

1123 Warning:- Please write your Roll No. in the space provided and sign. Roll No-----

Statistics (Objective)

(Session 2019-21 to 2022-24)

Sig. of Student -----

(Inter Part – I)

SGD-11-23

Paper (I)

Time Allowed:- 20 minutes

PAPER CODE 2181

Maximum Marks:- 17

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 or more circles will result in zero mark in that question. Write PAPER CODE, which is printed on this question paper, on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q. 1

- 1) A constant can assume  
(A) One value (B) Different values (C) More than one values (D) None of all
- 2) Row caption is called  
(A) Title (B) Body (C) Box head (D) Stub
- 3) The Model Letter(s) of the word STATISTICS.  
(A) S (B) T (C) S & T (D) None of all
- 4) If a distribution has  $\bar{X} = \tilde{X} = \hat{X}$ , then it is called.  
(A) +vely skewed (B) -vely skewed (C) Symmetrical (D) None of all
- 5) Median divides the ordered data into -----equal parts.  
(A) 2 (B) 3 (C) 4 (D) 5
- 6) The first moment about mean is  
(A) One (B) Variance (C) S.D (D) Zero
- 7) The degree of Peakedness is called  
(A) Dispersion (B) Skewness (C) Kurtosis (D) Symmetry
- 8)  $\frac{Q_3 - Q_1}{2}$  is called.  
(A) Interquartile range (B) Semi Interquartile Range (C) Variance (D) S.D
- 9) The Index  $\frac{\sum p_n q_o}{\sum p_o q_o} \times 100$  is  
(A) Laspeyre's Index No (B) Paasche's Index No (C) Fisher Index No (D) Value Index
- 10) Fisher Index No is----- of Laspeyre's and Paasche's Index Nos.  
(A) A.M (B) GM (C) Median (D) Mode
- 11) If  $A \cap B = \phi$ , then A & B events are called  
(A) Equally likely (B) Exhaustive (C) Mutually Exclusive (D) None of all
- 12) The probability of an event cannot be  
(A) = 0 (B) < 0 (C) > 0 (D) = 1
- 13) Expected value of a constant is always  
(A) Zero (B) One (C) Two (D) Constant itself
- 14) A r.v. that can assume its value only in whole numbers is called.  
(A) Continuous Variable (B) Discrete Variable (C) Qualitative Variable (D) None of these
- 15) Probability of success remains constant in  
(A) Binomial distribution (B) Poisson distribution (C) Hypergeometric distribution (D) None of these
- 16) Hypergeometric distribution deals with.  
(A) Independent trials (B) Dependent trials (C) Both a and b (D) None of all
- 17) Variance of Binomial distribution is  
(A) np (B)  $\sqrt{npq}$  (C) npq (D) npk

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Statistics (Subjective) (Session 2019-21 to 2022-24) Paper (I)

Time Allowed: 2.40 hours

(Inter Part - I) Maximum Marks: 68

Section ----- I

2. Answer briefly any Eight parts from the followings:-

8 × 2 = 16

- (i) Define Statistics in Plural Sense.
- (ii) What is Primary data?
- (iii) Write down Some advantages of median.
- (iv) Give three dis-advantages of H.M
- (v) Define Median.
- (vi) Find Mode of 3, 3, 7, 8, 10, 11, 10, 12, 3
- (vii) Define Harmonic Mean.
- (viii) Define Weighted mean.
- (ix) If Laspeyre's I.No=105.4 and Paache's I.No =103.2 Find Fisher's I.No.
- (x) What is Composite index number?
- (xi) Given:  $\sum p_1 q_0 = 900$  and  $\sum p_0 q_0 = 897$ . Find Cost of Living Index No.
- (xii) Define Paache's Index.

3. Answer briefly any Eight parts from the followings:-

8 × 2 = 16

- (i) What is an "Ogive"?
- (ii) What does "Data" means?
- (iii) Define variance.
- (iv) Define Range.
- (v) Define Skewness.
- (vi) Define Kurtosis.
- (vii) The first two moments about the value 2 are 1 and 16. Compute Mean and Variance.
- (viii) Define compound events.
- (ix) What is the Mathematical definition of probability?
- (x) Define an impossible event. Also give an example.
- (xi) Define Sure event. Also give an example.
- (xii) If  $P(A)=0.35$ . What will be the value of  $P(\bar{A})$ ?

4. Answer briefly any Six parts from the followings:-

6 × 2 = 12

- (i) Define probability mass function.
- (ii) What are properties of probability distribution?
- (iii) check whether  $f(y) = \frac{1}{y}$  for  $y = 1, 2, 3, 4$  is a probability function?
- (iv) Given that  $E(X^2)=400$ ,  $\text{Var}(X)=144$ , find  $E(X)$ .
- (v) Define hyper-geometric probability distribution.
- (vi) Write properties of binomial experiment.
- (vii) Is it possible to have binomial distribution with mean = 5 and S.D = 4.
- (viii) In a hyper-geometric distribution mean=1.8182,  $N=11$ ,  $n=5$ , then find K.
- (ix) If  $n=6$  and  $P=\frac{1}{5}$  in a binomial distribution find  $P(X=1)$

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Section ----- II

Note: Attempt any three questions.

(8 × 3 = 24)

5 (a) Find the A.M from the following data.

$u = \frac{x - 30}{5}$	-2	-1	0	1	2	3
f	5	8	15	20	12	04

(b) Find the value of upper Quartile  $Q_3$

Groups	0 - 4.9	5 - 9.9	10 - 14.9	15 - 19.9
f	3	4	9	4

6 (a) Find Mean deviation from mean for the following data.

C.I	86 - 90	91 - 95	96 - 100	101 - 105	106 - 110
f	6	4	10	3	1

(b) Calculate variance and standard deviation for the following data: 3, 6, 2, 1, 7 and 5.

7 (a) A household budget inquiry of middle class people in a town gave the following information.

Items	Food	Rent	Clothing	Fuel	Misc.
Expense	35%	15%	20%	10%	20%
Price (2003)	150	30	75	25	40
Price (2005)	145	30	65	23	45

Calculate CPI for the year 2005 with 2003 as base year.

(b) Three missiles are fired at a target. If probability of hitting is 0.4, 0.5 and 0.6 respectively. Assuming missiles are fired independently. What is the probability that:

(i) All hit the target (ii) None hit the target.

8 (a) Let X be a random variable with probability distribution as follows:

X	1	2	3	4	5
f(X)	0.125	0.350	0.300	0.125	0.100

Show that  $E(3X - 2) = 3E(X) - 2$

(b) A continuous random variable X has a density function.

$$f(X) = CX \quad \text{for } 0 < X < 2$$

$$= 0 \quad \text{elsewhere}$$

Determine (i) C

(ii)  $P(0.5 < X < 1.5)$

9(a) The probability that a patient recovers from a heart operation is 0.9. If 5 patients have heart operation.

Find the probability that (i) 3 will recover. (ii) None will recover.

(b) A machine produced 7 good and 3 defective items. Two items are selected at random without replacement. If X denote the number of defective items, then find.

(i)  $P(X = 2)$  (ii)  $P(X < 2)$