STATISTICS PAPER-I (NEW SCHEME)
TIME ALLOWED: 20 Minutes — **OBJECTIVE** 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 bubble in front of that question number. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve questions on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) Methods of organizing, summarizing and presenting data in an informative way is called:

(A) Descriptive Statistics (B) Inferential Statistics (C) Applied Statistics (D) All these

(2) Frequency distribution is often constructed with the help of:

(A) Entry table (B) Tally sheet (C) Both A and B (D) Neither A nor B

(3) A pie diagram is represented by a:

(A) Rectangle (B) Circle (C) Triangle (D) Square

(4) The sample mean $\bar{X}$ is calculated by the formula:

(A) $\frac{\sum f x}{\sum f}$ (B) $A + \frac{\sum f D}{\sum f}$ (C) $A + \frac{\sum f U}{\sum f} \times h$ (D) All these

(5) Which of the following statements is always correct for symmetric distribution?

(A) Mean = Median = Mode (B) Arithmetic mean = Geometric mean = Harmonic mean
(C) Median = Q_2 = D_4 = P_{30} (D) Mode = 2 Median – 3 Mean

(6) The averages are effected by change of:

(A) Origin (B) Scale (C) Both A and B (D) None of these

(7) Given $X_1 = 20$ and $X_2 = -20$ the arithmetic mean will be:

(A) Zero (B) Infinity (C) Impossible (D) Difficult to tell

(8) If $Y = ax \pm b$, where a and b are any two numbers but $a \neq 0$, then $M.D(Y)$ is equal to:

(A) $M.D(X)$ (B) $M.D(X) \pm b$ (C) $|a| M.D(X)$ (D) $M.D(Y) + M.D(X)$

(9) If the maximum value in a series is 25 and its range is 15, the minimum value of the series is:

(A) 10 (B) 15 (C) 25 (D) 35

(10) In chain base method, base period is:

(A) Fixed (B) Not fixed (C) Constant (D) Zero

(11) Consumer price index are obtained by: (A) Paasche's formula

(B) Fisher's ideal formula (C) Marshall Edge Worth formula (D) Family budget method formula

(12) Two coins are tossed. Probability of getting head on the first coin is:

(A) $\frac{2}{4}$ (B) 1 (C) Zero (D) 4

(13) Given of $P(\bar{A} \cap \bar{B}) = \frac{3}{10}$ then $P(A \cup B)$ is: (A) $\frac{7}{10}$ (B) $\frac{1}{10}$ (C) $\frac{3}{10}$ (D) 1

(14) $E[X - E(X)]^2$ is: (A) $E(X)$ (B) $E(X^2)$ (C) $Var(X)$ (D) $S.D(X)$

(15) A variable which can assume finite or countably infinite number of values, is known as:

(A) Continuous Variable (B) Discrete Variable (C) Qualitative Variable (D) None of these

(16) In a binomial experiment the successive trials are:

(A) Dependent (B) Independent (C) Mutually exclusive (D) Fixed

(17) In a Hypergeometric distribution $N = 6$, $n = 4$ and $K = 3$ then the mean is equal to:

(A) 2 (B) 4 (C) 6 (D) 24

NOTE: - Write same question number and its part number on answer book,
as given in the question paper.

SECTION-I

2.   **Attempt any eight parts.** $8 \times 2 = 16$

(i)   What are the difference between Parameter and Statistic?

(ii)   Define Discrete and Continuous Variable.

(iii)   Define Average.

(iv)   What is the difference between Simple Arithmetic mean and Weighted mean?

(v)   Find mode of the letter STATISTICS.

(vi)   Write down two merits and two de-merits of Harmonic Mean.

(vii)   For $n = 2$ if H.M = 10, G.M = 12 find A.M.

(viii)   What is Composite Index Number?

(ix)   Define Fisher's Ideal Index Number.

(x)   What are the purpose of Index Number.

(xi)   Define Simple Index Number.

(xii)   If $\sum p_0 q_1 = 850$ and $\sum p_1 q_1 = 1210$. Find current year weighted index.

3.   **Attempt any eight parts.** $8 \times 2 = 16$

(i)   Define Relative Frequency.

(ii)   Define Histogram.

(iii)   Explain the meaning of term "dispersion".

(iv)   Enlist various relative measures of dispersion.

(v)   Define Moments Ratios.

(vi)   Given $Var(X) = 25$, find $Var(2X + 4)$.

(vii)   Can mean, median and mode be same, if yes, state in what situation?

(viii)   If first three moments about $X = 20$ of a distribution are: 1, 4, 10, then find the value of $"b_1"$.

(ix)   Explain the term "Random experiment" with an example.

(x)   Explain the concept of equally likely events with an example.

(xi)   Define Conditional Probability.

(xii)   If $P(A) = \frac{1}{3}$, $P(B) = \frac{1}{4}$ and $P(A/B) = \frac{1}{6}$, then find $P(B/A)$

4.   **Attempt any six parts.** $6 \times 2 = 12$

(i)   Write down two properties of Probability Mass Function.

(ii)   What does p.d.f. stands for?

(iii)   Given $X = 2, 4, 6$ and $P(X) = \frac{2}{6}, \frac{2}{6}, \frac{2}{6}$ find $E(X^2)$

(iv)   Define Expectation.

(v)   Explain Discrete Probability Distribution

(vi)   Write down two properties of Hypergeometric Experiment.

(vii)   Write down the formula of Hypergeometric Distribution.

(viii)   What will be the mean and variance of binomial distribution if $n = 6$ and $p = 0.6$?

(ix)   Explain Binomial Random Experiment.

P.T.O

SECTION-II

NOTE: - Attempt any three questions.

5.(a) Reciprocals of X values are given below: 4
0.0267, 0.0235, 0.0211, 0.0191, 0.0174 Calculate Harmonic Mean of values.

  (b) Find Geometric Mean of 50, 67, 39, 40, 36, 60, 54.   4

6.(a) Calculate mean deviation.   4

y_i	22	27	32	37	42	47
f	1	4	8	15	9	2

  (b) For a group of 50 boys, mean score and standard deviation on a test are 59.5 and 8.38 respectively, for a group of 40 girls, the mean and standard deviation are 54.0 and 8.23 respectively on the same test. Find standard deviation for combined group of 90 students.   4

7.(a) An inquiry into the budgets of the middle class families in England gave the following information. What changes in cost of living figures of 1929 show as compared to 1928?   4

Expenses on	Food 35 %	Rent 15 %	Clothing 20 %	Fuel 10 %	Misc. 20 %
Price (1928)	150	30	75	25	40
Price (1929)	145	30	65	23	45

  (b) In rolling two dice once, what is the probability that "sum of dots is either 9 or 11?   4

8.(a) A continuous random variable 'X' has probability density function: $f(x) = cx$; $0 < x < 2$
    Determine (i) c,   (ii) $P(x < 1.5)$ 4

  (b) Let 'X' be a random variable with probability distribution as: 4

x	0	1	2	3	4
$f(x)$	0.125	0.45	0.25	0.05	0.125

  Find its mean and variance.

9.(a) Find mean and variance of binomial probability distribution if $n = 2$ and $q = \dfrac{1}{3}$ after making complete binomial probability distribution.   4

  (b) Find mean of hypergeometric random variable if $n = 6$, $k = 4$ and $N = 10$ after making complete probability distribution of it.   4