

1. Arun purchased a vacuum cleaner by giving Rs. 1700 as cash down payment, which will be followed by five EMIs of Rs. 480 each. The vacuum cleaner can also be bought under this installment plan ?
(a) 18% (b) 19% (c) 22% (d) 20%

2. The ratio compounded of duplicate ratio of 81 : 256 and sub-triplicate ratio of 1 : 3, sub-duplicate ratio of 4 : 512 and sub-triplicate ratio of 125 : 512 is
(a) 4 : 512 (b) 3 : 32 (c) 1 : 12 (d) none of these

3. Compute the compound interest on Rs. 4,000 for $1\frac{1}{2}$ years at 10% per annum compounded half-yearly.
(a) Rs.641.50
(b) Rs. 632.50
(c) Rs. 630.75
(d) Rs 630.50

4. If $E = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$, the subset of E satisfying $5 + x > 10$ is
(a) {5, 6, 7, 8, 9}
(b) {6, 7, 8, 9}
(c) {7, 8, 9}
(d) none of these

5. Ramesh wants to retire and receive Rs. 3,000 a month. He wants to pass this monthly payment to future generations after his death. He can earn an interest of 8% compounded annually. How much will he need to set aside to achieve his perpetuity goal ?
(a) 4,39,775
(b) 4,49,775
(c) 4,39,770
(d) 4,49,755

6. The difference between Compound Interest and Simple Interest on a certain sum for 2 years at 6% p.a. is Rs. 13.50. Find the sum
(a) 3750

(b) 2750
(c) 4750
(d) None

7. Find the value of $\sqrt{6561} + \sqrt[4]{6561} + \sqrt[8]{6561}$
(a) 81
(b) 93
(c) 121
(d) 243

8. The derivative of $\frac{3-5x}{3+5x}$ is
(a) $30/(3+5x)^2$
(b) $1/(3+5x)^2$
(c) $-30/(3+5x)^2$
(d) none of these

9. Solving $9x + 3y - 4z = 3$, $x + y - z = 0$ and $2x - 5y - 4z = -20$ following roots are obtained
(a) 2, 3, 4
(b) 1, 3, 4
(c) 1, 2, 3
(d) None

10. A person invests R1s. 500 at the end of each year with a bank which pays interest at 10% p.a. C.I. annually. The amount standing to his credit one year after he has made his yearly investment for the 12th time is.
(a) Rs. 11,764.50
(b) Rs. 10,000
(c) Rs. 12,000
(d) none of these

11. The sum of n terms of an AP is $3n^2 + 5n$. The series is
(a) 8, 14, 20, 26
(b) 8, 22, 42, 68
(c) 22, 68, 114,
(d) None of these

12. Given $A = \{2, 3\}$, $B = \{4, 5\}$, $C = \{5, 6\}$ then $A \times (B \cap C)$ is
(a) $\{(2, 5), (3, 5)\}$
(b) $\{(5, 2), (5, 3)\}$
(c) $\{(2, 3), (5, 5)\}$
(d) none of these

13. The effective rate of interest corresponding to a nominal rate 3% p.a. payable half yearly is
 (a) 3.2% p.a.
 (b) 3.25% p.a.
 (c) 3.0225% p.a.
 (d) none of these

14. Using $(a-b)^3 = a^3 - b^3 - 3ab(a-b)$ tick the correct of these when $x = p^{1/3} - p^{-1/3}$
 (a) $x^3 + 3x = p + 1/p$
 (b) $x^3 + 3x = p - 1/p$
 (c) $x^3 + 3x = p + 1$
 (d) None of these

15. If $xy + yz + zx = 1$, then the value of $\left(\frac{x+y}{1-xy} + \frac{z+y}{1-zy} + \frac{x+z}{1-zx} \right)$ is
 (a) xyz
 (b) $-\frac{1}{yz}$
 (c) $\frac{1}{xyz}$
 (d) $\frac{1}{x+y+z}$

16. Find the present value of an annuity of Rs. 1,000 payable at the end of each year for 10 years, if the money is worth 5% effective.
 (a) Rs. 7,724
 (b) Rs. 7,000
 (c) Rs. 8,000
 (d) none of these

17. The useful life of a machine is estimated to be 10 years and cost Rs. 10,000. Rate of depreciation is 10% p.a. The scrap value at the end of its life is
 (a) Rs. 3,486.78
 (b) Rs. 4,383
 (c) Rs. 3,400
 (d) None of these

