Sainik 9th - 2018

(Mathematics)

1. If a number $573xy$ is divisible by 90, then what is the value of $x + y$?
   (a) 6 (b) 9
   (c) 3 (d) 8
2. Which of the following numbers is in standard form?
   (a) $-\frac{24}{52}$ (b) $-\frac{49}{71}$
   (c) $-\frac{27}{48}$ (d) $-\frac{28}{105}$
3. What should be added to $-\frac{5}{7}$ to get $-\frac{2}{3}$?
   (a) $-\frac{29}{21}$ (b) $\frac{29}{21}$
   (c) $\frac{1}{21}$ (d) $-\frac{1}{21}$
4. The age of A and B are in the ratio 5:7. Four years from now the ratio of their ages will be 3 : 4. Then the present age of B is—
   (a) 20 years (b) 28 years
   (c) 15 years (d) 21 years
5. Two consecutive even numbers are such that half of the larger number exceeds one-fourth of the smaller number by 5. Then the larger number is—
   (a) 16 (b) 18
   (c) 32 (d) 34
6. If 0·25 $(4f - 3)$ = 0·05 $(10f - 9)$, then f is equal to –
   (a) 0·6 (b) 0·8
   (c) 0·5 (d) 0·4
7. A number consists of two digits. The digit in the tens place exceeds the digit in the units place by 4. The sum of the digit is $\frac{1}{7}$ of the number. The number is—
   (a) 27 (b) 72
   (c) 48 (b) 84
8. How many sides does a regular polygon have, wherein, whose interior angle is eight times its exterior angle?
   (a) 16 (b) 24
   (c) 18 (d) 20
9. ABCD is a rectangle with ∠BAC = 48°. Then ∠DBC is equal to—
   (a) 38° (b) 42°
   (c) 48° (d) 132°
10. The angles A, B, C, D of a quadrilateral ABCD taken in order are in the ratio 3 : 7 : 6 : 4, then ABCD is a-
    (a) Rhombus (b) Parallelogram
    (c) Trapezium (d) Kite
11. A data set of n observations has mean $2\bar{x}$. While another data set of $2n$ observations has mean $\bar{x}$. Then the mean of the combined data set of $3n$ observations will be—
    (a) $\bar{x}$ (b) $\frac{3}{2}\bar{x}$
    (c) $\frac{2}{3}\bar{x}$ (d) $\frac{4}{3}\bar{x}$
12. In a class of 17 students, six boys failed in a test. Those who passed scored 12, 15, 17, 15, 16, 15, 19, 17, 18, 18 and 19 marks. The median score of 17 students in the class—
    (a) 15 (b) 16
    (c) 17 (d) 18
13. The mean age of a class is 16 years. If the class teacher aged 40 years old is also included, the mean age increase to 17 years. The numbers of students in the class are—
    (a) 23 (b) 33
    (c) 44 (d) 16
14. From a well-suffled deck of 52 cards, one card is drawn at random. What is the probability that the drawn card is a queen?
    (a) $\frac{1}{4}$ (b) $\frac{1}{52}$

(c) $\frac{1}{13}$ (d) $\frac{1}{26}$

15. Which of the following numbers is not a perfect square?
(a) 3600 (b) 6400
(c) 81000 (d) 2500

16. Which least number must be subtracted from 176 to make it a perfect square?
(a) 16 (b) 7
(c) 10 (d) 4

17. $\frac{\sqrt{288}}{\sqrt{128}}$ is equal to—
(a) $\frac{3}{2}$ (b) 1·49
(c) $\frac{\sqrt{3}}{2}$ (d) $\frac{3}{\sqrt{2}}$

18. The volume of a cubical box is 32·768 cubic metres. Then the length of a side of the box is—
(a) 32 m (b) 320 m
(c) 768 m (d) 3·2 m

19. By what least number should 648 be multiplied to get a perfect cube?
(a) 3 (b) 6
(c) 9 (d) 18

20. Given that 3048625 = 3375 × 729. Then what is the cube root of 3048625?
(a) 155 (b) 135
(c) 45 (d) None

21. I borrowed Rs. 12000 from Jamshed at 6% per annum simple interest for 2 years. Had I borrowed this sum at 6% per annum compound interest, what extra amount would I have to pay?
(a) Rs. 144 (b) Rs. 1440
(c) Rs. 72 (d) Rs. 43.20

22. During a sale, a shop offered a discount of 10% on the marked price of all the items. What would a customer have to pay for a pair of Jeans marked at Rs. 1450 and two shirts marked at Rs. 850 each?
(a) Rs. 2835 (b) Rs. 3150
(c) Rs. 2300 (d) None

23. If the cost price of 10 greeting cards is equal to the selling price of 8 greeting cards. Then the gain or loss % is –
(a) Loss of 25% (b) Loss of 20%
(c) Gain of 25% (d) gain of 20%

24. 'A' can do a piece of work in 20 days which 'B' alone can do in 12 days. 'B' worked at it for 9 days then 'A' can finish the remaining work in—
(a) 3 days (b) 5 days
(c) 7 days (d) 11 days

25. A car takes 2 hours to reach a destination by travelling at 60 km/hr. How long will it take while travelling at 80 km/hr?
(a) 1 hrs 30 min (b) 1 hrs 40 min
(c) 2 hrs 40 min (d) None

26. If $x + \frac{1}{x} = 5$, then $x^2 + \frac{1}{x^2} = ?$
(a) 25 (b) 27
(c) 23 (d) $25\frac{1}{25}$

27. (a + 1) (a – 1) $(a^2 + 1)$ is equal to—
(a) $(a^4 - 2a^2 - 1)$ (b) $(a^4 - a^2 - 1)$
(c) $(a^4 + 1)$ (d) $(a^4 - 1)$

