established by an Act of parliament in 1956.

74. (b)

The trade balance is the net sum of a country's exports and imports of goods without taking into account all financial transfers, investments and others financial components. A country's trade balance is positive (meaning that it registers a surplus) if the value of exports exceeds the value of import. Vise versa a trade balance is negative, if the value of import exceeds that of exports. It will be known as trade deficit. The trade balance is the official term that is used for net export in the current account.

75. (d)

The Indian Atomic Energy Commission was first setup in August 1948 in the Department of Scientific Research, which was created a few months earlier in June 1948. The Department of Atomic Energy (DAE) was setup on 3 August, 1954 under the direct charge of the Prime Minister through a Presidential Order. Subsequently, in accordance with a Government Resolution dated March 1, 1958, the Atomic Energy Commission (AEC) was established in the Department of Atomic Energy.

76. (d)

Chandigarh was one of the early planned cities in post independence India and is internationally known for its architecture and urban design. The master plan of the city was prepared by Swiss French architect Le Corbusier.

The word Chandigarh literally means Chandi Garh or fort of Goddess Chandi, a name derived from a temple situated nearby in Panchakula. Administratively, it falls under central government of India as union territory and is the capital of both states of Haryana and Punjab.

77. (c)

Central Institute of Indian languages (CIIL) was established in 1969 in Mysore, Karnataka under the aegis of Ministry of Human Resource and Development (Ministry of Education). CIIL was established to co-ordinate the development of Indian languages, to bring about the essential unity of Indian languages through scientific studies, promoting inter-disciplinary research, contributing to mutual enrichment of languages and thus contributing towards emotional integration of the people of India.

78. (a)

Famous dances and their concerned states are as follow:

Dance	**State/Region**
Kuchipudi	Andhra Pradesh
Bihu	Assam
Bhangra	Punjab
Garba	Gujarat
Kathak	Uttar Pradesh
Tarangmel	Goa
Kathakali	Kerala
Odissi	Odisha
Bharatnattayam	Tamilnadu

79. (b)

United Nations organs and their headquarters:

- International Court of Justice (ICJ)- The Hague, Netherlands
- The World Health Organization (WHO)- Geneva, Switzerland
- The United Nations Educational, Scientific and Cultural Organization (UNESCO) - Paris, France.
- The International Atomic Energy Agency (IAEA) -Vienna, Austria.

80. (a)

Lone fox Dancing is autobiography of Ruskin Bond. He was awarded by Padma Bhushan, Padma Shri. Other notable works of Ruskin Bond is 'The Room on the Roof', 'The Blue Umbrella', 'Flight of Pigeons' etc.

81. (c)

Malyalam writer G. Shankar Kurup (Kerala) was the first winner (1965) of the Jnanpith Award and Bengali writer Ashapurna Devi (West Bengal) was the first female recipient. Jnanpith Award is given for the best literary writing by an Indian citizen in a language listed in eighth schedule of the Constitution of India.

82. (c)

The Jaduguda mine is a Uranium mine in Jaduguda village in the Purbi Singhbhum district of the Indian state of Jharkhand. It commenced operation in 1967 and was the first Uranium mine in India. The deposits at this mine were discovered in 1951.

83. (c)

In the 'Travel and Tourism Development Index, 2024' released by World Economic Forum (WEF) on 21st May, 2024, India has been accorded at 39th place in the list of 119 countries. It is an Important jump of 13 place from the last year ranking.

84. (c)

On 20th May 2024, the cyclone 'Remal' which devastated the coastal regions of West Bengal and Bangladesh. The cyclone name Remal given by Oman. Oman is a part of that Regional list which covers the Arabian Sea and Bay of Bengal and they sanctioned & offered the name– 'Remal' out of the names suggested in the cyclone name list for the year 2024.

85. (a)

Boreal forest is known for its coniferous (cone-bearing evergreen) forests. It is the northern most forest in the world.

86. (a)
Travelers in deserts often tend to have an optical illusion of a sheet of water where none actually exists. It is a called mirage. Mirage – Mirage happens when the ground is very hot and the air is cool. The hot ground warms the layer of air just above the ground. When the light travels through the cold air and enter into the layer of hot air it is refracted. A layer of very warm air, near the ground refracts the light and thus mirage ocurs.

