Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two more circles will result in zero mark in that question.

1- 1- The index numbers computed for a group of things are called _____ index numbers.
- (A) simple
- (B) composite
- (C) weighted
- (D) price relative

2- For a set of positive values, which one has the least value?
- (A) A.M.
- (B) G.M.
- (C) M.D.
- (D) H.M.

3- For a normal distribution, $\overline{X} \pm 2S$ include of the observations
- (A) 68.27%
- (B) 88.27%
- (C) 95.45%
- (D) 99.73%

4- For a binomial distribution, the value of p is 0.7 , then distribution will be
- (A) symmetrical
- (B) positively skewed
- (C) negatively skewed
- (D) not sure

5- The total area of the probability function is
- (A) 0
- (B) –1
- (C) 1
- (D) ∞

6- Two cards are drawn from a pack of 52 cards with replacement, then the probability of both aces is
- (A) $\frac{1}{169}$
- (B) $\frac{2}{13}$
- (C) $\frac{3}{26}$
- (D) $\frac{1}{221}$

7- Weight of any object is an example of
- (A) constant
- (B) geographical data
- (C) continuous data
- (D) discrete data

8- The H.M. of 0 , 1 and 2 is
- (A) 0
- (B) 1
- (C) 2
- (D) cannot be found

9- In Histogram, _____ is taken along y-axis.
- (A) class mark
- (B) frequency
- (C) cumulative frequency
- (D) class boundaries

10- In hypergeometric distribution , the successive trials are
- (A) dependent
- (B) independent
- (C) fixed
- (D) disjoint

11- If Var (X) = 1 , Var (Y) = 3 , then S.D. (X – Y) = ?
- (A) 2
- (B) 3
- (C) 4
- (D) –2

12- Var (X – Y) = ?
- (A) Var (X) – Var (Y)
- (B) $\sqrt{Var(X) - Var(Y)}$
- (C) Var (X) + Var (Y)
- (D) $\sqrt{Var(X) + Var(Y)}$

13- In binomial distribution , n = 5 , p = 0.5 then P(x = – 2) = ?
- (A) 1
- (B) 0.5
- (C) 0.8
- (D) zero

14- Mid-point of the class 65 – 84 is
- (A) 54.5
- (B) 64.5
- (C) 74.5
- (D) 84.5

15- A portion of population selected for study is
- (A) parameter
- (B) statistics
- (C) population
- (D) sample

16- The value of (–3)! Will be
- (A) –6
- (B) 6
- (C) 0
- (D) not defined

17- Which is link relative in chain indices?
- (A) $\frac{P_n}{P_{n-1}} \times 100$
- (B) $\frac{P_o}{P_n} \times 100$
- (C) $\frac{P_n}{P_o} \times 100$
- (D) $\frac{P_{n-1}}{P_n} \times 100$

<u>SECTION – I</u>

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 $u = \dfrac{x - 57}{5}$, $\sum u = 23$ 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- $\overline{X} = 200$, C.V = 7 , find Standard Deviation (S.D)

viii- Given $X_m = 15$, $X_0 = 3$, find Range and its co-efficients.

  ix- Differentiate between simple event and compound event.

   x- Define combination.

  xi- Given that $P(A) = 1/3$, $P(B) = 1/2$, $P(\overline{A} \cap B) = 1/2$, find $P(A \cap B)$

 xii- Given that $P(A) = 1/4$, $P(B/A) = 1/2$, $P(A/B) = 1/4$, then find $P(\overline{A}/\overline{B})$

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 , 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 , $p = \dfrac{1}{2}$, 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.

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 $\overline{Y} = 14 - 5\overline{X}$ 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

$n = 100$, $\sum x = 6000$, $\sum x^2 = 360900$, 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) $P\left(x < \frac{1}{4}\right)$ ii) $P(0.25 < x < 0.50)$

9- (a) A and B play a game in which A's chances of winning are 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) $P(x > 1)$