28. $(82)^2 - 18^2$ is equal to—
(a) 8218 (b) 6418
(c) 6400 (d) 7204

29. How many edges does a square prism have?
(a) 9 (b) 12
(c) 16 (d) 8

30. Three cubes of iron whose edges are 6 cm, 8 cm and 10 cm respectively are melted and formed into a single cube; the edge of the new cube formed is—
(a) 12 cm (b) 14 cm
(c) 16 cm (d) 24 cm

31. If the capacity of a cylindrical tank is 1848 m^3 and the diameter of its base is 14 m, the depth of the tank is—
(a) 8 m (b) 12 m
(c) 16 m (d) 18 m

32. The edges of a cuboid are in the ratio 1 : 2 : 3 and its surface area is 88 cm^2. The volume of the cuboid is—
(a) 64 cm^3 (b) 96 cm^3
(c) 120 cm^3 (d) 48 cm^3

33. The parallel sides of a trapezium are in the ratio 4 : 3 and the perpendicular distance between them is 12 cm. It the Area of the trapezium is 630 cm^2, then its shorter of the parallel side is—
(a) 45 cm (b) 42 cm
(c) 60 cm (d) 36 cm

34. The base of a triangle is four times its height and its area is 50 cm^2. The length of its base is—
(a) 10 m (b) 15 m
(c) 20 m (d) 25 m

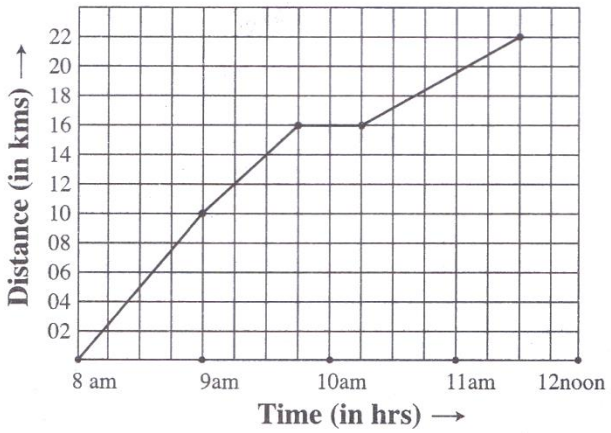
35. $\frac{3^n \cdot 3^{2n+1}}{9^n \cdot 3^{n-1}}$ is equal to—
(a) 1 (b) 9
(c) 3 (d) 3^n

36. $4^{3\cdot5} : 2^5$ is the same as—
(a) 4 : 1 (b) 2 : 1
(c) 7 : 5 (d) 7 : 10

37. If $a = b^{2/3}$ and b = c^{-2}, then what is the value of a in terms of c ?
(a) $\frac{4}{c^3}$ (b) $\sqrt[3]{c^4}$
(c) $\frac{1}{\sqrt[3]{c^4}}$ (d) $\sqrt[4]{c^3}$

Direction- (38 - 42): Refer the following graph—

A courier- person cycles from a town to a neighbouring suburban area to deliver a parcel to a merchant. His distance from the town at different times is shown by the above graph?



38. What is the scale taken for the times axis?
(a) 2 units = 1 hours
(b) 1 unit = 2 hours
(c) 1 unit = 4 hours
(d) 4 units = 1 hours

39. How much time did the person take for the travel?
(a) 2 hours (b) 2 $\frac{1}{2}$ hours
(c) 3 $\frac{1}{2}$ hours (d) 4 hours

40. How far is the place of the merchant from town?
(a) 11 km (b) 22 km
(c) 13 km (d) 26 km

41. When did the person stop on the way?
(a) Between 8 am to 9 am
(b) Between 9 am to 10 am
(c) Between 10·00 am to 10·30 am
(d) Between 10·30 am to 11·30 am

42. During which period did he ride the fastest?
(a) Between 8 am to 9 am
(b) Between 9 am to 10 am
(c) Between 10·00 am to 10·30 am
(d) Between 10·30 am to 11·30 am

43. Find the values of A, B, C in the following.

$$\begin{array}{r} 9\overline{)4AB(5C} \\ -45 \\ \hline 3B \\ -36 \\ \hline 0 \end{array}$$

Then what is the value of A + B + C?

(a) 10 (b) 14
(c) 16 (d) 18

44. If y denotes the digit at hundreds place of the number $67y$ 19, such that the number is divisible by 11. The value of y is –

(a) 3 (b) 5
(c) 4 (d) 7

45. Find three whole number a, b and c such that $a + b + c = a \times b \times c$, then what is the value of $a^2 + b^2 + c^2$?

(a) 14 (b) 15
(c) 16 (d) 17

46. $3 + 23y - 8y^2$ is equal to—

(a) $(1 - 8y)(3 + y)$
(b) $(1 + 8y)(3 - y)$
(c) $(1 - 8y)(y - 3)$
(d) $(8y - 1)(y + 3)$

47. A motor car starts with a speed of 70 km/hr with its speed increasing every 2 hrs. by 10 km/hr. In how many hours will it cover 345 kms?

(a) $2\frac{1}{4}$ hrs (b) 4 hrs 5 min
(c) $4\frac{1}{2}$ hrs (d) 3 hrs

48. $\left(\frac{1}{4}x^2 - \frac{1}{2}x - 12\right) \div \left(\frac{1}{2}x - 4\right)$ is equal to—

(a) $\left(x + \frac{3}{2}\right)$ (b) $\left(\frac{1}{2}x - 3\right)$
(c) $(2x + 3)$ (d) $\left(\frac{1}{2}x + 3\right)$

49. 1200 soldiers in a fort had enough food for 28 days. After 4 days, some soldiers were transferred to another fort and thus the food lasted now for 32 more days. How many soldiers left the fort?

