1. A bag contains 25 paise, 10 paise and 5 paise coins in the ratio $3:2:1$. If their total value is ₹ 40, the number of 5 paise coins is

A. 45
B. 48
C. 40
D. 20

2. If one root of $5z^2+13z+y=0$ be reciprocal of the other then the value of $y$ is

A. $\frac{1}{5}$
B. $\frac{-1}{5}$
C. 5
D. –5

3. If $\log_a \sqrt{3} = \frac{1}{6}$, find the value of $a$.

A. 9
B. 81
C. 27
D. 3

4. $\log \frac{p^2}{qr} + \log \frac{q^2}{pr} + \log \frac{r^2}{pq} =$ _____.

A. $pqr$
B. $\frac{1}{pqr}$
C. 1
D. 0

5. Find the future value of annuity of ₹ 1,000 made annually for 7 years at interest rate of 14% compounded annually. Given that $1.14^7 = 2.5023$.

A. ₹ 10,730.7
B. ₹ 5,365.35
C. ₹ 8,756
D. ₹ 9,892.34

6. Assuming that the discount rate is 7% per annum, how much would you pay to receive ₹ 200, growing at 5% annually, forever?

A. ₹ 2,500
B. ₹ 5,000
C. ₹ 7,500
D. ₹ 10,000

7. ₹ 2,500 is paid every year for 10 years to pay off a loan. What is the loan amount if interest rate be 14% per annum compounded annually?

A. ₹ 15,847.90
B. ₹ 13,040.27
C. ₹ 14,674.21
D. ₹ 16,345.11

8. ₹ 800 is invested at the end of each month in an account paying interest 6% per year compounded monthly. What is the future value of this annuity after $10^{th}$ payment? Given that $1.005^{10} = 1.0511$.

A. ₹ 4,444
B. ₹ 8,756
C. ₹ 3,491
D. ₹ 8,176



□

9. There is 60% increase in an amount in 6 years at simple interest. What will be the compound interest of ₹ 12,000 after 3 years at the same rate?

A. ₹ 3,972
B. ₹ 2,160
C. ₹ 3,120
D. ₹ 3,742

10. The present value of ₹ 2,000, after 8 years at the rate of 6% per annum, is _____. $(1.06^8 = 1.59385)$

A. ₹ 1,054
B. ₹ 1,254
C. ₹ 3,054
D. ₹ 2,054

11. The annual rate of simple interest is 12.5%. In how many years does the principal double?

A. 11 years
B. 9 years
C. 8 years
D. 7 years

12. A company creates a sinking fund of ₹ 2,00,000 in a bank account for 15 years. The bank offers interest rate 6% per annum the yearly payment to be paid by the company is approximately _____.
(if needed, use : $1.06^{14} = 2.209$)

A. ₹ 8,945
B. ₹ 8,145
C. ₹ 9,345
D. ₹ 9,645

13. The sum of first eight terms of geometric progression is five times the sum of the first four terms. The common ratio is

A. $\sqrt{2}$

B. $\sqrt{3}$

C. 4

D. 2

14. Which of the following is the differentiation of $e^t \log_e t$ with respect to '$t$'?

A. $e^t(t \log_e t)$

B. $\frac{e^t(1+t\log_e t)}{t}$

C. $\frac{e^t}{t}$

D. $e^t(1-\log_e t)$

15. If $f(p)=\frac{1}{1-p}$, then $f^{-1}$ is

A. $1-p$

B. $\frac{p-1}{p}$

C. $\frac{p}{p-1}$

D. $\frac{1}{p}$

16. Two finite sets have $m$ and $n$ elements. The total number of subsets of the first set is 56 more than the total number of subsets of the second set. The values of $m$ and $n$ are

A. 6, 3
B. 7, 6
C. 5, 1
D. 8, 7

17. A multiple-choice test contains five questions and each question has four possible options. How many different answer keys are possible?

A. 20
B. 120
C. 256
D. 1024

18. Let $R = \{(3, 3), (6, 6), (9, 9), (12, 12), (6, 12), (3, 9), (3, 12), (3, 6)\}$ be a relation on the set $A = \{3, 6, 9, 12\}$. The relation is

A. An equivalence relation
B. Reflexive and transitive only
C. Reflexive only
D. Reflexive and symmetric only

19. Determine $f(x)$, given that $f'(x) = 12x^2 - 4x$ and $f(-3) = 17$.

A. $f(x) = 4x^3 - 2x^2 + 143$
B. $f(x) = 6x^2 - x^4 + 137$
C. $f(x) = 3x^4 - x^3 - 137$
D. $f(x) = 4x^3 - 2x^2 - 143$

20. 9, 27, 31, 155, 161, 1127, ? – Find the missing number.