18. The supreme Court has given a 6 to 3 decision upholding a lower court ; the number of ways it can give a majority decision reversing the lower court is
 (a) 256
 (b) 276
 (c) 245
 (d) 226

19. A sinking fund is created for redeeming debentures worth Rs. 5 lakhs at the end of 25 years. How much provision needs to be made out of profits each year provided sinking fund investments can earn interest at 4% p.a. ?
 (a) Rs. 12,006
 (b) Rs. 12,040
 (c) Rs. 12,039
 (d) Rs. 12,035

20. The sum of the series $3\frac{1}{2} + 7 + 10\frac{1}{2} + 14 + \dots$ to 17 terms is
(a) 530
(b) 535
(c) 535 $\frac{1}{2}$
(d) none of these

21. Appu retires at 60 years receiving a pension of 14,400 a year paid in half - yearly installments for rest of his life after reckoning his life expectation to be 13 years and that interest at 4% p.a. is payable half - yearly. What single sum is equivalent to his pension ?
(a) 1,45,000
(b) 1,44,900
(c) 1,44,800
(d) 1,44,700

22. Given that $\log x = m + n$, $\log y = m - n$, the value of $\log 10 x/y^2$ is expressed in terms of 'm' and 'n' as
(a) $1 - m + 3n$
(b) $m - 1 + 3n$
(c) $m + 3n + 1$
(d) none of these

23. Present value of a five year annuity is Rs. 2,000. If the rate of interest is 8% p.a., what is the amount of each annuity payment ?
(a) Rs. 500.9
(b) Rs. 463.8
(c) Rs. 363.1
(d) Rs. 486.4

24. The Inverse function f^{-1} of $f(x) = 2x$ is
(a) $1/2x$
(b) $\frac{x}{2}$
(c) $1/x$
(d) None of these

25. Raja aged 40 wishes his wife Rani to have Rs. 40 lakhs at his death. If his expectation of life is another 30 years and he starts making equal annual investments commencing now at 3% compound interest p.a. how much should he invest annually?
(a) 84,448
(b) 84,450
(c) 84,449
(d) 84,080

26. Integrate w.r.t x , $(\log x)^2$

(a) $x(\log x)^2 - 2x \log x + 2x + k$
(b) $x(\log x)^2 + 2x \log x + 2x + k$
(c) $x(\log x)^2 - 2 \log x + 2x + k$
(d) $x(\log x)^2 + 2 \log x + 2x + k$

27. The union however forbids him to employ ~~less than~~ 2 experienced person to each fresh person. This situation can be expressed as

(a) $x \leq y/2$
(b) $y \leq x/2$
(c) $y \geq x/2$
(d) $x > 2y$

28. If the amount of an annuity after 25 years at 5% p.a. C.I. is Rs. 50,000 the annuity will be

(a) Rs. 1,406.90
(b) Rs. 1,047.62
(c) Rs. 1,146.90
(d) None of these

29. If 12 school teams are participating in a quiz context, then the number of ways the first, second and third positions may be won is

(a) 1,230
(b) 1,320
(c) 3,210
(d) none of these

30. The annual birth and death rates per 1,000 are 39.4 and 19.4 respectively. The number of years in which the population will be doubled assuming there is no immigration or emigration is

(a) 35 years
(b) 30 years
(c) 25 years
(d) None of these

31. The number of terms to be taken so that $1 + 2 + 4 + 8 + \dots$ will be 8191 is

(a) 10
(b) 13
(c) 12
(d) none of these

32. Integrate w.r.t x, $(2x+3)^{1/2}$ from lower limit 3 to upper limit 11 of x

(a) 33
 (b) $100/3$
 (c) $98/3$
 (d) None

33. Solve $x^3 - 5x^2 - 2x + 24 = 0$ given that two of its roots being in the ratio of 3 : 4

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

34. The number of permutations of 10 different things taken 4 at a time in which one particular thing never occurs is

(a) 3,020
 (b) 3,025
 (c) 3,024
 (d) none of these

35. The number of even numbers greater than 300 can be formed with the digits 1, 2, 3, 4, 5 without repletion is

(a) 110 (b) 112 (c) 111 (d) None of these

36. The sum of n terms of the series $1^2 / 1 + (1^2 + 2^2) / (1 + 2) + (1^2 + 2^2 + 3^2) / (1 + 2 + 3) + \dots$ is

(a) $(n/3)(n + 2)$
 (b) $(n/3)(n + 1)$
 (c) $(n/3)(n + 3)$
 (d) None

37. The sum of the ages of 3 persons is 150 years. 10 years ago their ages were in the ratio 7 : 8 : 9. Their present ages are