(a) 300 (b) 400
(c) 200 (d) 100

50. If the perimeter of an isosceles right triangle is $(6 + 3\sqrt{2})$m, then the area of the triangle is—

(a) 5·4 m^2 (b) 81 m^2
(c) 9 m^2 (d) 4·5 m^2

English Language

51. The correctly punctuated sentence is—

(a) He asked me, "whether I had done my work."
(b) He asked me, "whether I had done my work."?
(c) He asked me whether I had done my work?
(d) He asked me whether I had done my work.

52. Which of the following will be the correct indirect speech if the statement given below is changed into it: **He said, "I shall leave these papers here."**

(a) He said that he would leave those papers there
(b) He said that he would leave those papers there
(c) He said that he would leave these papers there
(d) He said that he would leave those papers here

53. The correct passive form of the following sentence is—They asked me my name.

(a) My name was asked me by them
(b) I was asked my name
(c) Me was asked my name by them
(d) My name was asked from them

54. The correct meaning of the word 'calamity' is—

(a) disaster (b) scourge
(c) harm (d) injury

55. 'Red Letter Day' means—

(a) a dangerous day
(b) a rosy day

(c) an important day
(d) a bloody day

56. The correct antonym of the word 'assets' is—
(a) liabilities (b) estate
(c) responsibilities (d) hindrances

57. The plural form of 'alumnus' is—
(a) alumnuses (b) alumna
(c) alumnae (d) alumni

58. 'Alma Mater' is the place where one—
(a) studied (b) married
(c) died (d) was born

59. Identify the part which contains an error in the following sentence: **Ten miles are not a long distance.**
(a) ten miles (b) are not
(c) a long distance (d) no error

60. Choose the correct order to make the sentence below meaningful.
History of India/ than/ was there a/
1 2 3
Mahatma Gandhi/ never in the/
4 5
greater man.
6
(a) 124356 (b) 634521
(c) 513126 (d) 513624

61. Fill in the blank with a suitable Phrase Preposition. "He accepted the car…….. his claim for Rs. 3,25,000."
(a) on account of (b) by dint of
(c) in lieu of (d) because of

62. The suitable prefix for the word 'bitter' is—
(a) im (b) in
(c) un (d) em

63. Fill in the blank with a suitable Conjunction: **"He is slow, ……. he is sure."**
(a) and (b) for
(c) but (d) or

64. Complete the following maxim: **"Genius without education is like silver in the ……."**
(a) shop (b) mine
(c) Well (d) pit

65. Select the word that is opposite in meaning to the underlined word. "My first lecture in the classroom was a fiasco."
(a) success (b) joy
(c) fun (d) disaster

66. The right suffix for the word 'just' to make it an abstract noun is—
(a) – ly (b) – ify
(c) – ice (d) – ing

67. Select the word that is similar in meaning to the underlined word: "The requisite energy is derived from the battery."
(a) insignificant (b) necessary
(c) different (d) special

68. Select the word that is similar in meaning to the underlined word: "His candid opinion has won him many friends."
(a) kind (b) courteous
(c) generous (d) frank

69. Select the word that is opposite in meaning to the underlined word: "Everyone agreed that it was a piece of meticulous research.
(a) careless (b) careful
(c) cautions (d) scrupulous

70. The word 'avert' means—
(a) avoid (b) fall
(c) hatred (d) degenerate

71. The adjective form of 'boast' is—
(a) boastful (b) boastly
(c) boasty (d) boastile

Direction (72 - 75): Read the following passage and answer the questions that follow—

Vehicles do not move about the roads for mysterious reasons of their own. They move only because people want them to move in connection with the activities which the people are engaged in. Traffic is therefore a 'function of activities', and because, in towns, activities mainly take place in buildings, traffic in towns is a function of buildings'. The implications of this line or reasoning are inescapable.

72. Line 1 of the passage means that the vehicles move on the roads—
(a) for reasons difficult to explain
(b) to serve specific purposes of people
(c) in a haphazard fashion
(d) in ways beyond our control

73. The author says that traffic is a 'function of activities'. He means that—
(a) human activities are taking place
(b) human activities are dependent on traffic
(c) traffic is not dependent on human activities
(d) traffic is connected with human activities.

74. The author suggests by his argument that—
(a) to regulate traffic, more policemen have to be employed
(b) to regulate activities, traffic has to be controlled
(c) to regulate traffic, buildings have to be taken into considered
(d) to understand the traffic problem, we must examine the social context in which it is found

75. By 'this line of reasoning', the author means—
(a) ideas contained in this line
(b) idea contained in any one line of his argument
(c) the manner of arguing
(d) this row of printed characters

General Science

76. Tungsten (a transition element) being a metal exhibits the following properties—
(I) It is sonorous
(II) It possesses high tensile strength
(III) It possesses high melting point
(IV) It has high density
Which of the above property/properties of Tungsten made it a suitable material for the filament of an electric bulb?
(a) I, II and III (b) II and III
(c) Only III (d) II, III and IV

77. Hepatitis-B is caused due to—
(a) Virus (b) Protozoa
(c) Bacteria (d) Fungi

78. The production of an exact copy of an animal without asexual reproduction is known as—
(a) Cloning (b) Mating
(c) Budding (d) Hatching

79. The device when can be used to detect very small current following in an electric circuit is—
(a) LEAD (b) MCB
(c) LED (d) None

80. Which of these unicellular organisms has no definite shape?
(a) Amoeba (b) Paramecium
(c) Euglena (d) Bacteria

81. Which is a thermosetting plastic?
(a) Polythene (b) Melamine
(c) PVC (d) Nylon

82. Solution of which of the following oxides in water will change the colour of blue litmus to red?
(a) Sulphur dioxide
(b) Magnesium oxide
(c) Iron oxide
(d) Copper oxide

