

1. If the median of the data $\frac{x}{5}, x, \frac{x}{3}, \frac{2x}{3}, \frac{x}{4}, \frac{2x}{5}, \frac{3x}{4}, x > 0$ is 4, then x is:

a) 5
☒ b) 10
c) 8
d) 7

2. A three digit number is chosen at random. The probability that its hundred's digit, ten's digit and unit's digit are consecutive integers in descending order is:

a) $\frac{1}{75}$
b) $\frac{4}{225}$
c) $\frac{2}{225}$
d) $\frac{1}{45}$

3. If the difference of mode and median of a data is 24, then the difference of median and mean is:

☒ a) 12
b) 24
c) 8
d) 36

4. A three digit number is chosen at random. The probability that it is divisible by both 2 and 3 is:

a) $\frac{1}{8}$
b) $\frac{1}{9}$
c) $\frac{1}{6}$
d) $\frac{1}{12}$

5. The mean and median of the data a, b and c are 50 and 35 respectively, where $a < b < c$. If $c - a = 55$, then $b - a$ is :

a) 8
b) 7
c) 3
☒ d) 5

6. A girl calculates that the probability of her winning the first prize in a lottery is 0.06. If 8000 tickets are sold, then how many tickets has she bought?

a) 420
☒ b) 480
c) 840
d) 48

7. If arithmetic mean and geometric mean of two values are 10 and 8 respectively, then the values are :

a) 16, 4
b) 12, 2
c) 12, 3
d) 16, 6

8. If x travels 8 km at the rate of 4 km per hour: 6 km at the rate of 3 km. per hour and 4 km at the rate of 2 km. per hour, what would be the average speed per hour at which he travelled?

a) 2 kmph
b) 3 kmph
c) 4 kmph
d) 5 kmph

9. If the observations 2, 4, 8 and 16 occur with frequencies 4, 3, 2 and 1 respectively, find their geometric mean.

a) 4
b) 6
c) 8
d) 12

10. If the relation between two variables x and y be $2x + 5y = 24$ and mode of y be 4, then the mode of x is:

a) 3
b) 4
c) 6
☒ d) 2

11. In a batch of 15 students, 5 students failed in a test. The marks of 10 students who passed were 9, 6, 7, 8, 8, 9, 6, 5, 4, 7. What was the median of all the 15 students?

- ☒ a) 6
- b) 4
- c) 8
- d) 7

12. If the means of two groups of m and n observations are 40 and 50 respectively, and the combined mean of two groups is 42, then the value of the ratio $m : n$ is :

- a) 2 : 1
- b) 3 : 1
- ☒ c) 4 : 1
- d) 5 : 1

13. The mean of 200 items was 50. Later on it was discovered that two items were wrongly read as 92 and 8 instead of 192 and 88. Find out the correct mean.

- a) 40.9
- b) 39.6
- ☒ c) 50.9
- d) 52.3

14. The variance of first n natural numbers is:

- a) $\frac{(n-1)^2}{6}$
- b) $\frac{n^2-1}{12}$
- c) $\frac{n^2-3}{12}$
- d) $\frac{(n+1)^2}{8}$

15. If for two numbers, the Arithmetic Mean is 25 and the Harmonic Mean is 9, then the Geometric Mean of the observations will be:

- a) 12
- b) 15
- c) 9
- d) 16

16. If a pair of dice is thrown, find the probability that the sum of the digits on them is neither 7 nor 11.

- a) $\frac{7}{9}$
- b) $\frac{5}{9}$
- c) $\frac{6}{11}$
- d) $\frac{7}{12}$

17. There are four hotels in a certain town. If 3 men check into hotels in a day, what is the probability that each checks into a different hotel?

- a) $\frac{1}{8}$
- ☒ b) $\frac{5}{8}$
- c) $\frac{3}{8}$
- d) $\frac{5}{9}$

18. In a trapezium, parallel sides are 60 and 90 cms respectively and non-parallel sides are 40 and 50 cms respectively. Find its area.

- a) 2000 Sq cm
- b) 2500 Sq cm
- c) 3000 Sq cm
- d) 3500 Sq cm

19. The diagonal of a rectangle whose sides are 12m and 5m will be:

- a) 11 m
- ☒ b) 13 m
- c) 15 m
- d) 17 m

20. How many metres of a carpet, 75 cm wide, will be required to cover the floor of a room which is 20 metres long and 12 metres broad?

