Roll No _____ (To be filled in by the candidate) **(Academic Sessions 2017 – 2019 to 2020 – 2022)**

STATISTICS 221 -(INTER PART – I) Time Allowed : 20 Minutes

Q.PAPER – I (Objective Type) **PAPER CODE = 6183** 4HR-21 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	Upper quartile Q_3 is equal to :			
	(A) $\frac{Q_1+Q_2}{2}$	(B) Q_2-Q_1	(C) P_{75}	(D) D_7
2	In weighted price index numbers, the weights are :			
	(A) Values	(B) Prices	(C) Quantities	(D) Quantity relatives
3	If E(x) = 5, E (y)= 3, then E (x + y) = :			
	(A) 2	(B) 3	(C) 5	(D) 8
4	Hyper geometric distribution has parameters :			
	(A) p, q	(B) n, N, k	(C) n, p	(D) n, k
5	Primary data are same as :			
	(A) Arrayed data	(B) Secondary data	(C) Raw data	(D) Grouped data
6	The probability of a sure event is :			
	(A) 1.2	(B) – 1	(C) 0	(D) 1
7	Sum of the deviations from mean is :			
	(A) – 1	(B) 0	(C) 1	(D) 2
8	An orderly arrangement of objects is called :			
	(A) Combination	(B) Permutation	(C) Union	(D) Intersection
9	Binomial random variable can assume values :			
	(A) 1, 2, ------	(B) 0, 1, 2, ------	(C) 1, 2, ------, n	(D) 0, 1, 2, -----, n
10	Standard deviation is independent of :			
	(A) Origin and scale	(B) Origin	(C) Scale	(D) Data
11	A graph of a frequency distribution is :			
	(A) Bar diagram	(B) Pie chart	(C) Historigram	(D) Histogram
12	If var (x) = 9, then S.D ($2x$ + 4) is :			
	(A) 6	(B) 12	(C) 10	(D) 20
13	Measure of dispersion can never be :			
	(A) 0	(B) 1	(C) Greater than zero	(D) Less than zero
14	Base year weighted index numbers are :			
	(A) Laspeyre's	(B) Paasche's	(C) Fisher's	(D) Marshall's
15	Mean of a constant ' K ' is :			
	(A) K	(B) K + 2	(C) K – 2	(D) K + 3
16	If 'c' is a constant then E (c) = :			
	(A) E (x + c)	(B) E (x)	(C) c	(D) E (x – c)
17	Nature of binomial variable is :			
	(A) Continuous	(B) Discrete	(C) Qualitative	(D) Dependent

Roll No _____ (To be filled in by the candidate) **(Academic Sessions 2017 – 2019 to 2020 – 2022)**

STATISTICS 221-(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) Define population.

(ii) Define secondary data.

(iii) What is an average?

(iv) Define geometric mean.

(v) Define the empirical relation between mean, median and mode.

(vi) Compute the median for the data $-2, 5, 0, -1, 4, 2$

(vii) $n = 15$, $\Sigma(X - 20) = 45$, find arithmetic mean.

(viii) Define quartiles.

(ix) Define an index number.

(x) Define link relatives.

(xi) Given that $\Sigma p_0 q_0 = 352$, $\Sigma p_1 q_0 = 422$, $\Sigma p_0 q_1 = 402$, $\Sigma p_1 q_1 = 481$, then find Fisher Ideal Index number.

(xii) What are weighted index numbers?

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

(i) Define tabulation.

(ii) Define class interval.

(iii) What is meant by relative dispersion?

(iv) Define quartile deviation.

(v) If var $(x) = 2$ then find var $(3x + 5)$

(vi) Define coefficient of variation.

(vii) If $Q_1 = 15$ and $Q_3 = 25$, find coefficient of quartile deviation.

(viii) Define skewness.

(ix) Define combination.

(x) Define compound event.

(xi) Write any two properties of a random experiment.

(xii) What is meant by mutually exclusive events?

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

(i) Define continuous random variable.

(ii) Given X = 0, 1, 2 , P (x) = 4c, 3c, 5c, find the value of 'c'

(iii) Write down two properties of expectation.

(iv) If E (X)= 3 and E (X^2) = 12 , then find variance of ' X '

(v) Define binomial experiment.

(vi) A random variable 'X' is binomially distributed when n = 15 and p = 0.4. Find mean and variance of 'X'.

(vii) Write hypergeometric probability function.

(Turn Over)

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4. (viii) Write any two properties of hypergeometric experiment.

(ix) If n = 20 , $p = \frac{3}{5}$ then find variance of binomial distribution.

SECTION – II

Note : Attempt any THREE questions.

5. (a) Find geometric mean of the following values of the variable ' X ' : 4
32, 35, 37, 53, 48, 71, 64, 78, 81, 84

(b) Find arithmetic mean for the following distribution : 4

Classes	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80	80 – 90
Frequency	14	20	32	7	3	2

6. (a) Given the following frequency distribution, compute the standard deviation. 4

y	0	1	2	3	4
f	17	9	6	5	3

(b) The mean of 200 items is 50 and the standard deviation is 4. Find the sum of squares (ΣX^2) of all these items. 4

7. (a) Calculate unweighted price index for 1994 when the procurement / support prices of agricultural commodities in rupees per 40 kg in 1980 and 1994 are given as following : 4

Commodities	Prices	
	1980	1994
Wheat	58	160
Rice	118	360
Potatoes	27	19
Onion	80	84

(b) A pair of dice is rolled. Find the probability of getting a total of either 5 or 11. 4

8. (a) For the probability distribution of X given below, find that : (i) E(X) (ii) $E(X^2)$ 4

X	0	1	2	3
$P(x)$	$3/10$	$4/10$	$2/10$	$1/10$

(b) The number of automobile accidents in a city are 1, 2, 3, 4 with corresponding probabilities $1/8$, $2/8$, $2/8$ and $3/8$. What is the expected number of accidents daily. 4

9. (a) An event has $P = 3/8$, find the complete binomial distribution for n = 5 trials. 4

(b) A committee of size 5 is to be selected from 3 women and 5 men, find the expected number of women on the committee. 4