Paper Code Number: 2183	2023 (1st-A) INTERMEDIATE PART-I (11th Class)	Roll No: _____
STATISTICS PAPER-I	MTN-11-23	
TIME ALLOWED: 20 Minutes	OBJECTIVE	MAXIMUM 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 that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.**

S.#	QUESTIONS	A	B	C	D
1	In binomial distribution $n = 16$ and $p = \frac{1}{2}$, then variance will be:	2	4	5	6
2	The hypergeometric experiment has properties:	One	Two	Three	Four
3	In plural sense, statistics mean:	Methods	Sample values	Numerical data	Average values
4	A pie chart is represented by:	Square	Circle	Triangle	Rectangle
5	The G.M. of 1, 3, and 27 is:	10	27	10.3	3
6	If $\bar{X} = 10$ and $Y = 2X + 7$, then $\bar{Y} = ?$	27	37	20	17
7	For a set of 20 values, $\Sigma(X - \bar{X})^2 = 780$, then S.D. will be:	49	7	14	98
8	$Var(aX + b)$ equals to:	$Var(X) + b$	$a\,Var(X) + b$	$a^2\ Var(X)$	$Var(X)$
9	The median of data $-2, 0, 2, 5, -1$ is:	-2	2	5	0
10	For a normal distribution, $\bar{X} \pm 3S$ include of the observations:	99.73%	95.45%	88.27%	68.27%
11	Simple aggregate index number is given by:	$\frac{\Sigma P_0}{\Sigma P_n} \times 100$	$\frac{P_n}{P_0} \times 100$	$\frac{\Sigma P_n}{\Sigma P_0} \times 100$	$\frac{P_0}{P_n} \times 100$
12	Simple index number involves commodity:	Four	Two	Three	One
13	The probability of a black queen from a pack of 52 playing cards is:	$\frac{4}{52}$	$\frac{2}{52}$	$\frac{1}{52}$	$\frac{3}{52}$
14	If $P(A) = 0.4$, $P(B) = 0.5$, $P(A \cap B) = 0.2$ then $P(A \cup B) = ?$	0.7	0.8	0.6	0.5
15	For a discrete random variable X, $\Sigma P(x)$ is always equal to:	0	1	2	3
16	If $Var(X) = 10$ and $Var(Y) = 20$, then $Var(X - Y) = ?$	-10	20	10	30
17	The hypergeometric distribution has parameters:	One	Two	Three	Four

INTERMEDIATE PART-I (11th Class)	2023 (1st-A)	Roll No: 637900

STATISTICS PAPER-I

TIME ALLOWED: 2.40 Hours	SUBJECTIVE	MAXIMUM MARKS: 68

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

SECTION-I MTN-11-23

2. Attempt any eight parts. **8 × 2 = 16**

(i)	Distinguish between the terms population and sample.	(ii)	Narrate any two sources of collecting primary data.
(iii)	Explain the term weighted mean with formula.	(iv)	Write down the names of any four positional averages.
(v)	Describe the empirical relation between mean, median and mode, for moderately skewed distribution.		
(vi)	Given that $X_1 = 3$ and $X_2 = 27$. Show that G.M > H.M.		
(vii)	Find the modal letter of the word "PAKISTAN".		
(viii)	Given that $U = \frac{X-98}{5}$, $\Sigma fU = -30$ and $\Sigma f = 30$. Find $\bar{X}$.		
(ix)	Explain the concept of unweighted index number.		
(x)	Define Laspeyre's price index number with formula.		
(xi)	Given that $\Sigma p_1q_1 = 1400$, $\Sigma p_2q_2 = 1600$, $\Sigma p_0q_1 = 1360$ and Σp_0q_2. Compute Paasche's price index numbers.		
(xii)	If link relatives are 100, 102, 113 and 118. Find chain indices.		

3. Attempt any eight parts. **8 × 2 = 16**

(i)	What is main idea of classification?	(ii)	Distinguish between class limits and class boundaries.
(iii)	Enlist the types of dispersion.	(iv)	Outline any two properties of S.D.
(v)	How would you explain the concept of Kurtosis if $b_2 > 3$, $b_2 = 3$ and $b_2 < 3$?		
(vi)	Find b_1, if $m_2 = 5.2$ and $m_3 = -0.8$	(vii)	The first two moments about 4 are 1 and 16. Find variance.
(viii)	Is variance affected by change of origin and scale?		
(ix)	Describe the main idea of calculating probability of an event.		
(x)	Distinguish between sample space and sample point.	(xi)	What is the range of probability of an event?
(xii)	Two cards are drawn without replacement from 52 playing cards. What is the probability that both are aces?		

4. Attempt any six parts. **6 × 2 = 12**

(i)	Define probability distribution.	(ii)	Explain the application of random numbers.
(iii)	Given $f(x) = \frac{k}{x}$, $x = 1, 2, 3$. Find k.	(iv)	Given $E(X) = 200$ and $S.D(X) = 5$. Find $E(X^2)$
(v)	What are the parameters of a binomial distribution?		
(vi)	A random variable X has following binomial distribution with $n = 5$ and $p = 0.2$. Find $P(X = 2)$		
(vii)	In a binomial distribution, mean = 2.4 and standard deviation = 1.2. Find the value of n.		
(viii)	Define hypergeometric experiment.		
(ix)	For hypergeometric distribution $N = 10$, $n = 4$ and $K = 5$. Find $P(X = 0)$		

SECTION-II

NOTE: Attempt any three questions. **3 × 8 = 24**

5.(a) The average wage of 4 men is Rs.17 per hour. What is the average wage of further 6 men if the average wage of all 10 men is Rs.20 per hour. 4

(b) Compute G.M of the data 4

Age	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70
f	12	14	26	35	23	5

6.(a) Find semi-inter quartile range for the data given below: 4

Ages	20	30	40	50	60
f	3	61	132	51	2

(b) Given the first four moments about $Y = 20$ are as $-2, 15, -25$ and 80 respectively. Calculate b_2. 4

7.(a) Compute: (i) Base year Weighted Index Number (ii) Current year Weighted Index Number from the given data by taking 1980 as base year. 4

Commodities	Prices		Quantities	
	1980	1981	1980	1981
A	10	12	20	22
B	8	8	16	18
C	5	6	10	11
D	4	5	7	8

(b) A bag consists of 3 white and 5 red balls. If two balls are drawn at random, what is the probability that: 4
(i) Both are white (ii) Both are of same colour

8.(a) A random variable 'X' has the following probabilities distribution: 4

X	1	2	3
$P(x)$	$\frac{6}{9}$	$\frac{2}{9}$	$\frac{1}{9}$

Find Mean and Standard Deviation of x.

(b) A continuous random variable 'X' can assume values between $X = 2$ and $X = 5$ and has a density function $fx = \frac{2(1+X)}{27}$ (i) $P(3 < x < 4)$ (ii) $P(X \leq 4)$ 4

9.(a) Let 'X' be a random variable having binomial distribution with parameters $n = 5$ and $p = 0.52$
Calculate (i) $P(X = -2)$ (ii) $P(X = 2)$ (iii) $P(X = 2.5)$ (iv) $P(X > 5)$ 4

(b) A committee of size "3" is to be selected at random from 4 women and 6 men.
Obtain the probability distribution of number of men in the committee. 4