87. (d)
Magnet stones do not have magnetic properties like permanent magnets. Natural magnet is iron oxide (Fe_2O_3). Steel is used to make permanent magnets. Iron, nickel, cobalt, iron-steel etc. have permanent magnetic properties.

88.(a)
J. Robert Oppenheimer invented the 'Atom Bomb'. He was the director of the Manhattan Project, started during World War II, for the formation of atomic bombs.
Samuel Cohan - Neutron Bomb
Samuel Colt - Revolver

89.(b)
MRI - is abbreviation of magnetic resonance imaging. It is a technique of medical reflection. Through this, strong magnetic fields and radio waves are used to obtain the body's image. It is also known as magnetic resonance tomography (MRT). Raymond V. Damadian used first MRI in 1977 AD. He is considered the inventor of MRI.

90. (c)
Diamonds can be synthesized by subjecting pure carbon to very high pressure and high temperature. These synthetic diamonds are small but are otherwise indistinguishable from natural diamonds.

91. (b)
Methane is the first member of the alkane group. It is the most common hydrocarbon. It is a flammable natural gas. It is produced by rotting trees and other organic matter in marshy places. Therefore, this gas is called Marsh gas. A fiery explosion occurs when a mixture of methane and air is ignited. This is the reason for the explosion in coal mines.

92. (b)
Fermentation is the biochemical process that occurs when yeast break down glucose. Yeast gets energy from glucose. As a result, ethanol is produced. Distillation and Dehydration. The product of the fermentation process is only 10-15% ethanol.

93.(b)
Pituitary gland is an endocrine gland, which secretes pituitary hormones. It is divided into two parts adenohypophysis and neurohypophysis. Adenohypophysis is composed of pars distalis and pars intermedia. The pars distalis is also known as the anterior pituitary gland which secrets growth hormone and hormones like somatotropin, prolactin etc.

94. (a)
Cyanocobalamin is a man-made form of B_{12} vitamin.
Fat Soluble Vitamins:-
Vitamin A- Retinol
Vitamin D- Calciferol
Vitamin E- Tocopherol
Vitamin K1- Phylloquinone
Vitamin K2- Menaquinone
Vitamin K3- Menadione
Water Soluble Vitamins:-
Vitamin B_1- Thiamine
Vitamin B_2- Riboflavin
Vitamin B_3- Niacin, Nicotinic acid
Vitamin B_5- Pantothenic acid
Vitamin B_6- Pyridoxine
Vitamin B_7- Biotin
Vitamin B_9- Folic acid
Vitamin B_{12}- Cyanocobalamin, Cobalamin
Vitamin C- Ascorbic acid

95. (a)
Spirulina and Chlorella are used as a source of food by space travellers. They are single celled protein. Chlorella provide 30% protein, 15% Lipids, 30% carbohydrates etc and Spirulina is very healthy and super nutritious.

96.(d)
Generally, tomato is not used as a fruit. It is used as a vegetable. Its botanical name is Lycopersicum esculentum, which is known as Solanum lycopersicum and it belongs to Solanaceae family of the flowering plants.

97. (a)
Separating cotton from the seeds by combing is called ginning of cotton. Eli Whitney invented modern mechanical cotton gin in 1794.
Ginning also helps in removing impurities like small stones, dust and wooden particles etc.

98.(d)
In computer terminology the extension of URL is Uniform Resource Locator. It also commonly referred to as web address. It is a reference to a resource on a computer network, which contains information about the location of that resource and how to obtain it. URLs are used to access web pages (HTTP) files (ftp) email (Mail to) data base (jdbc) etc on the internet.

99. (d)

Press this key	**To do this**
• Alt + Tab	Switch between open apps.
• Ctrl + X	Cut the selected item.
• Alt + F4	Close the active item, or exit the active app
• Alt + F	File menu option in current program
• Alt + E	Edit options in current program.

100. (c)
The Wildlife Institute of India is located in Dehradun, Uttarakhand. It was founded in 1982. This institute provides training courses, academic programs as well as advice in wildlife research and management.