Statistics **H.S.S.C (11th)1st Annual 2024** Roll No._____(To be written by the candidate)

Paper : I Objective | Paper Code | 6 | 1 | 8 | 1 | Marks:17 Time : 20 Minutes

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.	Statistics deals with:	Qualitative facts only	Single fact	Aggregative of facts	None of these
2.	The data in their original form are called:	Secondary data	Primary data	Ordered data	Un-official data
3.	A statistical table has at least:	Five parts	Two parts	Three parts	Four parts
4.	Histogram is the graph of:	Qualitative data	Time series	Frequency distribution	Ogive
5.	We must arrange the data before calculating:	Mode	Median	Mean	G.M
6.	$\Sigma(Y-\bar{Y})=$	0	1	Least	> 0
7.	The square root of second moment about mean is:	Variance	S.D	Q.D	M.D
8.	If $Y=ax+b$ then $Var(Y)=$	$aVar(X)$	$a^2Var(X)+b$	$a^2Var(X)$	$aVar(X)+b$
9.	Laspeyre's index number is also called:	Base year weighted	Ideal	Current year weighted	Simple
10.	The index number for base period is always taken as:	1000	200	100	Zero
11.	Tossing two dice, possible outcomes are:	6	12	8	36
12.	The probability of a red card out of 52 cards is:	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{4}{52}$	1
13.	In a family with two children, how many are girls:	0,1	2	0,1,2,3	0,1,2
14.	If $Var(X)=9$ then $S.D(2x+4)$ is:	36	10	6	18
15.	The number of possible outcomes in a Bernoulli Trial is:	Three	Two	Four	One
16.	Variance of the binomial distribution is:	nP	$\sqrt{nPq}$	nPq	n
17.	In hypergeometric distribution $N=6, n=2, k=3$ then means=	1	2	3	6

223-324-1A-2000

tistics | **H.S.S.C (11th) 1st Annual 2024** | Roll No._____(To be written by the candidate)

per : I | Subjective | Marks : 68 | Time : 2:40 Hours

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

SECTION – B

2. Write short answers to any EIGHT parts. (8x2=16)

i. Define Statistics.
ii. Distinguish between qualitative and quantitative variables.
iii. What are the main functions of descriptive statistics?
iv. Give the empirical relation between mean, median and mode.
v. Define median with its formula for grouped data.
vi. Calculate G.M of 1,1,8.
vii. Write down the formula for weighted mean and also give its definition.
viii. Calculate harmonic mean of 2 and 8.
ix. Define chain base method.
x. If $\sum W = 20$ and $\sum WI = 180$, find cost of living index number.
xi. Consider the following data $\sum p_0q_0 = 35310, \sum p_1q_0 = 41140, \sum p_1q_1 = 46707$ and $\sum p_0q_1 = 39644$. Compute "base year weighted" and "current year weighted" index.
xii. How can you define consumer price index number?

3. Write short answers to any EIGHT parts. (8x2=16)

i. What is classification?
ii. Define class boundaries.
iii. Name the important parts of table.
iv. What is meant by dispersion?
v. Define standard deviation.
vi. Compute coefficient of quartile deviation, if $Q_1 = 10.20$ and $Q_3 = 58.29$
vii. Write down any two properties of variance.
viii. Calculate upper quartile for the given: 13,3,7,15,17,5,23,27
ix. Define exhaustive events.
x. Calculate ${}^6C_2$ and ${}^6P_2$
xi. What is the range of probability?
xii. For two mutually exclusive events A and B, if P(A)=0.25 and P(B)=0.40 then find P(AUB).

