123

Booklet Serial No. :

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

TEST BOOKLET

R.O. (2016)

Time Allowed : 2 Hours] [Maximum Marks : 100

All questions carry equal marks.

INSTRUCTIONS

1. Immediately after the commencement of the examination, you should check that test booklet does not have any unprinted or torn or missing pages or items, etc. If so, get it replaced by a complete test booklet.
2. Write your Roll Number only in the box provided alongside. Do not write anything else on the Test Booklet.
3. This Test Booklet contains **100** items (questions). Each item comprises four responses (answers). Choose only one response for each item which you consider the best.
4. After the candidate has read each item in the Test Booklet and decided which of the given responses is correct or the best, he has to mark the circle containing the letter of the selected response by blackening it completely with Black or Blue ball pen. In the following example, response "C" is so marked :

5. Do the encoding carefully as given in the illustrations. While encoding your particulars or marking the answers on answer sheet, you should blacken the circle corresponding to the choice in full and no part of the circle should be left unfilled. After the response has been marked in the ANSWER SHEET, no erasing/fluid is allowed.
6. You have to mark all your responses ONLY on the ANSWER SHEET separately given according to 'INSTRUCTIONS FOR CANDIDATES' already supplied to you. *Responses marked on the Test Booklet or in any paper other than the answer sheet shall not be examined.*
7. All items carry equal marks. Attempt all items. Your total marks will depend only on the number of correct responses marked by you in the Answer Sheet. There will be no negative marking.
8. Before you proceed to mark responses in the Answer Sheet fill in the particulars in the front portion of the Answer Sheet as per the instructions sent to you.
9. If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct.
10. After you have completed the test, hand over the Answer Sheet only, to the Invigilator.

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P.T.O.

Time Allowed : 2 Hours] [Maximum Marks : 100

1. If the first day of a non-leap year is Monday, then the last day of this year is :

(A) Monday (B) Tuesday

(C) Friday (D) Saturday

2. The number of positions of digits in the number 59164823 will remain unchanged after the digits are rearranged in decreasing order within the number is :

(A) 1 (B) 2

(C) 3 (D) 4

3. If < means minus, > means plus, = means multiplication and * means divide, then the value of 27 > 81 * 9 < 8 = 2 is :

(A) 8 (B) 10

(C) 20 (D) 28

4. The missing term of the following number series 0, 6, 24, 60, 120, ..., 336 is :

(A) 168 (B) 210

(C) 240 (D) 250

5. Geeta walks 1 km to east, turn right and walk another 1 km and then turn left and walks 2 km, again turning to her left travel 5 km. How far is Geeta from her starting point ?

(A) 8 km (B) 5 km

(C) 7 km (D) 6 km

6. Mohan is the brother of Amar. Geeta is the sister of Mohan. Sanjeev is the brother of Ram and Meena is the daughter of Amar. Sanjeev's uncle is :

(A) Mohan (B) Geeta

(C) Ram (D) Sanjeev

7. If UNDATED is related to ATEDUND, then CORRECT is related to :

(A) PRECTOC (B) RECTROC

(C) ECTRORC (D) RECTCOR

8. If the first and sixth letter in the word BENEFICIAL were interchanged, also the second and seventh letters, and third and eighth letters and so on, then the third letter from the right end after rearrangement is :

(A) F (B) N

(C) C (D) E

9. The word which is least like the other words in the group *Feeling, Joy, Anxiety, Anger, Sorrow* is :

(A) Joy (B) Feeling

(C) Anger (D) Sorrow

10. The average age of players in a cricket team is 27 years. Two players with 24 and 27 years of age are replaced by new players of 23 and 28 years of age. The average age of team now is :

(A) 24 (B) 26

(C) 27 (D) 28

11. In a certain code language, word BREAKDOWN is written as NWODKAERB. In the same code language, the word TRIANGLES is written as :