A. 1316

B. 1135

C. 1288

D. 2254

21. In a certain code TELEPHONE is written as ENOHPELET, then ALIGATOR is written as

A. ROTAGILA

B. ROTAGAIL

C. ROTAGILE

D. TOTAGILA

22. What is the missing number in the sequence given below?

12, 9, 13.50, 30.375, ?, 341.71875

A. 91.125

B. 89.145

C. 90.475

D. 92.485

23. 7, 26, 63, 124, 215, 342, ? – Find the missing number.

A. 391

B. 421

C. 481

D. 511

24. The total number of sitting arrangements of 8 members of a board in a row with the President and the Vice-President occupying central places is

A. $7! \times 2!$

B. $6! \times 2!$

C. $6!$

D. $7!$

25. If $P \times Q$ means P is to the south of Q ; $P + Q$ means P is to the north of Q ; $P \% Q$ means P is to the east of Q ; $P - Q$ means P is to the west of Q ; then in case of $A \% B + C - D$, D is in which direction with respect to B?

A. North-west

B. South-east

C. North-east

D. South-west

26. Six friends Surya, Bhanu, Dinkar, Ravi, Suraj and Dinesh are sitting in a circle and are facing the centre of the circle. Dinesh is between Dinkar and Suraj. Bhanu is between Ravi and Surya. Dinkar and Ravi are opposite to each other. Who are the immediate neighbours of Ravi?

A. Suraj and Dinesh

B. Dinkar and Bhanu

C. Surya and Dinesh

D. Bhanu and Suraj

27. A woman going with a boy is asked by another woman about the relationship between them. The women replied, "My maternal uncle and the uncle of his maternal uncle is the same". How is the lady related with that boy?

A. Grandmother and Grandson
B. Mother and Son
C. Brother and sister
D. Aunt and Nephew

28. Sweetness of a sweet dish is

A. An attribute
B. A discrete variable
C. A continuous variable
D. A variable

29. If X + Y means X is the mother of Y; X – Y means X is the brother Y; X % Y means X is the father of Y and X × Y means X is the sister of Y, Which of the following shows that A is the maternal uncle of B?

A. B + D × C – A
B. B – D % A
C. A – C + D × B
D. A + C × D – B

30. B and C are siblings. M has two children and he is son of E, who is father-in-law of H. H has only one son. C is not granddaughter of E. How's B related to E?

A. Daughter
B. Son
C. Granddaughter
D. Grandson

31. Median of a distribution can be obtained from

A. Frequency polygon
B. Histogram
C. Less than type ogives
D. Pie-chart

32. _____ mean is calculated, when the values in a series do not have equal importance.

A. Arithmetic
B. Harmonic
C. Geometric
D. Weighted

33. What is the mean deviation about mean of the following numbers?

11, 8, 10, 10, 12, 9

A. 2
B. 1
C. 1.5
D. 1.8

34. We get _____ by plotting cumulative frequency against the respective class boundary.

A. Histogram
B. Polygon
C. Pie chart
D. Ogives

35. Following are the ages of 8 employees of a small old age home expressed in years 96, 50, 67, 75, 71, 69, 64, 66. Find the range and its coefficient.

A. 46, 31.51 respectively
B. 51, 37.67 respectively
C. 43, 29.49 respectively
D. 49, 36.42 respectively

36. Find the standard deviation and coefficient of variation of 1, 6, 5, 9, 8.

A. 2.78 and 40.83 respectively
B. 2.45 and 47.93 respectively
C. 2.78 and 47.93 respectively
D. 2.87 and 49.37 respectively

37. The coefficient of deviation based on $25^{th}$ and $75^{th}$ percentiles of 6, 9, 3, 8, 4, 5, 8 and 4 is

A. 50
B. $\frac{100}{3}$
C. 30
D. 25

38. If $P(A)=0.3$, $P(B)=0.8$ and $P(B/A)=0.5$. Find $P(A \cup B)$.

A. 0.7
B. 0.95
C. 0.60
D. 0.59

39. The arithmetic mean and coefficient of variation of data set X are respectively, 10 and 30. The variance of $30-2X$ is

A. 28
B. 32
C. 34
D. 36

40. What is the chance that a leap year selected at random will contain 53 Fridays?

A. 3/7
B. 1/7
C. 2/7
D. 4/7

41. Two balanced dice are rolled. The probability of getting 1 in at least one dice is $x/36$ where $x$ is

A. 12
B. 1
C. 11
D. 2

42. Thirty balls are serially numbered and placed in a bag. Find the chance that the first ball drawn is a multiple of 3 or 5.