4. Write short answers to any SIX parts. (6x2=12)

i. What do you mean by expected value?
ii. Enlist the properties of a probability density function.
iii. Given $E(X) = 0$ and $E(X^2) = 0.7$, find $E(3X^2 - 2X + 4)$
iv. If $E(X^2) = 400$ and $SD(X) = 12$, find $E(X)$
v. Write down any two properties of binomial experiment.
vi. What is Bernoulli trial?
vii. What is hypergeometric experiment?
viii. For hypergeometric distribution $N = 40, n = 5$ and $k = 4$, find mean and variance.
ix. If $n = 4, P = \frac{1}{2}$, find $P(X = 3)$

(PTO)

SECTION – C Attempt any THREE Questions Each question carries 4+4=8 marks. (8x3=24)

5. (a) Find geometric mean for the following data:

Classes	10 - 19	20 - 29	30 - 39	40 - 49	50 - 59
f	05	25	40	20	19

(b) Calculate median for the following data:

X	18	19	20	21	22	23	24
f	4	6	9	12	6	5	2

6. (a) For the following data, calculate mean deviation about median. 7,10,6,12,9,14,15,14 and 8.

(b) First four moments about $X = 20$ are given as -2,15, -25 and 80 respectively. Find corresponding moments about mean.

7. (a) Given the following information: $\sum p_0q_0 = 3600, \sum p_1q_0 = 4300, \sum p_1q_1 = 4890$ and $\sum p_0q_1 = 4100$, find Paasche's and Laspeyre's Price Index Number.

(b) Three coins are tossed, find the probability.
i. No head appears
ii. One head appears

8. (a) The probability distribution of a random variable X is given below. Find its mean and variance.

x	1	2	3	4	5
$P(x)$	0.1	0.2	0.4	0.2	0.1

(b) A continuous random variable X has the probability density function as $f(x) = cx, 0 < x < 2$: Find
i. The value of C
ii. $P\left(\frac{1}{2} < X < \frac{3}{2}\right)$

9. (a) An event has the probability $p = \frac{3}{8}$. Find the complete binomial distribution for $n = 5$ trials.

(b) There are 7 good and 3 defective items. Two items are selected randomly without replacement. Find the probability that one is good and one is defective.

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

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

Paper : I *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

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

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 $\overline{X}$ 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

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.

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

Statistics | **H.S.S.C (11th)-A-2022** | Time : 20 Minutes

Paper : I | 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 uniform of the student is an example of:	Variable	Discrete variable	Continuous variable	Constant
2.	Row caption is also called:	Tittle	Body	Box-head	Stub
3.	Total angle of the pie-chart is:	270°	300°	320°	360°
4.	The empirical relationship between mean, median and mode is, mode=	3 mean – 2 median	2 mean – 3 median	3 median – 2 mean	2 median – 3 mean
5.	Which of the given average cannot be less than zero?	A.M	G.M	H.M	Median
6.	Which average can only be applicable in qualitative data?	A.M	Median	Mode	H.M
7.	The first moment about origin is:	Zero	One	Mean	Variance
8.	In symmetrical distribution $Q_1 = 4$, $Q_3 = 12$ then median is:	8	4	16	Zero
9.	The first moment about mean is:	Zero	One	Variance	S.D
10.	In a fixed base method which period is taken as 100 (hundred):	Preceding	Following	Base	Current
11.	Cost of living index no. are:	Simple	Composite	Un-weighted	Chain
12.	${}^{n}P_{r} =$	$\frac{n!}{r!(n-r)!}$	$\frac{n!}{r!}$	$\frac{n!}{(n-r)!}$	$\frac{(n-r)!}{n!}$
13.	If A & B are two mutually exclusive events, then $P(A \cap B) =$	0	1	S	ϕ
14.	The probability function cannot be:	< 0	> 0	0	Fractional
15.	Expected value of a constant is:	Zero	One	Two	Constant itself
16.	A binomial distribution has variance:	nq	np	npq	$\sqrt{npq}$
17.	Hypergeometric distribution has parameters:	n, p	n, p, q	N, n, k	n, k

221-322-A-1750

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

Statistics | **H.S.S.C (11th)-A-2022** | 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 discrete variable and give examples.

ii. What is primary data?

iii. Describe any two properties of arithmetic mean.

iv. What are the desirable qualities of a good average (any two)?

v. Describe any two demerits of geometric mean.