83. In India, PCRA advisers how to save petrol/diesel while driving. For this,

PCRA gave several tips. Here, PCRA stands for—

(a) Pollution Control Research Association

(b) Petroleum Conservation Research Association

(c) Petroleum Collection and Reserve Association

(d) None of these

84. An electrolyte is—

(a) a metal

(b) a solution

(c) a liquid that conducts current

(d) All of the above

85. As the angle between two plane mirrors is decreasing gradually, the number of images of an object placed between them—

(a) First increases then decrease

(b) First decreases then increase

(c) Increases

(d) Decreases

86. Purest form of carbon is—

(a) Coal (b) Charcoal

(c) Coke (d) All of these

87. Value of one light year in S.I. unit is—

(a) $1{\cdot}5 \times 10^{11}$ m

(b) $9{\cdot}46 \times 10^{15}$ m

(c) $1{\cdot}5 \times 10^{15}$ m

(d) $9{\cdot}46 \times 10^{12}$ m

88. Which of the following liquids does not conduct electricity?

I. Lemon juice

II. Sugar solution

III. Distilled water

IV. Dilute Hydrochloric acid

(a) I, II and IV (b) Only III

(c) Only IV (d) III and IV

89. I. Fungi,

II. Bacteria

Consider the following statements and find the correct one—

(a) II are small prokaryotes while I are large celled eukaryotes with defined mitochondria and other organelles

(b) II have a sexual reproduction through conjugation and transformation but I through genetic recombination

(c) All of the above

(d) None of the above

90. When the applied force is doubled and the object is still at rest, then friction becomes—

(a) doubled (b) halved

(c) quadrupled (d) zero

91. Oxides of which element(s) is/are present in acid rain?

I. Carbon

II. Nitrogen

III. Sulphur

(a) I and II (b) II and III

(c) I and III (d) I, II and III

92. Which of the following tools would a farmer use to remove weeds from the field?

(a) Hoe (b) plough

(c) Axe (d) cultivator

93. …….are the smallest micro-organisms which can develop only inside the cell of the……Organism. They do not respire, feed, grow, excrete or move on their own but they cannot…….. When they are outside the ……cell, they behave as…… Choose the correct order to fill the blanks.

(a) Bacteria, Host, Multiply, Animal, Living

(b) Virus, Bacteria, Reproduce, Living, Non-living

(c) Virus, Host, Exchange gases, Living, Non-living

(d) Virus, Host, Reproduce, Living, Non-living

94. In the process of vulcanization, Natural rubber is treated with an element X to improve its properties. The element X can be—
(a) Carbon (b) Nitrogen
(c) Sulphur (d) Phosphorus

95. The standard value of atmospheric pressure is—
(a) 78 cm of Hg (b) 76 mm of Hg
(c) 45 cm of Hg
(d) 0.76 cm of Hg

96. The sound from a mosquito is produced when it vibrates its wings at an average rate of 500 vibrations per second. What is the time period of vibration?
(a) 2 s (b) 0.002 s
(c) 0.02 s (d) 0.2 s

97. The change in focal length of an eye lens to focus the image of objects at varying distances is done by the action of—
(a) Pupil (b) Iris
(c) Retina
(d) Ciliary muscles

98. Which cell organelle is called the power House of a cell?
(a) Lysosomes (b) Golgi bodies
(c) Mitochondria (d) Ribosomes

99. The dramatic changes in body features associated with puberty are mainly because of the secretions of-
I. Thyroxine II. Estrogen
III. Adrenalin IV. Testosterone
(a) (I) and (II) (b) (II) and (III)
(c) (I) and (III) (d) (II) and (IV)

100. The earth rotates around its axis. The sum appears to rise in the east. Venus rotates in the opposite direction of Earth. We can therefore assume that on Venus, the sun sets in the—
(a) East (b) West
(c) North (d) South

Social Science

101. Who became the Nawab of Bengal after the death of Alivardi Khan?
(a) Murshid Quli Khan
(b) Mir Jafar
(c) Sirajuddaulah
(d) Mir Qasim

102. FIR means—
(a) Final Information Report
(b) First Information Report
(c) Full Information Report
(d) First Investigation Report

103. How many MPs are elected to the Rajya Sabha?
(a) 272 (b) 250
(c) 245 (d) 233

104. What is the meaning of media sets the agenda?
(a) Media supports the government
(b) Media directs the people of agitage
(c) Media shapes our thoughts by giving more importance to some issues
(d) Media criticizes the government

105. The process in which different crops are grown in alternate rows in known as-
(a) Crop rotation
(b) Intercropping
(c) Terrace farming
(d) Contour cropping

106. Which of the following statements is/are correct?
1. 'Diwani' is the right to collect revenue.
2. 'Faujdari adalat' refers to a civil court.
3. Richard Wellesley implemented the Subsidiary Alliance.
Select the correct answer using the codes given below:
(a) 1 only (b) 1, 2 and 3
(c) 1 and 3 only (d) 2 and 3 only

107. Which type of farming is practised to meet the needs of a farmer's family?
(a) Subsistence Farming
(b) Organic Farming
(c) Commercial Farming
(d) Mixed Farming

108. Biotic resources are—
(a) made by human beings
(b) derived from living things
(c) derived from non-living things
(d) None of the above

109. Separation of religion from the state means—
(a) Communalism (b) Democracy
(c) Secularism (d) All of these

110. Arrange the following events of the Indian Freedom Movement in correct sequence beginning from the earliest:
1. The Non-Cooperation Movement
2. Quit India Movement
3. The Rowlatt Satyagraha
4. The March of Dandi
Select the correct answer using the code given below:
(a) 3, 1, 4, 2 (b) 1, 2, 3, 4
(c) 3, 1, 2, 4 (d) 1, 3, 2, 4

