Roll No. : _____

Objective
Paper Code
6181

Intermediate Part First (New Scheme)
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.

S.#	Questions	A	B	C	D
1	Height of a plant is _____ variable.	Qualitative	Discrete	Continuous	Attribute
2	In histogram, along x-axis we take:	Mid points	Frequency	Cumulative frequency	Class boundaries
3	Part of the table containing row captions are called:	Stub	Box heads	Body	Foot notes
4	$\sum(y-\overline{y})^2 =$	Least	Maximum	0	1
5	For averaging percentages, the useful average is:	Arithmetic mean	Median	Mode	Geometric mean
6	For positively skewed distribution:	Mean > median	Mean < median	Mean < mode	Median < mode
7	Moment ratio b_2 is defined as:	$\dfrac{m_3^2}{m_2^3}$	$\dfrac{m_3}{\sqrt{m_2^3}}$	$\dfrac{m_4}{m_2^2}$	$\dfrac{m_2^2}{m_4}$
8	Var (ay) =	a Var (y)	a^2 Var (y)	|a| Var (y)	$\dfrac{1}{a}$ Var (y)
9	Second moment about mean is:	0	Mean	Variance	SD
10	In price relatives, the given year price is divided by the price of:	First year	Last year	Preceding year	Base year
11	Fisher's index number is _____ of the Laspeyer's and Paasche's index number.	AM	GM	HM	Median
12	If A and B are independent events then $P(A \cap B) =$:	0	1	P(A)P(B)	P(A) P(B/A)
13	If a coin is tossed four times, the number of total sample points will be:	4	8	16	2
14	If d and b are constant and y is a random variable, then E(by + d) = :	b E (y) + d	b E (y)	E (y) + d	E (y)
15	If x is a random variable then Var(x) = :	$E[x - E(x)]$	$E[x^2 - E(x)]$	$E[x - E(x)]^2$	$E[x^2 - (E(x))^2]$
16	Parameters of binomial distribution are:	n and q	n and p	p and q	n, p and q
17	Variance of hyper-geometric distribution is:	$\dfrac{nN}{k}$	$\dfrac{Nk}{n} \cdot \dfrac{N-1}{N-n}$	$\dfrac{N}{nk} \cdot \dfrac{N-n}{N-1}$	$\left(\dfrac{nk}{N}\right)\left(\dfrac{N-k}{N}\right)\left(\dfrac{N-n}{N-1}\right)$

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SECTION – I

2. Write short answers of any EIGHT parts.   16
   (i)   Define the term population.
   (ii)   Enlist three main methods of collection of primary data.
   (iii) Define geometric mean.
   (iv)   What are two merits of arithmetic mean?
   (v)   Write the empirical relationship between mean, median and mode.
   (vi)   Given $\bar{x}_1 = 4$, $\bar{x}_2 = 5$ and $\bar{x}_3 = 7$ and each mean is based on six values. Compute combined mean.
   (vii) If $x_1 = 2$ and $x_2 = 8$, then show that A.M. > G.M. > H.M.
   (viii) Define price index number.
   (ix)   What are two important uses of index numbers.
   (x)   Explain chain base method.
   (xi)   Given $\sum p_0 q_n = 950$ and $\sum p_n q_n = 1310$. Find current year weighted index number.
   (xii) Given $\sum p_0 = 660$, $\sum p_1 = 924$ and $\sum p_2 = 1056$. Compute simple aggregative index numbers.

3. Write short answers of any EIGHT parts.   16
   (i)   What is frequency polygon?
   (ii)   Differentiate between class mark and class width.
   (iii) Define quartile deviation.
   (iv)   Differentiate between absolute and relative measures of dispersion.
   (v)   If $n = 10$, $\sum x = 40$ and $S = 2$ then find coefficient of variation.
   (vi)   Define kurtosis.
   (vii) If $Q_1 = 10$, $Q_2 = 20$ and $Q_3 = 30$, find coefficient of skewness.
   (viii) Define independent and dependent events.
   (ix)   What is conditional probability.
   (x)   State addition law of probability for non-mutually exclusive events.
   (xi)   What is meant by sample space?
   (xii) Differentiate between simple and compound events.

4. Write short answers of any SIX parts.   12
   (i)   Define a continuous random variable.
   (ii)   What are the expectation and standard deviation of a constant?
   (iii) Given $x = 0$, 1 , 2 and $P(x) = \dfrac{5}{8}, \dfrac{4}{8}, \dfrac{1}{8}$. Is this a probability function?
   (iv)   Find the mean for the given discrete distribution, $f(x) = \dfrac{1}{3}$ and $\dfrac{2}{3}$ with $x = 5$ and 6.
   (v)   A continuous random variable x has a density function $f(x) = \dfrac{cx}{4}$ for $1 \leq x \leq 4$. Find the value of c.
   (vi)   Write the properties of binomial experiment.
   (vii) For a binomial distribution with $n = 10$ and $p = 0.5$. Find the probability of 5 successes.
   (viii) Write the parameters of hypergeometric distribution.
   (ix)   Given $N = 10$, $n = 4$ and $k = 3$. Find $P(x = 1)$.

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

5. (a) Find the mean from the following distribution: 04

Classes	0 – 10	10 – 40	40 – 90	90 – 100	100 - 105	105 – 120	120 – 140
Frequency	40	110	150	200	120	30	20

   (b) Find the geometric mean of 50, 67, 39, 40, 36. Also find hormonic mean of these numbers.   04

6. (a) The following table given the marks of students:

Marks	30 – 39	40 – 49	50 – 59	60 – 69	70 – 79
Frequency	4	40	90	38	10

Calculate quartile deviation and coefficient of quartile deviation.

04

(b) For the following frequency distribution, calculate coefficient of variation:

D	– 6	– 3	0	3	6
Frequency	5	18	42	27	8

Where D = x – 67.

04

7. (a) Compute chain indices using median as an average:

Years	Commodities		
	A	B	C
2008	118	190	150
2009	122	172	160
2010	130	180	170
2011	135	135	180

04

(b) A digit is selected at random from the first ten natural numbers. Find the probability that the selected digit is (i) an odd (ii) less than 5.

04

8. (a) Determine the constant K in the probability function:

f(x) = K (x – 2)   x = 3, 4, 5, 6   Find (i) the value of K   (ii) E(x)

04

(b) A continuous random variable 'X' has a probability density function, f(x) = 2x when $0 \le X \le 1$

find (i) $P\left(X \le \frac{1}{2}\right)$ (ii) $P\left(\frac{1}{4} \le X \le \frac{1}{2}\right)$

04

9. (a) In binomial distribution with n = 6, what is value of other parameter of the binomial distribution if P (X = 0) = P (X = 1). Also find mean of the distribution.

04

(b) Determine the probability distribution for the number of white beads among 5 beads drawn at random from a box containing 5 white and 8 black beads.

04