Roll No. : _____

Objective
Paper Code
6185

Intermediate Part First
STATISTICS (Objective)
Time: 20 Minutes   Marks: 17

Q.No.1 You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.

FSD-24

S.#	Questions	A	B	C	D
1	When the price of a year is divided by the price of the preceding year, we get:	Value index	Link relative	Simple relative	Quantity index
2	The range of the values 6, 8, 10, –5, –10 is:	20	10	0	– 10
3	In a symmetrical distribution, $Q_3 - Q_1 = 20$, median = 15. Q_3 is equal to:	10	15	20	25
4	If $\bar{X} = 33$, which will be minimum?	$\sum X^2$	$\sum (X-66)^2$	$\sum (X-33)^2$	$\sum (X+33)^2$
5	A distribution with two modes is called:	Unimodal	Bimodal	Multimodal	Normal
6	A frequency polygon is a closed figure which is:	One sided	Two sided	Three sided	Many sided
7	The headings of the rows of a table are called:	Captions	Titles	Stubs	Prefactory notes
8	A measure computed on the basis of a census is called:	Parameter	Statistic	Constant	Class mark
9	A set of all units of interest in a study is called:	Sample	Population	Parameter	Statistic
10	The mean of the hypergeometric distribution is:	$\dfrac{nk}{N}$	$\dfrac{Nk}{n}$	$\dfrac{Nn}{k}$	$\dfrac{n+k}{N}$
11	In binomial experiment, the successive trials are:	Variable	Dependent	Independent	Without replacement
12	The binomial probability distribution is symmetrical when:	P = 0.1	P = q	P < q	P > q
13	If k is a constant in a continuous probability distribution, then P (X = k) is always equal to:	0	1	– 1	k
14	An expected value of a random variable is equal to its:	Variance	Standard deviation	Mode	Mean
15	A fair die is rolled. Probability of getting face more than 4 is:	$\dfrac{1}{2}$	$\dfrac{2}{3}$	$\dfrac{1}{3}$	$\dfrac{5}{6}$
16	For every event A, probability of A is:	≤ 0	≥ 0	> 1	< 0
17	Base year quantities are used, as weights, in:	Laspeyre's method	Paasche's method	Fisher's method	Chain base method

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SECTION – I

2. Write short answers of any EIGHT parts.   16

  (i)   Explain the concept of cost of living index number.

  (ii)   What is Laspeyre's price index number. Write its formula.

  (iii)   Given $\sum P_0 q_n = 950$ and $\sum P_n q_n = 1310$ find Paasche's price index number.

  (iv)   Define harmonic mean and write its formula for grouped data.

  (v)   If mean = 5, median = 6, find mode.

  (vi)   Describe two uses of index number.

  (vii)   Describe two demerits of geometric mean.

  (viii)   Given $\sum (x - 10) = 0$, n = 5 find mean.

  (ix)   What is difference between simple arithmetic mean and weighted mean?

  (x)   What is meant by secondary data? Write sources of secondary data.

  (xi)   Narrate differences between descriptive and inferential statistics.

  (xii)   Define discrete variable with an example.

3. Write short answers of any EIGHT parts.   16

  (i)   Write a note on two way classification.

  (ii)   Differentiate between ungrouped and grouped data.

  (iii)   Describe the main parts of a table.

  (iv)   What are the raw moments?

  (v)   Find the range of: – 1, – 4, 0, 7, 4

  (vi)   Compute the value of σ_y if $Y = 3X + 10$ and $V(X) = 2$

  (vii)   Define the mesokurtic distribution.

  (viii)   Give any two properties of the mean deviation.

  (ix)   Verify that: $^{10}C_4 = {}^{10}C_6$

  (x)   State the addition law of probability.

  (xi)   Differentiate between mutually and not mutually exclusive events.

  (xii)   Find $P(\frac{B}{A})$ so that $P(A \cap B) = 0.25$ and $P(A) = 0.75$.

4. Write short answers of any SIX parts.   12

  (i)   What is difference between discrete and continuous random variables?

  (ii)   Define probability density function and write its properties.

  (iii)   If $E(X) = 3$ and Variance $(X) = 1.2$ find $E(2X – 1)$ and $Var(2X – 1)$.

  (iv)   For a binomial distribution n = 10 and p = 0.7. Find $P(X = 7)$

  (v)   Given $f(x) = \frac{k}{x}$ for x = 1, 2, 3. Find k.

  (vi)   Explain what is meant by Bernoulli trials.

  (vii)   Explain and write the formula for hypergeometric distribution.

  (viii)   Find $P(X = 0)$ for hypergeometric distribution with n = 4, N = 10 and K = 3.

  (ix)   Point out the fallacy if any if mean of a binomial distribution is 5 and its standard deviation is 3.

SECTION – II   Attempt any THREE questions. Each question carries 08 marks.

5. (a) Find arithmetic mean for the given data: 04

Marks	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34
f	8	10	15	7	4

  (b) Find geometric mean from the following frequency distribution: 04

X	2	3	4	5	6
f	5	7	8	3	2

6. (a) Calculate variance for the marks of 100 students given in the following frequency distribution: 04

Marks	1 – 3	3 – 5	5 – 7	7 – 9
f	40	30	20	10

(b) First three moments of distribution about Y = 2 are 1, 2.5 and 5.5. Calculate mean and co-efficient of variation.   04

7. (a) Compute index number of prices for the following data taking 2000 as base year using median as an average: 04

Years	Prices		
	A	B	C
2000	18	85	52
2001	22	76	60
2002	28	80	66
2003	31	95	80

(b) If P(A) = 0.60 , P(B) = 0.08 and P(A ∩ B) = 0.01, calculate P(A ∪ B), if: 04

   (i) A and B are not mutually exclusive (ii) A and B are mutually exclusive

8. (a) Let X be random variable with probability distribution as follows: 04

x	1	2	3	4	5
f(x)	0.125	0.450	0.250	0.050	0.125

Find mean and variance.

(b) A continuous random variable X having values only between 0 and 4 has a density function given by:

$f(x) = \frac{1}{2} - ax$, where "a" is any constant: Find (i) a   (ii) P(1 < X < 2)   04

9. (a) An event has the probability $P = \frac{2}{5}$. Find the complete binomial distribution for n = 5 trials.   04

(b) An urn contains nine balls. Five of them are red and four blue. Three balls are drawn without replacement. Find the probability distribution for number of red balls.   04