A. 8/15
B. 2/15
C. 1/2
D. 7/15

43. If the plotted points in a scatter diagram lie from lower left to upper right, then the correlation is

A. Negative
B. Perfect Negative
C. Zero
D. Positive

44. The binomial distribution, having mean and standard deviation as 3 and 1.5, has number of trials equal to

A. 3
B. 6
C. 8
D. 12

45. The mean of binomial distribution is

A. Always less than its variance
B. Always more than its variance
C. Always equal to its variance
D. Always equal to its standard deviation

46. For finding correlation between two qualitative characteristics, we use

A. Coefficient of rank correlation
B. Scatter diagram
C. Coefficient of concurrent deviation
D. Product moment correlation coefficient

□

47. The test of shifting the base is called

A. Unit

B. Circular

C. Time reversal

D. Factor reversal

48. Let $p_0$ and $p_1$ be prices of a commodity in the base and current years respectively. The price relative with respect to base year is

A. $\frac{p_1}{p_0}$

B. $\frac{p_0}{p_1}$

C. $\frac{p_1 - p_0}{p_0}$

D. $\frac{p_1 - p_0}{p_1}$

49. Laspeyre's index number is a weighted aggregate method by taking ———— as weights.

A. Quantity consumed in the base year

B. Quantity consumed in the current year

C. Value of items consumed in the base year

D. Value of items consumed in the current year

50. If $x : y = 4 : 6$ and $2 : x = 1 : 2$ then $y =$ _____.

A. 4

B. 6

C. $\frac{1}{3}$

D. $\frac{3}{2}$

51. Find the value of $z$ from $(\sqrt{9})^{-8} \times (\sqrt{3})^{-5} = 3^z$.

A. $\frac{2}{21}$

B. $\frac{-21}{2}$

C. $\frac{21}{2}$

D. $\frac{-2}{21}$

52. Find the value of $\frac{3t^{-1}}{t^{\frac{-1}{3}}}$.

A. $\frac{3}{t^{\frac{1}{3}}}$

B. $\frac{3}{t^{\frac{2}{3}}}$

C. $\frac{3}{t^{\frac{1}{3}}}$

D. $\frac{3}{t^2}$

53. A man wants to cut three lengths from a single piece of board of length 91 cm. The second length is to be 3 cm longer than the shortest and third length is to be twice as the shortest. What is the possible length for the shortest piece?

A. 22
B. 20
C. 15
D. 18

54. Solve the following pair of linear equations for $x$ and $y$ :

$$\left(\frac{b}{a}\right)x+\left(\frac{a}{b}\right)y=a^2+b^2;$$
$$x+y=2ab$$

A. $x=\frac{a}{b}, y=\frac{b}{a}$
B. $x=3ab, y=-ab$
C. $x=-ab, y=3ab$
D. $x=ab, y=ab$

55. A labour can be paid under two methods as given below :

(i) ₹ 600 fixed and ₹ 50 per hr.

(ii) ₹ 170 per hr.

If a particular job work takes '$x$' hours to complete, find out the value of $x$ for which the method (ii) gives the labour gets the better wages.

A. $x=6$
B. $x=4$
C. $x=3$
D. $x=2$



□

56. Lokesh deposits ₹ 3,000 at the start of each quarter in his savings account. If the account earns interest 5.75% per annum compounded quarterly, how much money (in ₹) will he have at the end of 4 years? ($1.014375^{16} = 1.25696$)

A. 53,624.4
B. 58,353.6
C. 68,353.6
D. 63,624.4

57. Raj made an investment of ₹ 15,000 in a scheme and at the time of maturity the amount was ₹ 25,000. If Compound Annual Growth Rate (CAGR) for this investment is 8.88%. Calculate the approximate number of years for which he has invested the amount.

A. 6
B. 7.7
C. 5.5
D. 7

58. Madhu takes a loan of ₹ 50,000 from XYZ Bank. The rate of interest is 10% per annum. The first installment will be paid at the end of year 5. Determine the amount (in ₹) of equal instalments, if Madhu wishes to repay the amount in five installments.