- a) 220 m
- b) 260 m
- c) 310 m
- d) 320 m

21. A rectangular grassy plot is 112m by 78m. It has a gravel path 2.5m wide all round it on the inside. Find the area of the path.
- 850 Sq. m
 - 875 Sq. m
 - ☒ 925 Sq. m
 - 950 Sq. m
22. The perimeter of a rhombus is 146 cm and one of its diagonals is 55 cm. The other diagonal will be:
- 36 cm
 - 42 cm
 - 46 cm
 - ☒ 48 cm
23. A hall, whose length is 16 metres and breadth twice its height, takes 168 metres of paper, 2 meters wide, for its four walls. The area of the floor is :
- 184 Sq. m
 - 188 Sq. m
 - 192 Sq. m
 - 198 Sq. m
24. The radius of a circular wheel is $1\frac{3}{4}$ m. How many revolutions will it make in travelling 11 km?
- 800
 - 900
 - ☒ 1000
 - 1100
25. The length of a rectangle is increased by 60% . By what percent should the width be decreased to maintain the same area?
- $34\frac{1}{2}\%$
 - 36%
 - 37%
 - $37\frac{1}{2}\%$
26. The perimeters of two squares are 40 cm and 32 cm. Find the perimeter of a third square whose area is equal to the difference of the areas of the two squares.
- 18 cm
 - ☒ 24 cm
 - 16 cm
 - 28 cm
27. A rectangular carpet has an area of 120 Sq. meters and a perimeter of 46 meters. Find the length of its diagonal.
- 12 m
 - 16 m
 - ☒ 17 m
 - 19 m
28. The length of a rectangle R is 10% more than the side of a square S. The width of the rectangle R is 10% less than the side of the square S. What is the ratio of the area of R to that of S?
- 91 : 100
 - 93 : 100
 - 99 : 100
 - 96 : 101
29. A circular wire of diameter 42 cm is bent in the form of a rectangle whose sides are in the ratio 6 : 5. Find the area of the rectangle.
- 980 cm^2
 - 1020 cm^2
 - ☒ 1080 cm^2
 - 1140 cm^2
30. The diameter of the driving wheel of a bus is 140 cm. How many revolutions per minute must the wheel make in order to keep a speed of 66 kmph?
- 200
 - 220

- c) 240
- d) 250

31. A sector of 120° , cut out from a circle, has an area of $9\frac{3}{7}$ sq. cm. Find the radius of the circle.

- a) 2 cm
- b) 3 cm
- c) 4 cm
- d) 5 cm

32. If the radius of a circle is increased by 20%, then by how much will its area be increased?

- a) 36%
- b) 40%
- ☒ c) 44%
- d) 48%

33. The length of a rectangle is halved, while its breadth is tripled. What is the percentage change in area?

- a) 25 % increase
- ☒ b) 50% increase
- c) 50% decrease
- d) 75% decrease

34. What is the minimum number of identical square tiles required to tile a floor of length 6 m 24 cm and width 4m 80 cm?

- a) 122
- b) 130
- c) 148
- d) 165

35. The number of prime factors in the expression $6^{10} \cdot 7^{17} \cdot 11^{27}$ is equal to:

- a) 54
- b) 64
- c) 71
- d) 81

36. If 'm' and 'n' are natural numbers such that $2^m - 2^n = 960$, what is the value of m?

- ☒ a) 10
- b) 12
- c) 15
- d) 18

37. 10 years ago, the average age of a family of 4 members was 24 years. Since then, two children having been born, still the average age of the family is the same today. If the two children differ in age by 2 years, find the present age of the younger child.

- a) 2 years
- b) 3 years
- c) 1 year
- d) 4 years

38. If $2^x = 3^y = 6^{-z}$, find the value of

$$\left(\frac{1}{x} + \frac{1}{y} + \frac{1}{z}\right).$$

- a) 0
- b) 1
- c) 2
- ☒ d) 3

39. Ashok got 30% of the maximum marks in an examination and failed by 10 marks. However, Hari who took the same examination got 40% of the total marks and got 15 marks more than the passing marks. What was the passing mark in the examination?

- a) 75
- b) 80
- ☒ c) 85
- d) 90

40. If $x = 2^{\frac{1}{3}} - 2^{-\frac{1}{3}}$, find the value of $2x^3 + 6x$.

- a) 1
- b) 2
- c) 3
- d) 6

41. The sum of the digits of a two-digit number is 8. If the digits are reversed, the number is decreased by 54. Find the number.

