

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

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 $\text{var}(x) = 9$, 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

SECTION – I **ZUR 21**

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 $\text{var}(x) = 2$ then find $\text{var}(3x + 5)$
- (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)

(2)

LMR-21

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)	$\frac{3}{10}$	$\frac{4}{10}$	$\frac{2}{10}$	$\frac{1}{10}$

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

9. (a) An event has $P = \frac{3}{8}$, 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