vi. Compute geometric mean by using the basic definition: $45, 30, 35, 40, 44, 32, 42, 37$

vii. Compute upper quartile (i.e. third quartile) from the given data: $95.05, 94.90, 94.50, 84.60, 88.03$.

viii. If $\sum p_n.q_n = 272$, $\sum p_o.q_n = 194$, calculate Paasche's index number.

ix. If Laspeyre's index=104.5 and Paasche's index=103.9. Compute Fisher Index Number.

x. Describe any two limitations of index numbers.

xi. Describe the importance of consumer price index numbers.

xii. If $\sum p_n.q_o = 280.84$, $\sum p_o.q_o = 258.18$, compute C.P.I by aggregative expenditure method.

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

i. What is frequency histogram?

ii. Define Class Frequency with an example.

iii. Enlist the absolute measures of dispersion.

iv. Differentiate symmetry and skewness.

v. Define Standard Deviation.

vi. Given $X = 4, 6, 8, 8, 10$, find mean deviation from mode.

vii. If $var(x) = 25$ then find $var(2x + 4)$

viii. What would be the shape of the distribution if:
   (a) Mean=Median=Mode
   (b) Mean>Median>Mode
   (c) Mean<Median<Mode

ix. Explain sample space of two coins.

x. State additional law for not mutually exclusive events.

xi. Differentiate between simple and compound events.

xii. What is meant by dependent event? Give an example.

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

i. Define the Discrete Random Variable.

ii. If $E(X) = 5$ *and* $E(X^2) = 50$, find σ^2.

iii. Given below is a function. Is it a probability function?

x	0	1	2
$P(x)$	$\frac{5}{8}$	$\frac{4}{8}$	$\frac{1}{8}$

iv. What is probability density function?

v. If $E(X) = 1.15$, then find $E(3X + 5)$.

vi. If $n = 10$, $p = 0.4$, then find variance of binomial distribution.

vii. In a binomial distribution $n = 3$, $p = \frac{1}{2}$, find $P(X = 3)$.

viii. Given that $N = 10$, $n = 4$, $k = 3$, find $P(X = 1)$.

ix. Write any two properties of binomial experiment.

SECTION – C

Each question carries 4 + 4 = 8 Marks

5. (a) Calculate the geometric mean for the following data:

Marks	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59
No. of Students	5	25	40	20	10

(b) The following table gives the frequency distribution of heights recorded to the nearest inch of 100 students. Find mode.

Heights	60 – 62	63 – 65	66 – 68	69 – 71	72 – 74
No. of Students	5	18	42	27	8

6. (a) Calculate variance and standard deviation for the data: $3, 6, 2, 1, 7, 5$

(b) Calculate first 4 moments about origin from the following data:

x	1	2	3	4	5
f	2	5	7	10	4

7. (a) Find the index numbers from the following data taking 2010 as base year.

Year	2010	2011	2012	2013	2014
Prices	15	19	21	30	37

(b) A and B are two independent events. If $P(A) = 0.4, P(B) = 0.3$

Find (i) $P(A \cap B)$

(ii) $P(A \cup B)$

8. (a) A continuous random variable "X" has the probability density function given by $f(x) = \frac{x+1}{8} \quad 2 < x < 4$

Find (i) $P(2 < x < 4)$

(ii) $P(x < 3.5)$

(b) A discrete random variable "X" has a probability function given by $P(x) = C(3 - X)$ for $X = 0, 1, 2, 3$. Find the value of "C". Also find $E(X)$ and $E(X^2)$.

9. (a) Find the value of "n" and "p" in a binomial distribution. Which has mean 15 and standard deviation 5.

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

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

Statistics

Inter (Part-I)-A-2021

Time : 20 Minutes

Paper : I

OBJECTIVE - (III)

Marks : 17

Paper Code	6	1	8	5

Note: - You have four choices for each objective type question as A, B, C and D. The choice which you think i correct; fill that circle in front of that question number in your answer book. Use marker or pen to fill th circles. Cutting or filling up two or more circles will result no mark.