(a) (45, 50, 55)
 (b) (40, 60, 50)
 (c) (35, 45, 70)
 (d) none of these

38. $\{1 - (-1)^x\}$ for all integral x is the set

(a) {0}
 (b) {2}

$$x^3 - 5x^2 - 2x + 2$$

$$(3)^3 - 5(3)^2 - 2(3) + 2$$

$$27 - 45 - 6 + 2 = -66$$

(c) {0, 2}

(d) none of these

39. If $x^3 - 2x^2 y^2 + 5x + y - 5 = 0$ then $\frac{dy}{dx}$ at $x = 1, y = 1$ is equal to

(a) $\frac{4}{3}$

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

(c) $\frac{3}{4}$

(d) None of these

40. $\log 0.0625$ to the base 2 is equal to

(a) 4

(b) 5

(c) 1

(d) None of these

41. $120, 99, ?, 63, 48, 35$

(a) 80

(b) 36

(c) 45

(d) 40

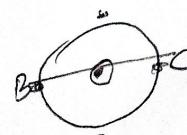
42. Four girls A, B, C, D are sitting around a circle facing the centre. B and C in front of each other, which of the following is definitely true ?

(a) A and D in front of each other

(b) A is not between B and C

(c) D is left of C

(d) A is left of C



43. Rakesh moves towards South - East a distance of 7 m, then he moves towards West and travels a distance of 14 m. From here he moves towards North - West a distance of 7 m and finally he moves a distance of 4 m towards East and stood at that point. How far is the starting point from where he stood ?

(a) 3 m

(b) 4 m

(c) 10 m

(d) 11 m

(Q. 44 & 45) Read the following information carefully and answer the questions given below ? There are six children playing football, namely P, Q, R, S, T and U. P and T are brothers, U is sister of T, R is the only son of P's uncle, Q and S are the daughters of the only brother of R's father

44. How many female players are there ?

(a) one

(b) two

(c) three

(d) Four



45. How is S is related to P

(a) Uncle

(b) Sister

V, P & T - Bro

U is sis - of T, R

P's are T, R father

Q & S are girls & her
father was R

- B K P S

59. Find out the next term of the series 4, 25, 121, 289, _____

(a) 529 (b) 441 (c) 625 (d) None of the above

60. A man starts from a point, walks 15 metres towards East, turns left and walks 10 metres, turns right again and walks. Towards which direction is he now walking?

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

1. Data collected on religion from the census reports are

(a) Primary data (b) Secondary data (c) Sample data (d) (a) or (b)

The line $X = 31/6 - Y/6$ is the regression equation of

(a) Y on X (b) X on Y (c) both (d) we can not say

If the AM and HM for two numbers are 5 and 3.2 respectively then the GM will be

(a) 16.00 (b) 4.10 (c) 4.05 (d) 4.00.

The following table gives distribution of wages of 100 workers -

Wages (in Rs)	120-140	140-160	160-180	180-200	200-220	220-240	240-260
No. of workers	9	20	0	10	8	35	27

For the above table the probability that his wages are above Rs. 200 is

(a) $43/100$ (b) $35/100$ (c) $53/100$ (d) $61/100$

The regression equation of Y on X is, $2x + 3Y + 50 = 0$. The value of b_{yx} is

(a) $2/3$ (b) $-2/3$ (c) $-3/2$ (d) None

An example of a bi-parametric discrete Probability distribution is

(a) Binomial distribution (b) Poisson Distribution (c) Normal Distribution (d) Both (a) and (b)

2 + x
2 + x
2 + x

The following data relate to the incomes of 86 persons :

Wages(in Rs)	120-140	140-160	160-180	180-200	200-220	220-240	240-260
No. of workers	9	20	0	10	8	35	18

For the above table the probability that his wages are above Rs. 200 is

(a) $43/100$ (b) $35/100$ (c) $53/100$ (d) $61/100$

65. The regression equation of Y on X is $2x + 3Y + 50 = 0$. The value of b_{yx} is

(a) $2/3$ (b) $-2/3$ (c) $-3/2$ (d) None

66. An example of a bi-parametric discrete Probability distribution is

- (a) Binomial distribution
- (b) Poisson Distribution
- (c) Normal Distribution
- (d) Both (a) and (b)

67. The following data relate to the incomes of 86 persons :

Income in Rs. :	500 - 999	1000 - 1499	1500 - 1999	2000 - 2499
No. of persons :	15	28	36	7

What is the percentage of persons earning more than Rs. 1500 ?