111. The young Bengal Movement was led by-
(a) Swami Vivekananda
(b) Keshab Chandra Sen
(c) William Jones
(d) Henry Louis Vivian Derozio

112. ……refers to the court declaring that a person is not guilty of the crime which he/she was tried for by the court.
(a) Appeal (b) Acquit
(c) Accuse (d) None

113. Which of the following pairs is NOT correctly matched.
1. Nana Saheb – Kanpur
2. Rani Lakshmibai – Jhansi
3. Kunwar Singh – Lucknow
4. Bakht Khan – Delhi
Select the correct answer using the codes given below:
(a) 1 and 3 (b) 3 only
(c) 4 only (d) 2 and 3

114. Which one of the following is a leading producer of copper in the world?
(a) Bolivia (b) Ghana
(c) Peru (d) Zimbabwe

115. AMUL stands for—
(a) Anand Milk Union Limited
(b) Anand Milk United Limited
(c) Anand Mazdoor Union Limited
(d) Ahmedabad Milk Union Limited

116. How many permanent members are there in the UN Security Council?
(a) Three (b) Four
(c) Five (d) Six

117. Cultivation on planter's own land was referred to as—
(a) Ryoti (b) Mahalwari
(c) Batai (d) Nij

118. Which of the following is a secondary activity?
(a) Transport
(b) Farming
(c) Obtaining sugar from sugarcane
(d) Bee keeping

119. Which one of the following is not a factor of soil formation?
(a) Topography (b) Soil texture
(c) Climate (d) Time

120. Viceroy……..partitioned Bengal in 1905.
(a) Curzon (b) Minto
(c) Irwin (d) Mountbatten

121. The leaders of the Khilafat agitation were—
(a) Sayyid brothers
(b) Ali brothers
(c) Both (a) and (b)
(d) None of these

122. Which of the following is not a fundamental right to citizens of India?
(a) Right to equality
(b) Right to education
(c) Right to property
(d) Right of freedom

123. To complain about the problem of hygiene & sanitation, a person living in a big city should go to—
(a) Municipal Corporation
(b) Municipal Committee
(c) Nagar Panchayat
(d) Zila Parishad

124. The Supreme Court was established on-
(a) 26 January, 1950
(b) 15 August, 1947
(c) 26 November, 1949
(d) 15 August, 1950

125. Which one of the following refers to the tomb of a Sufi Saint?
(a) Idgah (b) Khanqah
(c) Dargah (d) None of these

(Intelligence Test)

Directions- Choose the letters group that best represents a relationship similar to the one expressed in the original pair of letters group.

126. WINTER : IWTNRE : : LACSAP :?
(a) PASCAL (b) SPLACA
(c) ALSCPA (d) LACSPA

127. GDLM : IBNK : : XSOH : ?
(a) ZQQF (b) WTMO
(c) APQF (d) ZQLF

128. TQW is to MJP as ZHN is to—
(a) SAG (b) GSA
(c) YGM (d) TEG

129. WEIGHT is related to KILOGRAM is the same way as DISTANCE is related to—
(a) GRAM (b) POUND
(c) LENGTH (d) KILOMETER

Directions (130 – 131): Which number completes the second pair in the same way as the first pair?

130. 26 : 5 : : 65 : ?
(a) 6 (b) 7
(c) 8 (d) 9

131. 16 : 56 : : 36 : ?
(a) 96 (b) 112
(c) 118 (d) 128

Direction - In the given series, find the next/missing term—

132. AT, BS, CR, DQ,?
(a) EP (b) FP
(c) ED (d) EN

133. 4, 9, 16, 25, ?, 49
(a) 50 (b) 36
(c) 64 (d) 39

134. 0, 1, ?, 27, 64
(a) 16 (b) 32
(c) 4 (d) 8

135. A 5, C 10, E 15, G 20, ?
(a) H 30 (b) I 30
(c) I 25 (d) H 25

136. Interest a letter which completes both the words given below:

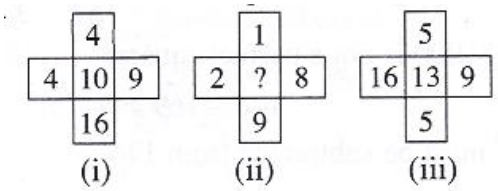
		C		
		A		
		R		
B	A	?	C	H

(a) T (b) K
(c) V (d) L

137. Insert the missing terms in the figure, so that the word formed is the name of a country when read clockwise direction—

(a) SAA (b) SAK
(c) APR (d) PLC

138. Find the number that replaces the question mark—



(i) (ii) (iii)

(a) 12 (b) 6
(c) 5 (d) 7

139. In a class of 30 students, Swati's rank is 11th from the top, what is her rank from the bottom?

(a) 19th (b) 20th
(c) 22nd (d) 21st

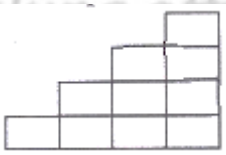
140. Ritu walks 50 m towards East, then turns to her right and walks 50 m, now she turns left and walks another 50 m, now again she turns left and walks another 50 m. In which direction is she from the starting point?