(A) AIRTGNSEL

(B) SELGNTRIA

(C) AIRTNSELO

(D) SELGNAIRT

12. If – means ÷, + means ×, ÷ means –, × means +, then which one of the following is *correct* ?

(A) $6 \div 20 \times 12 + 7 - 1 = 70$

(B) $6 \times 20 \div 12 + 7 - 1 = 170$

(C) $6 \div 20 + 12 \times 7 - 1 = 57$

(D) $6 - 20 \times 12 + 7 \div 1 = 7$

13. The meaningful English word can be made with the letters RBAE, using each letter only once in each word are :

(A) 2 (B) 3

(C) 4 (D) 5

14. The earth revolves in its axis in 24 hours. How much angle does it move in 4 hours and 12 minutes ?

(A) 63° (B) 64°

(C) 65° (D) 66°

15. If 5 mangoes and 4 oranges cost as much as 3 mangoes and 7 oranges, then the ratio of the cost of one mango to the cost of one orange is :

(A) 2 : 3 (B) 3 : 2

(C) 1 : 3 (D) 2 : 1

Answer the Question Nos. 16—19, based on the following information :

Eight executives J, K, L, M, N, O, P and Q are sitting around a circular table for a meeting. J is second to the right of P who is third to the right of K. The executive M is second to the left of O who sits between P and J, L is not neighbour of K and N.

16. The immediate left of K is :

(A) N (B) J

(C) Q (D) M

17. Which of the following is the *correct* position of N ?

(A) second to the right of K (B) immediate left of K

(C) immediate right of M (D) immediate right of K

18. The third executive to the right of P, is :

(A) L (B) J

(C) Q (D) N

19. Which of the following groups of persons have the first person sitting between the other two ?

(A) PJO (B) OPJ

(C) OPM (D) MPO

20. In a class, Sam ranked 9th from the top and 38th from the bottom. The total number of students in class is :

(A) 45 (B) 46

(C) 47 (D) 48

21. The angle covered by minutes hand in one second is :

(A) 0.1° (B) 0.2°

(C) 0.3° (D) 0.4°

22. The elements of the following matrix :

$$\begin{pmatrix} T & U & - \\ Q & R & U \\ N & O & R \end{pmatrix}$$

are related by some rule, then the missing alphabet element is :

(A) T (B) O

(C) I (D) X

23. Two trains start from Delhi and Poona towards each other at 7 A.M. with the speed of 85 km/hour and 67 km/hour respectively. If they cross each other at 3 : 30 P.M., then the distance between the stations is :

(A) 1200 km (B) 1224 km

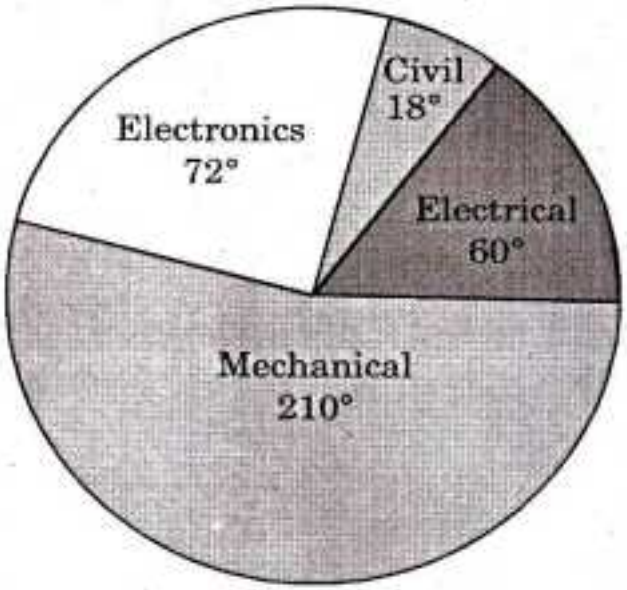
(C) 1256 km (D) 1292 km

24. A child saves Re. 1 in the first day of January, Rs. 2 in the second day, Rs. 3 in the third day and so on. By the end of the January, he saves :

