STATISTICS ⎯ 219 -(INTER PART – I) Time Allowed : 20 Minutes

Q.PAPER – I (Objective Type) **PAPER CODE = 6187** Maximum Marks : 17

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1	An expected value of a random variable is equal to its :
	(A) Variance (B) S.D. (C) Co-variance (D) Mean
2	Difference between largest and smallest value is called :
	(A) Standard deviation (B) Mean deviation (C) Quartile deviation (D) Range
3	If a distribution has two modes then it is called :
	(A) Uni-model (B) Bi-model (C) Tri-model (D) None of these
4	In fixed base method, the base period should be :
	(A) 100 (B) Never 100 (C) Changed (D) None of these
5	If $\sqrt{\beta_1} = 0$ then distribution is :
	(A) Skewed (B) Symmetrical (C) – vely skewed (D) None of these
6	The process of systematic arrangement of data into rows and columns is called :
	(A) Classification (B) Stub (C) Box head (D) Tabulation
7	In hypergeometric experiment the successive trials are :
	(A) Independent (B) Dependent (C) Fixed (D) Infinite
8	For certain frequency distribution $\Sigma(X-20)=25$ and $\Sigma(X-18)=0$, then mean is :
	(A) 20 (B) 35 (C) 18 (D) Zero
9	If a coin is tossed four times, the number of total sample points will be :
	(A) 4 (B) 8 (C) 16 (D) 2
10	A constant can assume values :
	(A) Fixed (B) Not fixed (C) Infinity (D) Variable values
11	An index number computed for a single commodity is called :
	(A) Simple index (B) Composite index
	(C) Weighted index (D) Retail price index
12	The difference between the upper and lower class boundary of a class is known as :
	(A) Class frequency (B) Class mark (C) Class limit (D) None of these
13	Random numbers are sequence of digits from the set :
	(A) { 0, 1, 2, -----10 } (B) { 0, 1, 2, ------9 }
	(C) { 1, 2, ----- 10 } (D) { 1, 2, ------9 }
14	A set of all possible outcomes of a random experiment is called :
	(A) Null set (B) Sample points (C) Sample space (D) Simple events
15	In binomial probability distribution $\left(\frac{1}{5}+\frac{4}{5}\right)^5$ parameters are :
	(A) $\left(25,\frac{4}{5}\right)$ (B) $\left(100,\frac{4}{5}\right)$ (C) $\left(5,\frac{4}{5}\right)$ (D) $\left(\frac{1}{5},5\right)$
16	The half of the difference between upper and lower quartile is :
	(A) Mean deviation (B) Quartile deviation
	(C) Inter quartile range (D) Range
17	The sum of square of deviation from mean is :
	(A) Least (B) Infinity (C) Zero (D) None of these

Roll No _____ (To be filled in by the candidate) **(Academic Sessions 2015 – 2017 to 2018 – 2020)**

STATISTICS   219-(INTER PART – I)   Time Allowed : 2.40 hours

PAPER – I (Essay Type)   Maximum Marks : 68

SECTION – I

2. Write short answers to any EIGHT (8) questions :   16

   (i) Describe any two uses of statistics.

   (ii) Distinguish between primary and secondary data.

   (iii) Define harmonic mean.

   (iv) Calculate geometric mean of $X = 1, 1, 27$.

   (v) Define mode and give its formula in case of grouped data.

   (vi) Write down any two demerits of geometric mean.

   (vii) In a moderately skewed distribution, mean = 100, mode = 95 and S.D. = 10. Find coefficient of skewness.

   (viii) Distinguish between simple and composite index numbers.

   (ix) Explain important uses of index numbers.

   (x) Define Paasche's index number.

   (xi) Given $\Sigma P_0 = 660$, $\Sigma P_1 = 924$, $\Sigma P_2 = 1056$, then compute simple aggregative price index numbers.

   (xii) Given $\Sigma P_1 q_0 = 1250$, $\Sigma P_0 q_0 = 1200$, find base-year weighted index number.

3. Write short answers to any EIGHT (8) questions :   16

   (i) Define the term classification.

   (ii) Define histogram.

   (iii) What does kurtosis mean?

   (iv) S.D. of a distribution is 4. Find 2nd moment about mean.

   (v) Define the term symmetry of a distribution.

   (vi) Find variance if $n = 25$, $\Sigma X = 480$ and $\Sigma X^2 = 15735$

   (vii) Define co-efficient of variation.

   (viii) If var $(x) = 10$ and $y = 5x + 20$, then find var (y)

   (ix) Define the term combination.

   (x) Distinguish between simple and compound events.

   (xi) What is the range of probability?

   (xii) Find $P(B/A)$ if $P(A \cap B) = 0.3$ and $P(A) = 0.7$

4. Write short answers to any SIX (6) questions :   12

   (i) Enlist properties of probability mass function.

   (ii) Describe continuous random variable.

   (iii) What are random numbers.

   (iv) Enlist two properties of expectations.

   (v) If $E(X) = 1.4$, then find $E(5x - 4)$

   (vi) What is Bernoulli trial?

   (vii) What are the properties of binomial distribution?

4. (viii) If $\bar{n} = 20$, $P = \dfrac{3}{5}$ then find mean of binomial distribution

   (ix) What is the mean and variance of hypergeometric distribution?

SECTION – II

LHR-11.19

Note : **Attempt any THREE questions.**

5. (a) Find arithmetic mean by short cut method :   4

Classes	86 – 90	91 – 95	96 – 100	101 – 105	106 – 110
Frequency	6	4	10	6	3

   (b) Find upper quartile from the following frequency distribution :   4

Classes	9.3 – 9.7	9.8 – 10.2	10.3 – 10.7	10.8 – 11.2	11.3 – 11.7
f	2	5	12	7	4

6. (a) Calculate Bowley's coefficient of skewness from the given data :   4

Groups	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59
f	14	25	40	32	17

   (b) The following table gives the marks of students :   4

Marks	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59
f	8	87	190	86	20

Calculate standard deviation.

7. (a)

Years	A	B	C	D
1990	30	12	20	11
1991	30.5	15	21	10
1992	32	17	23	15
1993	33	16	27	14

Taking the year 1990 as base year, find simple aggregative index number.   4

   (b) Assume that ' X ' is a number chosen from a set of integers between 1 and 20 inclusive. What is the probability that 'X' is a :
(i) Double digit number   (ii) Multiple of 4   4

8. (a) $f(x) = \dfrac{4-x}{4}$; $1 \le X \le 3$. Is $f(x)$ a probability density function?

   Also find $P(1.5 < X < 2.5)$
               $P(1.5 \le X < 2.5)$
               $P(1.5 < X \le 2.5)$
               $P(1.5 \le X \le 2.5)$ 4

   (b) Find E (X) and V (X) for the following data on discrete random variable X :   4

X	0	1	2
$f(x)$	$\dfrac{1}{4}$	$\dfrac{1}{2}$	$\dfrac{1}{4}$

9. (a) If 20% bolts produced by a machine are defective, determine the probability that out of 4 bolts chosen at random (i) Zero bolt is defective   (ii) 2 bolts are defective   4

   (b) Three balls are drawn from a bag containing 5 white and 3 black balls. If X denotes the number of white balls, then find the probability distribution of X?   4