(a) 50 (b) 45 (c) 40 (d) 60

68. A coin is tossed six times, then the probability of obtaining heads and tails alternatively is

(a) $\frac{1}{2}$ (b) $1/64$ (c) $1/32$ (d) $1/16$

69. The data relating to the daily wage of 20 workers are shown below :

Rs. 50, Rs. 55, Rs. 60, Rs. 58, Rs. 59, Rs. 72, Rs. 65, Rs. 68, Rs. 53, Rs. 50, Rs. 67, Rs. 58, Rs. 63, Rs. 69, Rs. 74, Rs. 63, Rs. 61, Rs. 57, Rs. 62, Rs. 64

The employer pays bonus amounting to Rs. 100, Rs. 200, Rs. 300, Rs. 400 and Rs. 500 to the wage earners in the wage groups Rs. 50 and not more than Rs. 55 and not more than Rs. 60 and so on and lastly Rs. 70 and not more than Rs. 75, during the festive month of October.

What is the average bonus paid per wage earner ?

(a) Rs. 200 (b) Rs. 250 (c) Rs. 285 (d) Rs. 270

70. In a class 40% students read Mathematics, 25% Biology and 15% both Mathematics and Biology. One student is selected at random. The probability that he reads Biology if he reads Mathematics

(a) $7/8$ (b) $1/8$ (c) $3/8$ (d) None

71. The consumer price index for April 1985 was 125. The food price index was 120 and other items index was 135. The percentage of the total weight of the index is

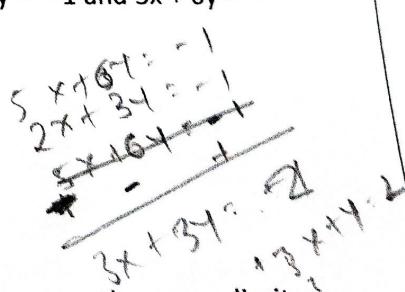
(a) 66.67
(b) 68.28
(c) 90.25
(d) None of these

72. If the regression line of y on x and of x on y are given by $2x + 3y = -1$ and $5x + 6y = -1$ then the arithmetic means of x and y are given by

(a) (1, -1)
(b) (-1, 1)
(c) (-1, -1)
(d) (2, 3)

73. The curve obtained by joining the points, whose x - coordinates are the upper limits of the class intervals and y co-ordinates are corresponding cumulative frequencies is called

(a) Ogive
(b) Histogram
(c) Frequency Polygon
(d) Frequency Curve



74. Two different dice are thrown simultaneously, then the probability, that the sum of two numbers appearing on the top of dice 9 is

- (a) $8/9$
- (b) $1/9$
- (c) $7/9$
- (d) None of these

75. The mean height of girls in class is 162cm while for boys is 182 cm. The ratio of number of girls : boys is 1 : 2. Find the mean height of the whole class

- (a) 170 cm
- (b) 180 cm
- (c) 154 cm
- (d) None of these

76. A problem in probability was given to three CA students A, B and C whose chances of solving it are $1/3$, $1/5$ and $1/2$ respectively. What is the probability that the problem would be solved ?

- (a) $4/15$
- (b) $7/8$
- (c) $8/15$
- (d) $11/15$

77. Which of the following is not an example of continuous variable ?

- (a) Temperature in India
- (b) Profit of Company X
- (c) Number of road accidents
- (d) A person's height

78. In case 'Years of education and income' _____.

- (a) positive correlation
- (b) negative correlation
- (c) no correlation
- (d) None

79. If the price of commodity in a place have decreased by 30% over the based period places, then the index number of that place is

- (a) 30
- (b) 60
- (c) 70
- (d) 80

80. A sample study of the people of an area revealed that total number of women were 40% and the percentage of coffee drinkers were 45 as a whole and the percentage of male coffee drinkers was 20. What was the percentage of female non - coffee drinkers ?

- (a) 10
- (b) 15
- (c) 18
- (d) 20

81. For a Poisson variate X , $P(X = 1) = P(X = 2)$. What is the mean of X ?

82. (a) 1.00 (b) 1.50 (c) 2.00 (d) 2.50

For 333, 999, 888, 777, 1000, 321, 133

Rank of 3rd quartile is

(a) 7 (b) 4 (c) 5 (d) 6

83. Following are the wages of 8 workers in rupees :

50, 62, 40, 70, 45, 56, 32, 45

If one of the workers is selected at random, what is the probability that his wage would be lower than the average wage ?