(A) Rs. 400 (B) Rs. 420

(C) Rs. 450 (D) Rs. 496

25. The pie chart gives the proportion of students in different faculties of engineering in a university.

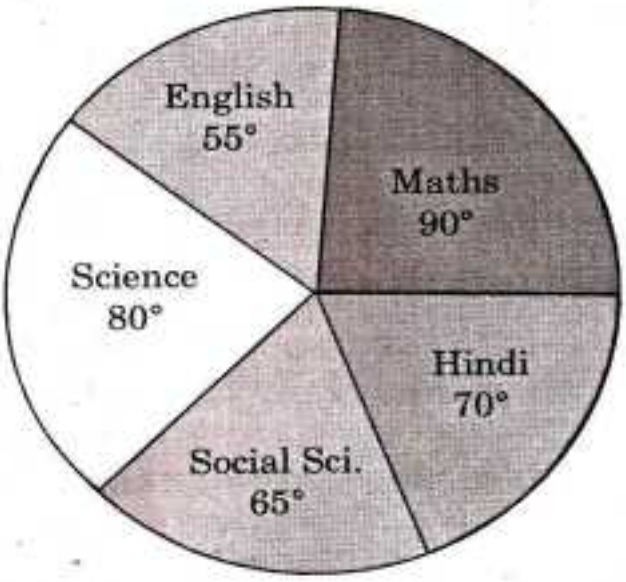


If the total number of students enrolled is 8000 in a year, the number of students in Electronics is :

(A) 1200 (B) 1440

(C) 1600 (D) 5760

Question Nos. 26—30 are based on the following pie-chart.



The pie chart gives the proportion of marks scored by a student in different subjects. Assume that the total marks for the examination is 540.

26. The marks scored in Hindi and Mathematics exceeds the marks obtained in English and Social Science by :

(A) 60 (B) 75

(C) 40 (D) 30

27. Student scored 22.2 percent marks in :

(A) Hindi (B) Science

(C) Social Science (D) English

28. Student scored 105 marks in :

(A) Mathematics (B) Science

(C) Hindi (D) English

29. The percent of the total marks scored in Mathematics is :

(A) 20 (B) 25

(C) 30 (D) 35

30. The difference of marks between English and Social Science is the same as between :

(A) Science and Hindi (B) Hindi and Social Science

(C) English and Hindi (D) Hindi and Science

31. The sum of the series

$$1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} - \ldots\ldots\ldots$$

is :

(A) 0 (B) log 2

(C) log 3 (D) log 5

32. Centroid and orthocentre are coincident for :

(A) equilateral triangle (B) right-angled triangle

(C) isosceles triangle (D) scalene triangle

33. Number of diagonals in a polygon having 9 sides are :

(A) 20 (B) 24

(C) 27 (D) 30

34. If each of interior angle of a polygon is double its each exterior angle, then number of sides in the polygon is :

(A) 5 (B) 6

(C) 7 (D) 8

35. The area enclosed by curve $y = |x| - 5$ with x-axis is :

(A) 25 sq. unit (B) 12.5 sq. unit

(C) 50 sq. unit (D) 22.5 sq. unit

36. If $x - 1$ and $x - 2$ are two factors of $x^3 - ax^2 + 14x + b$, then :

(A) $a = 7, b = -8$ (B) $a = 8, b = -7$

(C) $a = 7, b = 8$ (D) $a = -8, b = 7$

37. If $x^4 + \frac{1}{x^4} = 47$, then the value of $x + \frac{1}{x}$ is :

(A) ± 2 (B) ± 3

(C) ± 4 (D) ± 5

38. If the length of two sides of a triangle are 8 cm and 12 cm, then the possible length of its third side is :

(A) between 8 cm and 12 cm (B) more than 20 cm

(C) less than 4 cm (D) between 4 cm and 20 cm

39. If each side of a rhombus is 10 cm, then the square root of sum of square of its diagonals is :

(A) $10\sqrt{10}$ cm (B) $10\sqrt{20}$ cm

(C) $20\sqrt{10}$ cm (D) 20 cm

40. The radius of two incentric circles are 5 cm and 3 cm. The length of chord of larger circle which touches the smaller circle is :

(A) 6 cm (B) 8 cm

(C) 10 cm (D) 12 cm

41. The tip of a pendulum covers an arc of 50 cm when it swings and subtends 60° at the pivot point. The length of pendulum is :

(A) 43.72 cm

(B) 45.72 cm

(C) 47.72 cm

(D) 45.27 cm

42. For $a > 0$, $b > 0$, the minimum value of $a \tan^2 \theta + b \cot^2 \theta$ is :

(A) $\sqrt{ab}$

(B) $\sqrt{\frac{a}{b}}$

(C) $2\sqrt{ab}$

(D) $\sqrt{\frac{b}{a}}$

43. Which *one* of the following is *true* ?

(A) $\sin 35° > \cos 55°$

(B) $\cos 60° > \frac{1}{2}$

(C) $\sin 32° > \frac{1}{2}$

(D) $\tan 44° > 1$

44. The value of $\tan 1° \cdot \tan 2° \cdot \tan 3° \ldots \tan 89°$ is :

(A) -1

(B) 0

(C) 1

(D) 2

45. A mixture of 30 liters of milk and water contains milk and water in the ratio 7 : 3. How much water must be added to it so that the ratio of the milk to water be reversed ?