(a) East (b) North
(c) North-East (d) South-West

141. Find the fourth proportional to 3, 7 and 9.

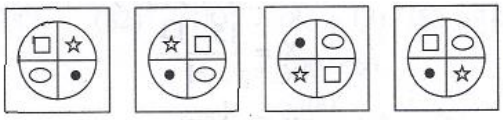
(a) 23 (b) 27
(c) 21 (d) None

142. Count the number of squares in the given figure—



(a) 14 (b) 13
(c) 10 (d) None

143. Choose the figure, which is different from others—


(A) (B) (C) (D)

144. What is the sequence of the following when arranged in a dictionary?

1. Telegraph 2. Telephone
3. Teleprinter 4. Telemetry
5. Telepathy

(a) 14532 (b) 14253
(c) 14523 (d) 14325

145. CLOCK is 42145, LEAN is 2068. CARE is 4690, then NECKLACE is—

(a) 80546240 (b) 6054842
(c) 80452640 (d) 50842604

146. Which among the following year is a leap year?

(a) 2500 (b) 2800
(c) 2600 (d) 2700

Direction- In each of the following questions, find the word which cannot be made from the letters of the given word—

147. CARPENTER

(a) NECTAR (b) CARPET
(c) PAINTER (d) REPENT

148. REASONABLE

(a) BRAIN (b) BONES
(c) NOBLE (d) ARSON

149. If '÷' stands for '×' '×' stands for '+'. '+' stands for '−', then what is the value of $7 \div 21 \times 81 + 9 - 3 \times 14$?

(a) 21 (b) 24
(c) 27 (d) 28

150. Determine the term that would replace the question mark—

(a) 36 (b) 41
(c) 35 (d) 45

Hints and Solution

1. (c) Put $x = 3$ and $y = 0$

then, $\frac{5+7+3+3+0}{9} = \frac{18}{9} = 2$

$\therefore$ $x + y = 3 + 0 = 3$

2. (b)

3. (c) $-\frac{5}{7} + X = -\frac{2}{3}$

$X = \frac{5}{7} - \frac{2}{3}$

$X = \frac{15-14}{21}$

$X = \frac{1}{21}$

4. (b) $\because$ $\frac{5x+4}{7x+4} = \frac{3}{4}$

$20x + 16 = 21x + 12$

$\boxed{x = 4}$

$\therefore$ Present age of B = $7x$

$= 28$ years

5. (b) Let two consecutive even numbers

$= 2x, (2x + 2)$

then, $\frac{2x}{4} + 5 = \frac{1}{2}(2x + 2)$

$\frac{x}{2} + 5 = x + 1$

$\frac{x}{2} = 4$

$\boxed{x = 8}$

$\therefore$ Larger number = $(2 \times 8) + 2$

$= 18$

6. (a) If $0{\cdot}25\,(4f - 3) = 0{\cdot}05\,(10f - 9)$

$5(4f - 3) = (10f - 9)$

$20f - 15 = 10f - 9$

$10f = 6$

$f = \frac{6}{10} = 0{\cdot}6$

7. (d) Let number = $10x + y$

then, $x = y + 4$

$x - y = 4$ …(i)

and, $x + y = \frac{1}{7}(10x + y)$

$3x - 6y = 0$

$x - 2y = 0$ …(ii)

from (i) and (ii) —

$x = 8, y = 4$

$\therefore$ number = $10 \times 8 + 4$

$= 84$

8. (c) Let exterior angle = x, interior angle = $8x$

$\because$ $x + 8x = 180°$

$9x = 180°$

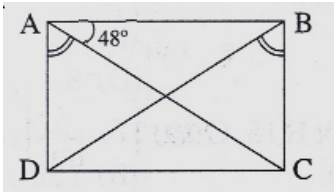
$\boxed{x = 20}$

$\therefore$ number of sides = $\frac{360}{20} = 18$ sides.

9. (b) $\because \angle BAC + \angle CAD = 90°$

$\angle CAD = 90° - 48°$

$= 42°$



and $\angle CAD = \angle DBC$

$= 42°$

10. (c)

11. (d) $\because$ $n = 2\bar{x}$ (mean)

and $2n = \bar{x}$ (mean)

Mean of $3n$ observations = $\frac{2n\bar{x} + 2n\bar{x}}{n+2n}$

$= \frac{4n\bar{x}}{3n}$

$= \frac{4}{3}\bar{x}$

12. (a) Score in ascending order $\Longrightarrow$ 6 failed boys, 12, 15, 15, 15, 16, 17, 17, 18, 18, 19, 19

$\therefore$ Median = $\left(\frac{n+1}{2}\right)^{\text{th}}$ term

$=9^{\text{th}}$ term

$= 15$

13. (a)

14. (c) Required probability = $\frac{4}{52} = \frac{1}{3}$

15. (c) 81000 is not a perfect square.

16. (b) $\because$ $176 - 169 = 7$

$\because$ 7 must be subtracted from 176.

17. (a) $\frac{\sqrt{288}}{\sqrt{128}} = \frac{\sqrt{2 \times 144}}{\sqrt{2 \times 64}}$

$= \sqrt{\frac{144}{64}}$

$= \frac{12}{8} = \frac{3}{2}$

18. (d) Volume of cube = $32{\cdot}768$ cubic metres.

$a^3 = 32{\cdot}768$

$a = \sqrt[3]{32 \cdot 768}$

$a = 3{\cdot}2$ m

19. (c) ∵ $648 = 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 3$

∴ Multiply by 9 to get a perfect cube.