(a) 0.625 (b) 0.500 (c) 0.375 (d) 0.450

84.

Class:	0-10	10-20	20-30	30-40	40-50
Frequency:	5	8	15	6	4

For the class 20-30, cumulative frequency is 28

(a) 20 (b) 13 (c) 15 (d) 28

85. If the weekly wages of 5000 workers in a factory follows normal distribution with mean and SD as Rs. 700 and Rs. 50 respectively, what is the expected number of workers with wages between Rs. 660 and Rs. 720 ?

$$(z = 0 \text{ to } 0.8 = 0.2881)$$

$$z = 0 \text{ to } 0.4 = 0.1554$$

(a) 2,050 (b) 2,200 (c) 2,218 (d) 2,300

86. If median = 5, Quartile deviation = 1.5 then the coefficient of quartile deviation is

(a) 33 (b) 35 (c) 30 (d) 20

87. The two lines of regression are given by

$8x + 10y = 25$ and $16x + 5y = 12$ respectively.

If the variance of x is 25, what is the standard deviation of y ?

(a) 16 (b) 8 (c) 64 (d) 4

88. For the construction of grouped frequency distribution from ungrouped data we use

(a) Class limits
(b) class boundaries
(c) class width
(d) none

89. The Factory Reversal Test is as represented symbolically is :

$$(a) P_{01} \times Q_{01} = \frac{\sum P_1 Q_1}{\sum P_0 Q_0}$$

$$(b) I_{01} \times I_{10}$$

$$(c) \frac{\sum P_0 Q_0}{\sum P_1 Q_1}$$

$$(d) \sqrt{\frac{\sum P_1 Q_1}{\sum P_0 Q_0} \times \frac{\sum P_0 Q_1}{\sum Q_{10} P_0}}$$

90. If two random variables x and y are related as $y = -3x + 4$ and standard deviation of x is 2, then the standard deviation of y is

(a) -6 (b) 6 (c) 18 (d) 3.50

91.	Height in cms :	60 - 62	63 - 65	66 - 68	69 - 71	72 - 74
	No. of students :	15	118	142	127	18
	Modal group is					
	(a) 66 - 68 (b) 69 - 71 (c) 63 - 65 (d) None					

92. If the quartile deviation of a normal curve is 4.05, then its mean deviation is
 (a) 5.26 (b) 6.24 (c) 4.24 (d) 4.80

93. Frequency curve is a limiting form of
 (a) Frequency polygon
 (b) Histogram
 (b) (a) or (b)
 (d) (a) and (b)

94. If $\sum P_0 Q_0 = 1360$, $\sum P_n Q_0 = 1900$, $\sum P_0 Q_n = 1344$, $\sum P_n Q_n = 1880$ then the Laspeyres Index number is
 (a) 0.71 (b) 1.39
 (c) 1.75 (d) None of these

95. Tom speaks truth in 30 percent cases and Dick speaks truth in 25 percent cases. What is the probability that they would contradict each other ?
 (a) 0.325 (b) 0.400 (c) 0.925 (d) 0.075

96. Coefficient of variation is equal to
 (a) Standard deviation $\times 100 / \text{median}$
 (b) Standard deviation $\times 100 / \text{mode}$
 (c) Standard deviation $\times 100 / \text{mean}$
 (d) None

97. In a discrete random variable x follows uniform distribution and assumes only the values 8, 9, 11, 15, 18, 20. Then $P(x > 15)$ is

(a) $2/3$ (b) $1/3$ (c) 1 (d) None

98. The mode of the numbers 7, 7, 7, 9, 10, 11, 11, 11, 12 is

(a) 11 (b) 12 (c) 7 (d) 7 & 11

99. The average price of certain commodities in 1980 was Rs. 60 and the average price of the same commodities in 1982 was Rs. 120. Therefore, the increase in 1982 on the basis of 1980 was 100%. 80. The decrease in 1980 with 1982 as base is : using 1982, comment on the above statement is :

(a) The price in 1980 decreases by 60% using 1982 as base.
 (b) The price in 1980 decreases by 50% using 1982 as base.
 (c) The price in 1980 decreases by 90% using 1982 as base.
 (d) None of these

100. The distribution, for which the coefficient of variation is less, is _____ consistent.
 (a) less (b) more (c) moderate (d) None