A. 19,510
B. 19,430
C. 19,310
D. 19,630

59. Ramesh invests ₹ 20,000 per year in a stock index fund, which earns 9% per year, for the next ten years. What would be the closest value of the accumulated value of the investment upon payment of the last instalment? ($1.09^{10} = 2.36736$)

A. ₹ 388,764.968
B. ₹ 303,858.594
C. ₹ 268,728.484
D. ₹ 408,718.364



□

60. An investment is earning compound interest, ₹ 100 invested in the year 2 accumulates to ₹ 105 by year 4. If ₹ 500 invested in the year 5, will become ₹ _____ by year 10.

A. 364.80
B. 564.80
C. 464.80
D. 664.80

61. There are 10 flights operating between City-A to City-B. The number of ways in which a person can travel from City-A to City-B and return by a different flight is

A. 90
B. 95
C. 80
D. 78

62. An investor is saving to pay off an obligation of ₹ 15,250 which will be due in seven years. If the investor is earning 7.5% simple interest rate per annum, he must deposit ₹ _____ to meet the obligation.

A. 8,000
B. 9,000
C. 10,000
D. 11,000

63. Out of 7 boys and 4 girls, a team of a debate club of 5 is to be chosen. The number of teams such that each team includes at least one girl is

A. 439
B. 429
C. 419
D. 441

64. Six points are marked on a straight line and five points are marked on another line which is parallel to the first line. How many straight lines, including the first two, can be formed with these points?

A. 28
B. 30
C. 32
D. 34

65. If the $n^{th}$ term of the arithmetic progression 9,7,5... is same as the $n^{th}$ term of the arithmetic progression 15, 12, 9..., then $n$ will be

A. 7
B. 9
C. 15
D. 11

66. How many 4 letter words with or without meaning, can be formed out of the letters of the word, 'LOGARITHMS', if repetition of letters is not allowed?

A. 7,020
B. 5,040
C. 1,480
D. 2,520

67. In a geometric progression, the second term is 12 and the sixth term is 192. Find the $11^{th}$ term.

A. 3,072
B. 1,536
C. 12,288
D. 6,144

68. The first and last terms of an arithmetic progression are 5 and 905. The sum of the terms is 45955. The number of terms is

A. 99
B. 100
C. 101
D. 102

69. In a coded language, if 'EARTH' is written as 34215 and 'VENUS' is written as 73089. What is the code for 'SATURN'?

A. 941012
B. 941820
C. 914281
D. 912418

70. The solution for $\frac{n!}{10} = {}^{(n-1)}P_{n-3}$ is $n =$

A. 5
B. 6
C. 7
D. 8

71. $\int_0^1 xe^x dx =$

A. $-1$
B. 1
C. $e^1$
D. $e^{-1}$

72. I am facing West, turning to the left I go 20 m, then turning to the left I go 20 m and turning to the right I go 20 m, then again turning to the right I go 40 m and then again I go 40 m to the right. In which direction am I from my original position?

A. North
B. West
C. South
D. East

73. A, B, C, D, E, F, G, H and I are nine poles. C is 2 km east of B. A is 1 km north of B and H is 2 km south of A, G is 1 km west of H while D is 3 km east of G and F is 2 km north of G. I is situated right in the middle of B and C while E is just in the middle of H and I. The Distance between B and I is

A. 1 km
B. 1.41 km
C. 2 km
D. 3 km

74. Starting from a point, Rani walked 12 m South, she turned left and walked 10 m, she again turned left and walked 12 m, then she turned right and walked 5 m. How far is she now and in which direction from the starting point?

A. 27 m towards East
B. 5 m towards East
C. 10 m towards West
D. 15 m towards East

75. Puru was driving his car and at a circle there was a direction pole, which was showing all the four correct directions. But due to the wind, it turns in such a manner that now North pointer is showing West. Puru went in the wrong direction thinking that he was travelling East. In what direction he was actually travelling?

A. West
B. East
C. North
D. South



□

76. Eight persons E, F, G, H, I, J, K and L are seated around a square table, facing table – two on each side. J is between L and F ; G is between I and F ; H, a lady member is second to the left of J ; F, a male member is seated opposite to E, a lady member. There is a lady member between F and I. Who among the following is to the immediate left of F ?

A. G
B. I
C. J
D. H

77. Five persons are sitting on a bench to be photographed, S is to the left of N and to the right of B. M is to the right of N. R is between N and M. Who is sitting immediate right to R ?