(A) 10 liters (B) 20 liters

(C) 30 liters (D) 40 liters

46. A student has to score 33 percent marks to pass. He gets 57 marks and fails by 75 marks. The maximum marks are :

(A) 400 (B) 450

(C) 500 (D) 550

47. The population of a village increases at the rate of 5 percent every 10 years. If the present population of the village is 8820, then the population 20 years ago was :

(A) 6000 (B) 7000

(C) 8000 (D) 9000

48. Ram pays 5 percent of his salary as tax. If after spending 95 percent of the remainder, he has Rs. 114 left. Before taxation his salary is :

(A) Rs. 1,500 (B) Rs. 1,560

(C) Rs. 1,600 (D) Rs. 2,400

49. The length of the side of a tetrahedron is 12 cm. The volume is :

(A) $144\sqrt{5}$ cm^2 (B) $144\sqrt{2}$ cm^2

(C) $144\sqrt{3}$ cm^2 (D) 144 cm^2

50. If one side of a cube is doubled, then the volume of cube will increase :

(A) 600 percent (B) 700 percent

(C) 800 percent (D) 900 percent

51. The largest surface area of a cylinder is 1056 cm^2 and its height is 16 cm. Its volume is :

(A) 5541 cm^3 (B) 5542 cm^3

(C) 5543 cm^3 (D) 5544 cm^3

52. One watermelon of 30 kg contains 96 percent water in it. After 5 days, the water is reduced to 95 percent. The weight of watermelon is :

(A) 24 kg (B) 25 kg

(C) 26 kg (D) 27 kg

53. Four years ago, the ratio of the age of Ram and Mohan was 2 : 3 and after 4 years it will become 5 : 7. The present age is :

(A) 34 and 52 years
(B) 36 and 50 years
(C) 32 and 48 years
(D) 36 and 52 years

54. A group of 10 men can finish a work in 20 days, whereas group of 15 women can finish the same work in 30 days. How many women can be employed in place of 8 men to finish the work on right time ?

(A) 16
(B) 17
(C) 18
(D) 19

55. The selling price of 9 objects is equal to cost price of 12 objects. The profit percentage is :

(A) 29
(B) 30
(C) 33
(D) 33.33

56. If Re. 1 produces Rs. 6 over a period of 20 years, then the rate percent, one get on his investment, is :

(A) 20
(B) 30
(C) 40
(D) 50

57. By selling the cloth at the cost price, a cloth merchant still gains $19\frac{1}{21}$ percent. What length does he measure for a metre ?

(A) 80 cm (B) 82 cm

(C) 84 cm (D) 86 cm

58. Two trains travel in the same direction at 56 km and 83 km per hour and the faster train passes a man in the slower train in 6 seconds. The length of the faster train is :

(A) 100 m (B) 110 m

(C) 120 m (D) 130 m

59. The length of the train, if it passes a telegraph post in 10 seconds moving with a speed of 54 km per hour, is :

(A) 125 m (B) 150 m

(C) 175 m (D) 178 m

60. The face value of 3 months bill when the Banker's discount at 3% per annum is Rs. 18, is :

(A) Rs. 2,000 (B) Rs. 2,400

(C) Rs. 2,800 (D) Rs. 2,600

61. The curve $y = ax^b$ is a/an :

(A) exponential curve

(B) geometric curve

(C) hyperbola

(D) quadratic curve

62. The random variable X is uniformly distributed in interval $[-\alpha, \alpha]$ with $\alpha > 0$. For $P(X > 1) = 1/3$, the value of α is :