20. (b) ∵ $\sqrt[3]{3375} = \sqrt[3]{5 \times 5 \times 5 \times 3 \times 3 \times 3}$

$= 5 \times 3$

and $\sqrt[3]{729} = \sqrt[3]{3 \times 3 \times 3 \times 3 \times 3 \times 3}$

$= 3 \times 3$

then, $\sqrt[3]{3048625} = 5 \times 3 \times 3 \times 3$

$= 135$

21. (d) S.I. $= \frac{12000 \times 6 \times 2}{100}$

$= \text{Rs. } 1440$

C.I. $= 12000\left[\left(1 + \frac{6}{100}\right)^2 - 1\right]$

$= 12000\left[\frac{53}{50} \times \frac{53}{50} - 1\right]$

$= 12000\left[\frac{2809 - 2500}{2500}\right]$

$= \frac{24}{5} \times 309$

C.I. = Rs. 1483·2

Difference = Rs. 1483·2 – 1440

= Rs. 43·20

22. (a) Customer paid

$= (1450 + 2 \times 850) \times \frac{90}{100}$

$= (1450 + 1700) \times \frac{9}{10}$

$= 3150 \times \frac{9}{10} = \text{Rs. } 2835$

23. (c) Gain % $= \frac{2}{8} \times 100$

$= 25\%$ gain

24. (b)

(A) 20 —(×3)— 60 (Total work) —(×5)— (B) 12

∵ B works 9 days $= 9 \times 5$

$= 45$

Remaining work $= 60 - 45$

$= 15$

A can finish the remaining work

$= \frac{15}{3} = 5$ days

25. (a) Distance = Speed × time

$= 60 \times 2$

$= 120$ km

New time taken $= \frac{120}{80} = \frac{3}{2}$ hrs.

= 1 hr. 30 min.

26. (c) If $\left(x + \frac{1}{x}\right) = 5$

then, on squaring both side

$x^2 + \frac{1}{x^2} + 2 = 25$

∴ $\boxed{x^2 + \frac{1}{x^2} = 23}$

27. (d) $(a + 1)(a - 1)(a^2 + 1) = (a^2 - 1)(a^2 + 1)$

$= (a^4 - 1)$

28. (c) $(82)^2 - (18)^2 = (82 + 18) \cdot (82 - 18)$

$= 100 \times 64$

$= 6400$

29. (b)

30. (a) Let the edge of the new cube = a

then, $a^3 = (6)^3 + (8)^3 + (10)^3$

$= 216 + 512 + 1000$

$a^3 = 1728$

$a = \sqrt[3]{1728}$

$a = 12$ cm

31. (b) ∵ $1848 = \pi r^2 h$ (volume)

$1848 = \frac{22}{7} \times (7)^2 \times h$

$h = 12$

∴ Depth of the tank = 12 m

32. (d) Let $l = x, b = 2x$ and $h = 3x$

then, Surface area $= 2(lb + bh + hl)$

$= 2(2x^2 + 6x^2 + 3x^2)$

$88 = 2 \times 11x^2$

$x^2 = 4$

$\boxed{x = 2}$

Now, volume of cuboid = lbh

$= (2) \cdot (4) \cdot (6)$

$= 48 \text{ cm}^3$

33. (a) Let parallel sides of trapezium

$= 4x, 3x$

then, Area of trapezium

$= \frac{1}{2}(4x + 3x) \times 12$

$630 = \frac{1}{2} \times 7x \times 12$

$630 = 42x$

$\boxed{x = 15}$

$\therefore$ Shorter parallel sides = 15 × 3
= 45 cm

34. (c) Let height of the triangle = x
then base = $4x$
Now, $\frac{1}{2} \times 4x \times x = 50$
$x^2 = 25$
$\boxed{x = 5}$
$\therefore$ Length of its base = 4 × 5
= 20 m

35. (b) $\frac{3^n.3^{2n+1}}{9^n.3^{n-1}} = \frac{3^{3n+1}}{3^{2n+n-1}}$
$= 3^{(3n+1)-(3n-1)}$
$= 3^2 = 9$

36. (a) $4^{3.5} : 2^5 = \frac{(2^2)^{7/2}}{2^5} = \frac{(2)^7}{(2)^5}$
$= (2)^2$
= 4 = 4 :1

37. (c) If $a = b^{2/3}$
then, $a^{3/2} = b$ …(i)
and $b = c^{-2}$ …(ii)
Now, $a^{3/2} = c^{-2}$
$a^{3/2} = \frac{1}{c^2}$
$a = \left(\frac{1}{c^2}\right)^{2/3}$
$a = \frac{1}{c^{4/3}} = \frac{1}{\sqrt[3]{c^4}}$

38. (d)

39. (c) Time taken for the travel
= 11:30 – 8:00
= 3:30 hours
= $3\frac{1}{2}$ hours

40. (b) 22 km (From the graph)

41. (*) between 9:45 am to 10:15 am.

42. (a)

43. (d) Put A = 8, B = 6 and C = 4
then,
$\therefore$ A + B + C = 8 + 6 + 4 = 18

44. (c) $\because$ (6 + y + 9) – (7 + 1) = 11
15 + y - 8 = 11
y + 7 = 11
$\boxed{y = 4}$

45. (a) Let a = 1, b = 2 and c = 3
then, 1 + 2 +3 = 1 × 2 × 3
6 = 6
$\therefore$ $a^2 + b^2 + c^2 = (1)^2 + (2)^2 + (3)^2$
= 1 + 4 + 9
= 14

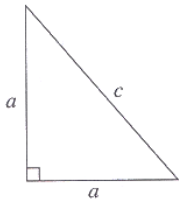
46. (b) 3 + 23y - 8y^2 = 3 + 24y – y - 8y^2
= 3(1 + 8y) – y (1 + 8y)
= (3 – y) (1 + 8y)

47. (c) Distance covered in first 2 hours
= 70 × 2
= 140 km
Distance covered in next 2 hours
= 80 × 2
= 160 km
Remaining distance = 345 – (160 + 140)
= 345 – 300
= 45 km
Speed in the fifth hour = 90 km/hr.
Time taken to cover 45 km = $\frac{45}{90} = \frac{1}{2}$ hrs.
Total time taken = 2 + 2 + $\frac{1}{2}$
= $4\frac{1}{2}$ hrs.