- a) 62
- ☒ b) 71
- c) 53
- d) 80

42. The geometric mean of the series:

1, 3, 9, 27, 3^n is:

- a) $3^{\frac{n}{3}}$
- b) $3^{\frac{n}{4}}$
- c) $3^{\frac{n}{2}}$
- d) $3^{\frac{n}{5}}$

43. If Arithmetic Mean of two numbers is 17 and Geometric Mean is 15, find the Harmonic Mean of these numbers.

- a) 11.24
- b) 12.32
- c) 13.24
- d) 13.78

44. The standard deviation of the natural numbers 1, 2, 3, 4 and 5 is:

- a) 2
- b) 3
- c) $\sqrt{3}$
- ☒ d) $\sqrt{2}$

45. A candidate is selected for interview for three posts. For the first post there are 3 candidates, for the second 4 and for the third 2 candidates. What is the probability that the candidate is selected for at least one post?

- a) $\frac{2}{3}$

b) $\frac{3}{4}$

c) $\frac{3}{5}$

d) $\frac{1}{5}$

46. A 5100 sq cm trapezium has the perpendicular distance between the two parallel sides 60 m. If one of the parallel sides be 40 m then find the length of the other parallel side.

- a) 110 m
- b) 115 m
- c) 120 m
- ☒ d) 130 m

47. Find the area of a triangle whose sides are 50 meters, 78 meters, 112 meters respectively.

- a) 1460 sq.m
- ☒ b) 1680 sq.m
- c) 1540 sq.m
- d) 1580 sq.m

48. Find the area of the largest circle that can be drawn in a square of side 14 cm.

- ☒ a) 154 cm^2
- b) 150 cm^2
- c) 148 cm^2
- d) 144 cm^2

49. In a quadrilateral, the length of one of its diagonal is 23 cm and the perpendiculars drawn on this diagonal from other two vertices measure 17 cm and 7 cm respectively. Find the area of the quadrilateral.

- a) 236 sq cm
- b) 248 sq cm
- c) 256 sq cm
- d) 276 sq cm

50. In a class, $\frac{3}{5}$ of the students are girls and rest are boys. If $\frac{2}{9}$ of the girls and $\frac{1}{4}$ of the boys are absent, what part of the total number of students is present?

- a) $\frac{17}{25}$
- b) $\frac{18}{49}$
- c) $\frac{23}{30}$
- d) $\frac{23}{36}$

51. The average of 7 consecutive integers is 7. The average of the squares of these integers will be:

- a) 43
- b) 46
- c) 53
- d) 56

52. What is the least number which, when divided by 52, leaves 33 as the remainder, and when divided by 78 leaves 59, and when divided by 117 leaves 98 as the respective remainders?

- a) 429
- b) 436
- c) 449
- d) 446

53. It is given that $2^{32} + 1$ is exactly divisible by a certain number. Which one of the following is also divisible by the same number?

- a) $2^{96} + 1$
- b) $2^{16} - 1$
- c) $2^{16} + 1$
- d) 7×2^{33}

54. What is the greatest number that will divide 38, 45 and 52 and leave remainders as 2, 3 and 4 respectively?

- a) 4
- b) 6
- c) 8
- d) 3

55. The ratio between a two-digit-number and the sum of the digits of that number is 4 : 1. If the digit in the unit's place is 3 more than the digit in the ten's place, then the number is:

- a) 28
- b) 34
- c) 38
- d) 36

56. The greatest number that will divide 55, 127 and 175 so as to leave the same remainder in each case is:

- a) 16
- b) 20
- c) 22
- d) 24

57. What would be the maximum value of Q in the following equation?

$$5P9 + 3R7 + 2Q8 = 1114$$

- a) 9
- b) 7
- c) 5
- d) 4

58. If a family of 7 persons can live on Rs 840 for 36 days, how long can a family of 9 persons live on Rs 810?

- a) 21 days
- b) 27 days
- c) 26 days
- d) 17 days

59. In 30 litres mixture of milk and water, the ratio of milk and water is 7 : 3. Find the quantity of water to be added in the mixture in order to make this ratio 3 : 7.

- a) 25 litres
- b) 30 litres
- c) 40 litres
- d) 50 litres

60. The speed of three cars are in the ratio 2 : 3 : 4. What is the ratio among the times taken by these cars to travel the same distance?

