

Note: Section-I is compulsory. Attempt any Three (3) questions from Section-II.

SECTION - I

2. Write short answers to any EIGHT (8) questions:

(2 x 8 = 16)

- i- Differentiate between parameter and statistics.
- ii- What is meant by secondary data?
- iii- How many significant digits are there in each of the following numbers?
(a) 400 (b) 0.00394
- iv- Define Mode.
- v- In a skewed distribution, Mode = 15 and Mean = 10.5. Find Median.
- vi- What is relationship among A.M., G.M. and H.M.?
- vii- Find the arithmetic mean if $\bar{x} = \frac{\sum x}{n}$, $\sum x = 23$ and $n = 20$
- viii- Write a formula for P_{37} (37th percentile) for grouped data.
- ix- Differentiate between Price Relative and Link Relative.
- x- What are the steps in the construction of Index Numbers?
- xi- If Laspeyre's Price Index is 116.51 and Paasche's Price Index is 118.39 then find Fisher Price Index.
- xii- What is difference between Aggregative Expenditure Method and Family Budget Method?

3. Write short answers to any EIGHT (8) questions:

(2 x 8 = 16)

- i- What is frequency distribution?
- ii- Differentiate between box-head and stub.
- iii- Define Histogram.
- iv- Given $\sum f = 120$, $\sum fx = 296$, Mode = 2.944, find Median.
- v- Given $Q_3 = 178.25$, Q.D = 53.725, find Q_1
- vi- Define standard deviation and give its formulas.
- vii- $\bar{X} = 200$, C.V = 7, find Standard Deviation (S.D)
- viii- Given $X_m = 15$, $X_o = 3$, find Range and its co-efficients.
- ix- Differentiate between simple event and compound event.
- x- Define combination.
- xi- Given that $P(A) = 1/3$, $P(B) = 1/2$, $P(\bar{A} \cap B) = 1/2$, find $P(A \cap B)$
- xii- Given that $P(A) = 1/4$, $P(B/A) = 1/2$, $P(A/B) = 1/4$, then find $P(\bar{A}/\bar{B})$

4. Write short answers to any SIX (6) questions:

(2 x 6 = 12)

- i- Define probability density function.
- ii- Write down the properties of probability density function.
- iii- If $E(x) = 0.63$, $\text{var}(x) = 0.2331$ then find $E(x^2)$.
- iv- Given $x = 0, 1, 2$ and $p(x) = 4c, 3c, c$ then find the value of c .
- v- Define binomial probability distribution.
- vi- Given $n = 6$, $p = \frac{1}{2}$, then compute its mean and S.D.
- vii- Write down the formula of hypergeometric distribution.
- viii- Discuss the statement that in binomial distribution, mean = 5 and S.D = 3
- ix- Write any two properties of hypergeometric distribution.

(Turn over)

SECTION – II

- 5- (a) A variable Y is determined from a variable X by the equation $Y = 14 - 5X$. Find Y when $X = -3, -2, -1, 0, 1, 2, 3, 4, 5$ and show that $\bar{Y} = 14 - 5\bar{X}$ 4

- (b) Calculate the Geometric mean for the following data : 4

Marks	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59
No. of Students	5	25	40	20	10

- 6- (a) Find the co-efficient of Q.D from the following data 4

Groups	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29
f	3	4	12	6	5

- (b) Estimate the co-efficient of skewness from the given information. 4

$$n = 100, \quad \sum x = 6000, \quad \sum x^2 = 360900, \quad \text{Median} = 60$$

- 7- (a) Construct the cost of living I. No. of 1990 on the basis of 1986 using the family budget method. 4

Expense on	Food	Rent	Clothing	Fuel	Misc.
	35%	15%	20%	10%	20%
Price 1986	150	30	75	25	40
Price 1990	145	30	65	23	45

- (b) A bag contains 5 white and 4 black balls. Two balls are drawn together. Find the probability that 4

i) both are white

ii) both are black

- 8- (a) From the following probability distribution, find mean and variance 4

x	0	1	2	3	4
P(x)	$\frac{1}{16}$	$\frac{4}{16}$	$\frac{6}{16}$	$\frac{4}{16}$	$\frac{1}{16}$

- (b) A continuous random variable "x" has density function as 4

$$f(x) = \begin{cases} 2x & \text{for } 0 \leq x \leq 1 \\ 0 & \text{elsewhere} \end{cases}$$

Find i) $P(x < \frac{1}{4})$ ii) $P(0.25 < x < 0.50)$

- 9- (a) A and B play a game in which A's chances of winning are $\frac{2}{3}$. A series of 5 games is played. Find the probability that 4

i) A will win 3 games

ii) A will win at least 3 games.

- (b) Given that "x" is a hypergeometric random variable with $N = 8$, $n = 3$ and $K = 5$, then find 4

i) $P(x \leq 1)$

ii) $P(x > 1)$