48. (d) $\left(\frac{1}{4}x^2 - \frac{1}{2}x - 12\right) \div \left(\frac{1}{2}x - 4\right)$
$= \frac{\frac{1}{4}(x^2-2x-48)}{\frac{1}{2}(x-8)}$
$= \frac{1}{2}\frac{(x-8)(x+6)}{(x-8)}$
$= \left(\frac{x}{2} + 3\right)$

49. (a) 1200 × 28 = 33600
and, 1200 × 4 = 4800
$\because$ 33600 – 4800 = 28,800
then, x × 32 = 28,800
x = 900
Now, 1200 – 900 = 300 (left the fort)

50. (d) Let two equal sides = a
then, $c = \sqrt{a^2 + a^2} = a\sqrt{2}$



$\because \quad (a + a + a\sqrt{2}) = (6 + 3\sqrt{2})$

$\Rightarrow \quad a(2 + \sqrt{2}) = 3(2 + \sqrt{2})$

$\Rightarrow \quad a = 3$

$\therefore$ Area of the triangle $= \frac{1}{2} \times 3 \times 3 = \frac{9}{2}$

$= 4{\cdot}5 \text{ m}^2$

51. (d)	52. (a)	53. (b)	54.(a)
55.(c)	56. (a)	57. (d)	58. (a)
59. (b)	60. (d)	61. (c)	62. (d)
63. (c)	64. (b)	65. (a)	66. (c)
67. (b)	68. (d)	69. (a)	70. (a)
71. (a)	72. (b)	73. (d)	74. (d)
75. (c)	76. (c)	77. (a)	78. (a)
79. (c)	80. (a)	81. (b)	82. (a)
83. (b)	84. (c)	85. (c)	86. (c)
87. (b)	88. (b)	89. (a)	90. (a)
91. (d)	92. (a)	93. (d)	94. (c)
95. (b)	96. (b)	97. (d)	98. (c)
99. (d)	100. (a)	101. (c)	102. (b)
103. (d)	104. (c)	105. (b)	106. (c)
107. (a)	108. (b)	109. (c)	110. (a)
111. (d)	112. (b)	113. (b)	114. (c)
115. (a)	116. (c)	117. (d)	118. (c)
119. (b)	120. (a)	121. (b)	122. (c)
123. (a)	124. (a)	125. (c)	126. (c)
127. (a)	128. (a)	129. (d)	

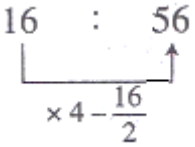
130. (c) As, $26 - 1 = 25$

$= (5)^2$

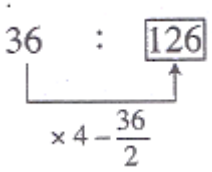
Same as, $65 - 1 = 64$

$= (8)^2$

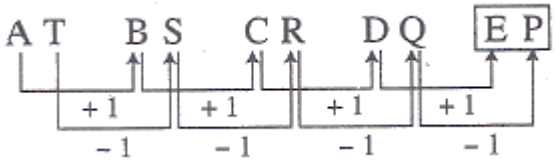
131. (*) As,



Same as,



132. (a)



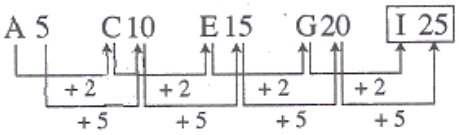
133. (b) 4, 9, 16, 25, 36, 49

$\Rightarrow (2)^2, (3)^2, (4)^2, (5)^2, (6)^2, (7)^2$

134. (d) 0, 1, 8, 27, 64

$\Rightarrow (0)^3, (1)^3, (2)^3, (3)^3, (4)^3$

135. (c)



136. (a) CART , BATCH

137. (b)

138. (c) As,

$(9 \times 4) + (16 \times 4) = 36 + 64 = 100$

$= (10)^2$

and, $(16 \times 9) + (5 \times 5) = 144 + 25 = 169$

$= (13)^2$

Same as, $(9 \times 1) + (8 \times 2) = 9 + 16 = 25$

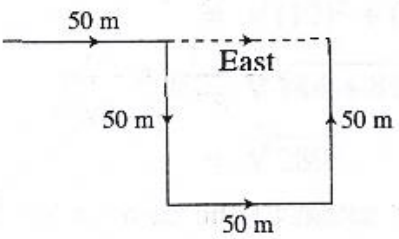
$= (5)^2$

139. (b) Her rank from the bottom

$= (30 - 11) + 1$

$= 20\text{th}$

140. (a)



141. (c) $\because \quad \frac{3}{7} = \frac{9}{x}$

$\Rightarrow \quad \boxed{x = 21}$

∴ Fourth Proportional = 21

142. (b)

143. (d)

144. (c) Telegraph, Telemetry,
Telepathy, Telephone, Teleprinter
⟹ 1, 4, 5, 2, 3.

145. (c) If C L O C K , L E A N
| | | | | | | | |
4 2 1 4 5 2 0 6 8

and, C A R E
| | | |
4 6 9 0

then, N E C K L A C E
| | | | | | | |
8 0 4 5 2 6 4 0

146. (b)

147. (c)

148. (a)

149. (*) $7 \div 21 \times 81 + 9 - 3 \times 14$
↓ ↓ ↓ ↓ ↓
$7 \times 21 \div 81 - 9 - 3 + 14$
$= 147 + 81 + 14 - 9 - 3$
$= 242 - 12$
$= 230$

150. (b) As, $(7)^2 + (24)^2 = 49 + 576$
$= 625$
$= (25)^2$

and, $(3)^2 + (4)^2 = 9 + 16$
$= 25$
$= (5)^2$

Same as, $(9)^2 + (40)^2 = 81 + 1600$
$= 1681$
$= (41)^2$