- a) 5 : 3 : 2
- b) 6 : 5 : 2

- c) $6:4:3$
d) $5:4:3$

61. The contents of two vessels containing water and milk are in the ratio $1:2$ and $2:5$ are mixed in the ratio $1:4$. The resulting mixture will have water and milk in the ratio:

- a) $21:74$
b) $31:74$
c) $11:64$
d) $15:54$

62. Two candles of the same height are lighted at the same time. The first is consumed in 7 hours and the second is consumed in 4 hours. Assuming that each candle burns at a constant rate, in how many hours, after being lighted, was the first candle four times the height of the second?

- a) 2.6 hours
b) 4.5 hours
c) 3.7 hours
d) 3.5 hours

63. A, B and C invested capitals in the ratio $2:3:5$; the timing of their investments being in the ratio $4:5:6$. In what ratio would their profit be distributed?

- a) $6:15:25$
b) $8:15:30$
c) $6:15:40$
d) $5:12:30$

64. The population of a town is 8000. If the males increase by 6% and the females by 10%, the population will be 8600. Find the number of females in the town.

- a) 2000
b) 3000
c) 4000
d) 1500

65. Due to fall in manpower, the production in a factory decreases by 25%. By what percent should the working hour be

increased to restore the original production?

- a) $25\frac{1}{3}\%$
b) $35\frac{2}{3}\%$
c) $28\frac{2}{3}\%$
d) $33\frac{1}{3}\%$

66. Rima, Sima and Nilima invested capitals in the ratio $2:3:4$. At the end of the business term, they received the profits in the ratio $3:6:10$. Find the ratio of the periods for which they contributed their capitals.

- a) $2:4:5$
b) $3:4:7$
c) $3:4:5$
d) $4:5:6$

67. If the price of a commodity be raised by 20%, find by how much percent must a householder reduce his consumption of that commodity so as not to increase his expenditure.

- a) $14\frac{1}{3}\%$
b) $12\frac{2}{3}\%$
c) $16\frac{2}{3}\%$
d) $18\frac{1}{3}\%$

68. There were 35 students in a hostel. If the number of students increases by 7, the expenses of the mess increase by Rs 42 per day while the average expenditure per head diminishes by Rs 1. The original expenditure of the mess is:

- a) Rs 380
b) Rs 460
c) Rs 410
d) Rs 420

69. The ratio of the ages of the father and the son at present is 3 : 1. 4 years earlier, the ratio was 4 : 1. What are the present ages of the son and the father?

- a) 12, 36 years
- b) 10, 32 years
- c) 14, 32 years
- d) 16, 28 years

70. Two-thirds of a consignment was sold at a profit of 6% and the rest at a loss of 3%. If there was an overall profit of Rs 540, find the value of the consignment.

- a) Rs 10,450 /-
- b) Rs 12,000/-
- c) Rs 18,000/-
- d) Rs 20,000/-

71. A sum of money at simple interest amounts to Rs 600 in 4 years and Rs 650 in 6 years. Find the rate of interest per annum.

- a) 3%
- b) 5%
- c) 6%
- d) 8%

72. In a zoo, there are rabbits and pigeons. If heads are counted, there are 200 and if legs are counted, there are 580. How many pigeons are there?

- a) 100
- b) 90
- c) 110
- d) 120

73. A train passes a pole in 15 seconds and passes a platform 100m long in 25 seconds. Find its length.

- a) 120 m
- b) 140 m
- c) 150 m
- d) 170 m

74. If equations $ax^2 + bx + c = 0$ and $x^2 + 2x + 3 = 0$ have a common root, then $a : b : c$ is :

- a) 2 : 1 : 3
- b) 3 : 2 : 1
- c) 1 : 2 : 3
- d) 3 : 1 : 2

75. The solution of the equation $1 + 3^{\frac{x}{2}} = 2^x$ is:

- a) $x = 2$
- b) $x = 3$
- c) $x = 4$
- d) $x = 1$

76. Rakesh has 8 friends. In how many ways he can invite one or more of them to dinner?

- a) 168
- b) 240
- c) 250
- d) 255

77. In how many ways the number 10800 can be resolved as a product of two factors?

- a) 20
- b) 25
- c) 30
- d) 32

78. In how many ways 5 different balls can be distributed into 3 boxes so that no box remains empty?

- a) 120
- b) 140
- c) 130
- d) 150

79. If the sum of the coefficient in the expansion of $(\alpha x^2 - 2x + 1)^{35}$ is equal to the sum of the coefficients in the expansion of $(x - \alpha y)^{35}$, then the value of α is:

- a) -1
- b) 1
- c) 15
- d) 21

80. A certain number of tennis balls were purchased for Rs 450. Five more balls could have been purchased for the same amount if each ball was cheaper by Rs 15. The number of balls purchased was :

- a) 6
- b) 8
- c) 10
- d) 12

81. If $a + b + c = 0$, then the value of

$$\frac{a^4 + b^4 + c^4}{b^2c^2 + c^2a^2 + a^2b^2} \text{ is:}$$

- a) 1
- b) 3
- ☒ c) 2
- d) 4

82. If $x + y$ is constant, then xy is maximum when:

- a) $x = y$
- b) $x > y$
- c) $x < y$
- d) $x \pm y$

83. For what value of m can the equation $-9x^2 + 12x - m = 0$ be a perfect square of a linear expression?

- a) 2
- b) 4
- c) 3
- d) 6

84. The expression $5^{2n} - 2^{3n}$ has a factor:

- a) 3
- b) 7
- c) 10
- ☒ d) 17

85. The last digit in the expansion of $(41)^n - 1$ when n is any positive integer is :

- a) 2
- b) 1
- ☒ c) 0
- d) -1

86. What should be subtracted from $27x^3 - 9x^2 - 6x - 5$ To make it exactly divisible by $(3x-1)$?

- a) 5
- b) -5
- c) 7
- d) -7

87. In a school, 391 boys and 323 girls have been divided into the largest possible equal classes, so that each class of boys numbers the same as each class of girls. What are the number of classes?

- a) 12
- b) 14
- ☒ c) 17
- d) 21

88. If $a + b + c = 0$, then the value of $\frac{a^2 + b^2 + c^2}{a^2 - bc}$ will be :

- a) 0
- b) 1
- ☒ c) 2
- d) 3

89. If $x^2 = y + z$, $y^2 = z + x$, $z^2 = x + y$ then the value of $\frac{1}{x+1} + \frac{1}{y+1} + \frac{1}{z+1}$ is :

- a) 1
- b) -1
- c) 2
- d) 4

90. What is the first value of n for which $n^2 + n + 41$ is not a prime?

- a) 1
- b) 10
- c) 20
- d) 40

91. The sum of four consecutive even numbers A, B, C and D is 180. What is the sum of the set of next four consecutive even numbers?

- a) 196
- b) 204

212

d) 214

92. In an objective examination of 90 questions, 5 marks are allotted for every correct answer and 2 marks are deducted for every wrong answer. After attempting all the 90 questions a student got a total of 387 marks. Find the number of questions that he attempted wrong.

a) 6

b) 8

c) 9

d) 4

93. If $\frac{x+1}{x-1} = \frac{a}{b}$ and $\frac{1-y}{1+y} = \frac{b}{a}$, then the value of

$\frac{x-y}{1+xy}$ is :

a) $\frac{2ab}{a^2 - b^2}$

b) $\frac{a^2 - b^2}{2ab}$

c) $\frac{a^2 + b^2}{2ab}$

d) $\frac{a^2 - b^2}{ab}$

94. A gardener plants 17956 trees in such a way that there are as many rows as there are trees in a row. The number of trees in a row are:

a) 134

b) 136

c) 144

d) 154

95. A number is chosen at random from the numbers -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5. Then the probability that square of this number is less than or equal to 1 is:

a) $\frac{9}{11}$

b) $\frac{3}{11}$

c) $\frac{8}{11}$

d) $\frac{7}{11}$

96. A bag contains 5 red balls and 'n' green balls. If the probability of drawing a green ball is three times that of a red ball, then the value of 'n' is:

a) 18

b) 15

c) 10

d) 20

97. The probability of getting a bad apple in a box of 400 apples is 0.035. The total number of bad apples is:

a) 7

b) 14

c) 21

d) 28

98. The probability of guessing the correct answer to a certain question is $\frac{a}{b}$. If the probability of not guessing the correct answer to this question is $\frac{2}{3}$, then:

a) $b = 4a$

b) $b = 3a$

c) $b = 2a$

d) $b = a$

99. If for a data, Mean : Median = 9 : 8, then Median : Mode is:

a) 8 : 9

b) 4 : 3

c) 7 : 6

d) 5 : 4

100. A number was chosen at random from first 300 three-digit natural numbers. The probability that the selected number has zero at units place is:

a) $\frac{1}{15}$

b) $\frac{1}{25}$

c) $\frac{1}{10}$

d) $\frac{1}{20}$