Q.1	Questions	A	B	C	D
1.	The mean deviation is least if deviations are taken from:	Median	Mode	A.M.	G.M.
2.	Link relative is equal to:	$\frac{P_n}{P_0}\times 100$	$\frac{P_n}{P_{n-1}}\times 100$	$\frac{P_0}{P_n}\times 100$	$\frac{P_{n-1}}{P_n}\times 100$
3.	Index number for base period is taken as:	0	1	200	100
4.	${}^4C_3 =$ _____.	24	3	4	1
5.	If one event is not affected by the outcome of another event, the two events are said to be:	Dependent	Independent	Mutually Exclusive	Both A and B
6.	If X and Y are random variables, then $E(X-Y)$ is equal to:	$E(X)-E(Y)$	$E(X)+E(Y)$	$X-E(Y)$	$E(X)-Y$
7.	If "C" is a constant, then E(C)=_____	0	1	C^2	C
8.	The mean, median and mode of the binomial distribution $b(x;n,p)$ will be equal when:	$p=0.5$	$p<0.5$	$p>0.5$	None of these
9.	In a binomial, $n=20$, $P=\frac{3}{5}$, the mean of this distribution is:	60	12	0	8
10.	In a Hypergeometric distribution, the trials are:	Independent	Independent and dependent	Dependent	None of these
11.	If X and Y are independent, then $\text{var}(X-Y)$ is equal to:	$\text{var}(X)-\text{var}(Y)$	1	$\text{var}(X)+\text{var}(Y)$	0
12.	The positive square root of the variance of a distribution is called:	Mean Deviation	Standard Deviation	Range	Quartile Deviation
13.	The sum of deviations of all the values from their arithmetic mean is:	1	2	3	0
14.	The most frequent value in a data set is called:	Mode	Median	A.M.	H.M.
15.	It is the reciprocal of Arithmetic Mean of the reciprocal of all the values.	A.M.	G.M.	Mode	H.M.
16.	The sum of relative frequencies is always equal to:	0	2	1	3
17.	Hourly temperature recorded by Weather Bureau is an example of _____data.	Discrete	Continuous	Qualitative	Secondary

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

Statistics | Inter (Part-I)-A-2021 | Time : 2:40 Hours

Paper : I | Subjective | Marks : 68

Note :- **Section I is compulsory. Attempt any Three Questions from Section II.**

SECTION – I

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

i. Define the term "Variable".
ii. What do you mean by data?
iii. Find mean of 5, 3, 2, 7, 3.
iv. Define Geometric Mean.
v. What is Empirical Relationship between mean, median and mode?
vi. If Mean = 5. Median = 6, then find Mode.
vii. If $\Sigma X = 15, n = 3$, then find Mean.
viii. Define Mode.
ix. Find Laspeyre's index number if Fisher's=8, Paasche's=4
x. What is composite index number?
xi. Define Simple Index Number.
xii. What is simple aggregative index?

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

i. Differentiate between class limits and class boundaries.
ii. Write down the main steps in the construction of frequency distribution.
iii. Write the types of dispersion.
iv. If $Q_1 = 20$ and $Q_3 = 60$, find coefficient of quartile deviation.
v. Define Average Deviation.
vi. What is standard deviation?
vii. If $\bar{X} = 10$ and $\text{var}(X) = 4$, find $\bar{Y}$ and $\text{var}(\bar{Y})$ when $Y = 2x - 1$
viii. What is relative dispersion?
ix. What is random experiment?
x. What is permutation?
xi. If A and B are independent events with $P(A) = 0.2$ and $P(B) = 0.6$, find $P(A \cap B)$
xii. State the classical definition of Probability.

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

i. Write down properties of Expectation.
ii. If $E(X) = 4$, $E(Y) = 3.5$, then find $E(X - Y)$.
iii. What is meant by variance of the Discrete Random Variable?
iv. Define Probability Distribution.
v. Define Bernoulli Trial.
vi. Write down properties of Binomial experiment.
vii. Define Binomial Probability Distribution.
viii. A fair coin is tossed 4 times. Find the probabilities of obtaining various number of heads.
ix. Write down properties of Hypergeometric Experiment.