(A) 1

(B) 2

(C) 3

(D) 4

63. For the independent random variables X and Y, which one of the following is *not* true ?

(A) $Var(X + Y) = Var(X) + Var(Y)$

(B) $Var(X - Y) = Var(X) - Var(Y)$

(C) $E(XY) = E(X)E(Y)$

(D) $Cov(X, Y) = 0$

64. The probability of getting a total of 7 at least once in three tosses of a pair of a fair dice, is :

(A) $\frac{95}{216}$

(B) $\frac{91}{216}$

(C) $\frac{97}{216}$

(D) $\frac{99}{216}$

65. For 3×4 contingency table, the number of degree of freedom is :

(A) 4 (B) 5

(C) 6 (D) 12

66. The minimum sample size necessary in order that a correlation coefficient of 0.32 significantly greater than zero at a 0.05 level, is :

(A) 25 (B) 26

(C) 27 (D) 28

67. If two points are selected at random in the interval $0 \leq x \leq 1$, then the probability of the sum of their squares is less than 1, is :

(A) $\frac{\pi}{4}$ (B) $\frac{\pi}{3}$

(C) $\frac{\pi}{2}$ (D) π

68. The expectation of the sum of points in tossing a pair of fair dice is :

(A) 5 (B) 6

(C) 7 (D) 8

69. If 20 percent of the bolts produced by a machine are defective, then the probability that out of 4 bolts chosen at random less than 2 bolts will be defective, is :

(A) 0.7819 (B) 0.8192

(C) 0.9105 (D) 0.9215

70. A box contains 5 red balls, 4 white balls and 3 blue balls. A ball is selected at random from the box, its colour is noted and then the ball is replaced. Then the probability that out of 6 balls selected in this manner, 3 are red and 2 are white and 1 is blue, is :

(A) $\frac{625}{5843}$ (B) $\frac{625}{5182}$

(C) $\frac{625}{5184}$ (D) $\frac{625}{5484}$

71. Chi-square curve lies completely in :

(A) first quadrant (B) second quadrant

(C) third quadrant (D) fourth quadrant

72. The moment generating function of Cauchy distributed random variable X :

(A) does not exit

(B) exit and equal to $e^{-a\omega}$

(C) exit and equal to $e^{a\omega}$

(D) exit and equal to $e^{-a\omega^2}$

73. The moment generating function of the general normal distribution with mean μ and variance σ is :

(A) $e^{\mu t + \sigma^2 t^2/2}$

(B) $e^{\mu t + \sigma t^2/2}$

(C) $e^{\mu t + \sigma t/2}$

(D) $e^{\mu t + \sigma^2 t/2}$

74. The moment generating function for the Chi-square distribution with degree of freedom ν is :

(A) $(1 - 2t)^{-\nu/2}$

(B) $(1 + 2t)^{-\nu/2}$

(C) $(1 - 2t)e^{-\nu/2}$

(D) $(1 + 2t)e^{-\nu/2}$

75. The joint density function of the random variable X and Y is :

$$f(x) = \begin{cases} \frac{2}{3}(x + 2y), & \text{if } 0 \le x \le 1, 0 \le y \le 1 \\ 0, & \text{otherwise} \end{cases}$$

The least-sqaure regression curve of Y on X is :

(A) $\frac{3x + 4}{6x + 6}$

(B) $\frac{3x + 5}{6x + 7}$

(C) $\frac{3x + 6}{6x + 8}$

(D) $\frac{3x + 7}{6x + 7}$

76. Three students Ram, Shyam and Mohan are in swimming race. Ram and Shyam have the same probability of winning and each is twice as likely to win as Mohan. The probability that Shyam or Mohan wins, is :

(A) $\frac{1}{5}$ (B) $\frac{2}{5}$

(C) $\frac{3}{5}$ (D) $\frac{4}{5}$

77. Suppose a university representative is to be chosen either from 200 teaching or 300 non-teaching employees. Total possible ways to pick this representative is :

(A) 200 (B) 300

(C) 500 (D) 60000

78. The probability of selecting 5 cards of which 3 are red and 2 are black from an arbitrary deck of 52 playing cards is :

(A) 0.3251 (B) 0.3751

(C) 0.3900 (D) 0.4090

79. In a certain town 40 percent have brown hair, 25 percent have brown eyes and 15 percent have both brown hair and brown eyes. A person is selected from the town. The probability that he has neither brown hair nor brown eyes is :