A. B
B. N
C. M
D. S

78. Ravi is a son of Aman's father's sister. Sahil is the son of Divya who is the mother of Gaurav and grandmother of Aman. Ashok is the father of Tanya and grandfather of Ravi. Divya is the wife of Ashok.

How is Ravi related to Divya?

A. Nephew
B. Son
C. Grandson
D. Father

79. Six friends P, Q, R, S, T and U are sitting around the hexagonal table each at one corner and are facing the center of the hexagonal. P is second to the left of U. Q is neighbour of R and S. T is second to the left of S.

Which one is sitting opposite to P ?

A. R
B. Q
C. T
D. S

80. Rani told Jaya, "The girl I met yesterday at the beach was the youngest daughter of the brother-in-law of my friend's mother." How is the girl related to Rani's friend?

A. Cousin
B. Daughter
C. Mother
D. Aunt



□

81. Types of research data are

A. Organised data and unorganised data
B. Qualitative data and quantitative data
C. Processed data and unprocessed data
D. Discrete data and Continuous data

82. The collected information on which of the following characteristic do not form data?

A. The number of files audited are 'less than 6', 'between 5 and 10' and more than 9'
B. The number of files audited are 'very less', 'moderate' and very large'
C. The number of audits in a file
D. The number of auditors who audited a file

83. Histograms are drawn only when

A. Frequencies in various class intervals are equal
B. Class intervals are equal
C. Class intervals are unequal
D. For less than type cumulative frequencies

84. Which one of the following is not a mode of presentation of data?

A. Textual presentation
B. Tabular presentation
C. External presentation
D. . Diagrammatic representation

85. Which one of the following is a continuous variable?

A. The quantum of days to get a cure from illness
B. The quantum of oxygen cylinders used to treat a patient
C. The quantum of drug injected in to a patient
D. The quantum of tablets prescribed to a patient

86. Which measure of dispersion is based on the absolute deviations only?

A. Range
B. Standard deviation
C. Mean deviation
D. Quartile deviation

87. Which one of the following is not a measure of central tendency?

A. Median
B. Range
C. Arithmetic Mean
D. Harmonic Mean

88. A seller of pearls kept the pearls in seven boxes labelled from one to seven. At the end of a day, he found that $j^{th}$ labelled box contained $j$ pearls. The average number of pearls per box is

A. 4
B. 6.5
C. 7.5
D. 8

89. The Mean of 100 students was 45. Later on, it was discovered that the marks of two students were mis-read as 85 and 54 instead of 58 and 45. Find out the correct mean.

A. 68
B. 36
C. 44.64
D. 52

90. Calculate the value of 3rd quartile from the following data

40, 35, 51, 30, 21, 25, 16, 29, 27, 32.

A. 36.25
B. 30.25
C. 25
D. 35

91. The odds in favour of an event $A$ is 2 : 3 and odds against an event $B$ is 6:4. The probability that only one of $A$ and $B$ occurs is $y/25$ where $y$ is

A. 12
B. 15
C. 18
D. 9

92. The odds in favour of event $A$, in a trial, is 3 : 1. In a three independent trials, the probability of no occurrence of the event A is

A. 1/64
B. 1/32
C. 1/27
D. 1/8

93. The variance of a normal distribution is given to be 16. The mean deviation about mode is

A. 3.2
B. 8
C. 12.8
D. 12

94. The standard deviation of a Poisson variate $X$ is 1.732. Then $P[-2.9 < X < 3.54]$ is

A. $13e^{-3}$
B. $9e^{-3}$
C. $4e^{-2}$
D. $e^{-6}$

95. For a normal distribution, the first and third quartiles are given to be 37 and 49, the mode of the distribution is

A. 37
B. 49
C. 43
D. 45

96. For positive and perfectly correlated random variables, one of the regression coefficient is 1.3 and the standard deviation of X is 2, the variance of Y is

A. 2.66
B. 6.76
C. 6.56
D. 3.16

97. Karl Pearson's coefficient is defined from

A. Grouped data
B. Ungrouped data
C. Any data
D. Scattered data

98. Which one of the following method is based on geometric mean for calculating index number?

A. Fisher's method
B. Kelley's method
C. Paasche's method
D. Laspeyre's method

99. For $n$ pairs of observations, the coefficient of concurrent deviation is calculated as $\frac{1}{\sqrt{5}}$. If there are six concurrent deviations, then $n =$

A. 11
B. 10
C. 9
D. 8

100. Which one of the following test is not applied for selecting an appropriate index number?

A. Time Reversal
B. Price Relative
C. Factor Reversal
D. Circular

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