SECTION – II

Each question carries 4 + 4 = 8 Marks

5. **(a)** The following data has been obtained from a frequency distribution of a continuous variable X after making the substitution: $U = \frac{X - 136.5}{6}$

Compute Harmonic Mean.

U	-4	-3	-2	-1	0	1	2	3
f	2	5	8	18	22	13	8	4

(b) Calculate Q_1 and Q_3 from the following data:
12, 10, 19, 20, 11, 27, 30, 28, 45, 70, 65, 60.

(Turn Over ورق الٹیے)

Roll No._____ Annual 2018

Statistics (New Scheme) (INTER PART - I CLASS 11th) (I) Time :20 Minutes

Paper : I (Academic Session 2017 – 2019) Marks : 17

OBJECTIVE

Code : 6181

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 with marker or pen. Cutting or filling two or more circles will result in zero mark in that question.

1. i. A quantity computed from sample is called:
(A) parameter (B) statistic (C) constant (D) population

ii. The process of arranging observations in different classes is called:
(A) classification (B) tabulation (C) sampling (D) frequency distribution

iii. The cumulative frequency distribution is graphically represented by:
(A) frequency curve (B) frequency polygone (C) pie-diagram (D) ogive

iv. For a certain frequency distribution $\Sigma(x-20)=25$ *and* $\Sigma(x-18)=0$ then mean is
(A) 18 (B) 25 (C) 20 (D) zero

v. Harmonic mean of any two numbers "a" and "b" is :
(A) $\frac{a+b}{2}$ (B) $\sqrt{ab}$ (C) $\frac{2ab}{a+b}$ (D) $\frac{a+b}{2ab}$

vi. Which of the following is a measure of dispersion?
(A) Mean (B) Mean Deviation (C) Median (D) Quartile

vii. The variance of 5 , 5 , 5 , 5 is :
(A) 5 (B) 25 (C) zero (D) one

viii. For a symmetrical distribution the moment ratio:,
(A) $\sqrt{b_1}=0$ (B) $\sqrt{b_1}=3$ (C) $\sqrt{b_1}>3$ (D) $\sqrt{b_1}<0$

ix. Which price relative is used in chain indices?
(A) $\frac{p_n}{p_0}\times 100$ (B) $\frac{p_n}{p_{n-1}}\times 100$ (C) $\frac{p_{n-1}}{p_n}\times 100$ (D) $\frac{p_0}{p_{n-1}}\times 100$

x. The Index number constructed for the prices of more than one commodity is called:
(A) simple price index (B) volume price index (C) composite price index (D) mixed

xi. Which of the following cannot be the probability of an event?
(A) 1.75 (B) zero (C) 0.36 (D) 0.82

xii. Two events A and B are said to be mutually exclusive if :
(A) $P(A\cap B)=1$ (B) $P(A\cap B)=0$ (C) $P(A\cup B)=0$ (D) $P(A\cup B)=1$

xiii. Let $p(x)$ is a probability mass function of discrete random variable X , then $\Sigma p(x)$ is:
(A) zero (B) less than one (C) one (D) greater than one

xiv. "a" and "b" are any two constants and "X" is a variable, then $E(ax+b)$ is :
(A) $aE(x)+b$ (B) $aE(x)$ (C) $E(x)$ (D) $a^2E(x)+b$

xv. The binomial probability distribution is positively skewed when:
(A) $p=\frac{1}{2}$ (B) $p=q$ (C) $p>\frac{1}{2}$ (D) $p<\frac{1}{2}$

xvi. The variance of binomial probability distribution $(q+p)^3$ is :
(A) $\sqrt{3pq}$ (B) 3pq (C) pq (D) 3p

xvii. Hypergeometric probability distribution has parameters:
(A) n , N , k (B) n , k (C) N , k (D) N , n

Statistics (New Scheme): (INTER PART - I CLASS 11th) Time : 2 : 40 Hours

Paper : I SUBJECTIVE Marks : 68

Academic Session 2017 – 2019

Note :- Section I is compulsory. Attempt any three Questions from section II.

