Roll No. | | | | | | | (To be filled in by the candidate)

Statistics **H.S.S.C (11th) 1st Annual 2023** Time : 20 Minutes

Paper : I SWL-11-23 *Objective* Marks : 17

Paper Code	6	1	8	1

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 circle in front of that question number in your answer book. Use marker or pen to fill the circles. Cutting or filling up two or more circles will result no mark.

SECTION–A

Q.1	Questions	A	B	C	D
1.	The data collected from research journals are:	Primary data	Fractional data	Official data	Secondary data
2.	Column caption is called:	Title	Body	Box head	Stub
3.	Which of the given averages is affected by extreme values?	A.M.	G.M	H.M.	Median
4.	For a certain distribution $\sum(x-10)=5, \sum(x-10)=20, \sum(x-10)=0$ then $\bar{x}=$	5	20	10	None of these
5.	Which of the given averages cannot be less than zero?	A.M.	G.M	H.M.	Median
6.	The S.D. is always calculated from:	Mean	Median	Mode	H.M.
7.	If v (X)=4 and v (Y)=9, then v (2 X+Y) is:	13	17	25	1
8.	Which of the given is a relative measure of dispersion?	S.D	Q.D	C.V	M.D
9.	In chain base method, base period is:	Fixed	Not fixed	Random	Zero
10.	The index given by $\frac{\sum p_n q_n}{\sum p_o q_n} \times 100$ is:	Laspeyre's Index No.	Paasche's Index No.	Fisher Index No.	Value Index
11.	Probability of an event always lies between:	$-\infty$ & ∞	$-\infty$ and 0	0 and 1 (both inclusive)	1 and ∞
12.	An orderly arrangement of objects is called:	Combination	Permutation	Power set	Universal set
13.	E (x) is equal to:	A.M	G.M	H.M	Median
14.	Var ($2X$+5)= ————	2 Var (X)+5	4 Var (X)	4 Var (X)−25	4 Var (X)+25
15.	Range of Binomial random variable is:	0 to n	0 to 00	0 to ∞	1 to n
16.	Number of parameters of Hypergeometric distribution is:	4	2	3	5
17.	If n=10 and $q=\frac{1}{2}$, then mean of binomial distribution is:	20	10	2.5	5

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Statistics **H.S.S.C (11th) 1st Annual 2023** Time : 2:40 Hours

Paper : I Subjective Marks : 68

Note :- Section B is compulsory. Attempt any Three Questions from Section C.

SECTION – B

2. Write short answers to any Eight parts. (8 x 2 = 16)

i. Define primary data.
ii. What is an attribute?
iii. Define Geometric Mean.
iv. Calculate $\bar{X}$ if $n=10, \sum \mu = 100,\ h=2$ *and* $A=50$.
v. Define Deciles.
vi. Write any two properties of a good average.
vii. Define median and write down its formula.
viii. Write the formula of empirical relation between mean, median and mode.
ix. Define index numbers.
x. What is the difference between simple and composite index numbers?
xi. Define base period.
xii. Given that $\sum W = 60.25$ and $\sum WI = 8074.5$, then find consumer price index number.

3. Write short answers to any Eight parts. (8 x 2 = 16)

i. What is the cumulative frequency?
ii. What is the frequency curve?
iii. Define the relative dispersion.
iv. What are the moments about origin?
v. Find the co-efficient of skewness, given that $m_2=6$, $m_3=12$.
vi. Name the distribution for which $b_1=0$ and $b_2=3$.
vii. What is the symmetrical distribution?
viii. If $Q_1=12$, $Q_2=20$, and $Q_3=25$, find the Bowley's co-efficient of skewness.
ix. Define the impossible event.
x. What are the mutually exclusive events?
xi. A die is rolled. Find the probability of more than four dots.
xii. What is the probability of selecting a red king out of 52 playing cards?

4. Write short answers to any Six parts. (6 x 2 = 12)

i. State the properties of discrete probability function.
ii. What do you mean by mathematical expectation?
iii. Given that E(X)=0.55, Var (X)=1.35 and Y=2X+1, find E (Y) and Var (Y).
iv. A continuous random variable X has probability density function $f(x)=\frac{cx}{4}$ for $1 \le X \le 4$ =0 elsewhere, find the value of c.
v. For a binominal distribution with n=6 and p=$\frac{1}{2}$, find P(X=1).
vi. If X is a hypergeometric random variable with N=40, n=5 and K=8. Find Var (X).
vii. What do you mean by Bernoulli trial?
viii. State two properties of binomial distribution.
ix. Define hypergeometric probability function with formula.

Turn the page over

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SECTION – C

Note: Attempt any Three question. Each question carries 4+4=8 marks. (8x3=24)

5. (a) The frequency distribution given below has been derived from the use of working origin. If D= $x-18$, find A.M.

D	−12	−8	−4	0	4	8	12	16
f	2	5	8	18	22	13	8	4

(b) Find the upper quartile for the following frequency distribution:

Height	86 - 90	91 - 95	96 - 100	101 - 105
f	4	10	6	3

6. (a) Calculate mean, standard deviation and coefficient of variation from the following data:

$\Sigma f = 40,\ \Sigma fx = 48,\ \Sigma f(x-\bar{x})^2 = 68.4$.

(b) Calculate Bowley's coefficient of skewness from the following data.

Weights	118 - 126	127 - 135	136 - 144	145 - 153
f	3	9	12	4

7. (a) Compute the Fisher's ideal price index for the year 2009 by taking 2007 as base year.

Commodity	2007		2009	
	Price	Quantity	Price	Quantity
A	45	90	93	100
B	37	10	64	11
C	27	03	51	05

(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.

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

x	1	2	3	4	5
$f(x)$	0.125	0.45	0.25	0.05	0.125

Estimate its variance

(b) If $f(x)$ has probability density function $kx^2, 0 < X < 1$, determine the value of k and find probability that $\frac{1}{3} < X < \frac{1}{2}$.

9. (a) A fair coin is tossed five times, what is the probability of getting:

(i) Exactly three heads
(ii) At least three heads.

(b) Ten vegetables cans, all of same size, have lost their labels. It is known that 5 contain tomatoes and 5 contain corns. If 5 cans are selected at random, what is the probability that:

(i) All contain tomatoes.
(ii) Three or more contain tomatoes.