(A) 0

(B) $\frac{1}{2}$

(C) $\frac{1}{3}$

(D) $\frac{1}{4}$

80. Which one of the following matrix is Stochastic matrix ?

(A) $\begin{pmatrix} 0 & 1 & 0 \\ \frac{1}{2} & \frac{1}{4} & \frac{1}{4} \end{pmatrix}$

(B) $\begin{pmatrix} 0 & 1 \\ 0 & 3 \end{pmatrix}$

(C) $\begin{pmatrix} \frac{1}{4} & \frac{3}{4} \\ \frac{3}{4} & \frac{1}{4} \end{pmatrix}$

(D) $\begin{pmatrix} 0 & 1 \\ \frac{-1}{2} & \frac{3}{2} \end{pmatrix}$

81. When was the status of H.P. down-graded from a 'C' state to a Union Territory ?

(A) April 1956

(B) November 1956

(C) January 1957

(D) March 1957

82. Near which town of Mandi District of H.P. is Macchial lake ?

(A) Sundernagar (B) Sarkaghat

(C) Jogindernagar (D) Karsog

83. With which ancient sage is Renuka lake of Sirmaur District of H.P. associated ?

(A) Jamdagini (B) Vashishtha

(C) Vyasa (D) Prashar

84. By which treaty did the Sikhs cede to the British all hill territories to the south of river Satluj ?

(A) Treaty of Amritsar (B) Treaty of Lahore

(C) Treaty of Malaun (D) None of these

85. With which region of H.P. is Kayang folk-dance associated ?

(A) Bharmaur (B) Kinnaur

(C) Sirmaur (D) Babhaur

86. Who among the following was *not* associated with the Praja Mandal movement in the Sirmaur princely state ?

(A) Pandit Sita Ram (B) Chaudhary Sher Jung

(C) Dr. Devinder Singh (D) Shiva Nand Ramaul

87. Which petty princely states were subordinate to Keonthal princely state ?

(A) Koti
(B) Madhan
(C) Ghund
(D) All of these

88. On which river is Harsipattan bridge in Kangra District of H.P. ?

(A) Beas
(B) Swan
(C) Binwa
(D) Neogal

89. When was Pradhan Mantri Suraksha Bima Yojna launched ?

(A) October 2014
(B) March 2015
(C) May 2015
(D) July 2015

90. In which river basin is Holi Hydel Power Project ?

(A) Chenab
(B) Ravi
(C) Siul
(D) None of these

91. What is the total number of members of Electoral College that elects the 45th President of the U.S.A. ?

(A) 438
(B) 538
(C) 638
(D) None of these

92. Reuven Rivlin is President of .....

(A) Egypt (B) South Korea

(C) East Timor (D) Israel

93. Approximately what percentage of voters of U.K. who voted on 23 June, 2016 voted in favour of leaving the European Union ?

(A) 51.9(52) (B) 52.5

(C) 53.4 (D) None of these

94. Which day is celebrated as Bastille Day in France ?

(A) February 14 (B) May 14

(C) July 14 (D) August 14

95. In which year was Interpol (International Police Organisation) founded ?

(A) 1908 (B) 1910

(C) 1914 (D) None of these

96. Which was the first bank to be merged with the State Bank of India around 2008 AD ?

(A) State Bank of Travancore (B) State Bank of Mysore

(C) State Bank of Saurashtra (D) None of these

97. Who was the captain of Indian Hockey Team for the Four-Nation Tournament scheduled on November 23, 2016 in Australia ?

(A) P.R. Shreejesh (B) B.R. Raghunath

(C) Rupinder Pal Singh (D) None of these

98. How many women pilots are participating in National Paragliding Accuracy Championship being held at Billing in Kangra District of H.P. ?

(A) Three (B) Six

(C) Nine (D) None of these

99. In how many states in India Assembly elections were held in 2017 AD ?

(A) Three (B) Four

(C) Five (D) Six

100. Who was the Chairman of Seventh Central Pay Commission ?

(A) Ajit Doval (B) Amitabh Sinha

(C) Ashok Kumar Mathur (D) Gajendra Chauhan