(Section – I)

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

i. What are the two types of quantitative variables?

ii. What is descriptive Statistics?

iii. Define Median and write the formula to find it from continuous grouped data.

iv. The sum of deviations of 10 values from X= 40 is 250, what is the value of arithmetic mean?

v. Define Harmonic mean.

vi. Give two important properties of Arithmetic Mean.

vii. Compute Geometric mean of 5 , 25 , 125.

viii. Define weighted index number.

ix. What is composite price index number?

x. If Fischer's and Paasche's index numbers are 108 and 109 respectively, what is Laspeyre's index number?

xi Define the chain indices.

xii. Explain fixed base method.

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

i. What is size of class interval?

ii. Define classification.

iii. What are measures of dispersion?

iv. Define range.

v. If $n = 10$, $\Sigma x = 50$, $\Sigma x^2 = 360$, find variance.

vi If $\Sigma x = 180$, $s^2 = 36$, n = 5 find C.V .

vii. Define moments.

viii. Define sample space.

ix If A and B are mutually exclusive events, P(A) = 0.4 , P(B))=0.3 , Find $P(A \cup B)$.

x Define equally likely events.

xi. Define independent events.

xii. Write sample space when a coin is tossed two times.

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

i. Define continuous random variable.

ii. What are properties of discrete probability distribution?

iii. Given $f(x) = \frac{k}{x}$, $x = 1,2,3,$ *find* k

iv. If E(X) =1.1 , find E (3x+5).

v. Define random numbers.

vi. Define the binomial experiment.

vii. If $n = 10$, $p = \frac{1}{2}$, find variance of binomial distribution.

viii. Write the formula of hypergeometric probability distribution.

ix. If $N = 11$, $n = 5$, $k = 7$, find variance of hypergeometric distribution.

Section = II

Note:- Attempt any three (3) questions: (3 X 8 = 24)

5. (a) Find the value of mode by using the empirical relationship between averages for the following data.

Marks	2-4	4-6	6-8	8-10	10-12
No. of Students	5	25	40	20	10

(b) Calculate harmonic mean of the variable X from the following data.

$U = \frac{X-3.5}{0.5}$	-3	-2	-1	0	1	2	3
Frequency	15	38	65	92	80	40	20

6. (a) For the following frequency distribution, find quartile deviation.

Marks	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
frequency	3	8	14	7	4

(b) Given that $\Sigma f = 76$, $\Sigma fy = 572$, $\Sigma fy^2 = 4848$, $\Sigma fy^3 = 44240$ *and* $\Sigma fy^4 = 42580$.

Find first three moments about mean and b_2.

7. (a) Construct index numbers from the following data by applying

(i) Laspeyer's method (ii) Paasche's method

Commodities	Base year		Current year	
	price	quantity	price	quantity
A	8	55	2	50
B	4	105	4	115
C	6	65	8	55
D	12	35	14	19

(b) An integer is selected at random from first 200 positive integers. What is the probability that integer chosen is divisible by "6" or " 8".

8. (a) A random variable X has following probability distribution.

x	-2	-1	0	1	2	3
$P(X = x)$	0.1	k	0.2	0.3	0.2	0.15

Find (i) k (ii) $P(X \geq 2)$ (iii) $P(X = -2)$ (iv) $P(X > 3)$

(b) A continuous random variable X has the probability density function as

$$f(x) = \begin{cases} a(x+3) & for 2 \leq x \leq 8 \\ 0 & elsewhere \end{cases}$$, find (i) a (ii) $p(3 < x < 5)$

9. (a) Team A has probability $\frac{2}{3}$ of winning whenever it plays. If A plays 4 games, find the probability that A wins (i) Exactly 2 games (ii) At least one game

(b) A box contains ten items, seven of which are good and three are defective. Two items are selected (Without replacement). Compute the probability distribution for the number of defectives in the sample of two.