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Roll No _____ (To be filled in by the candidate) **(Academic Sessions 2020 – 2022 to 2023 – 2025)**

STATISTICS 224 – 1st Annual (INTER PART – I) Time Allowed : 20 Minutes

Q.PAPER – I (Objective Type) **PAPER CODE = 6187** Maximum Marks : 17

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1	In a discrete probability distribution the sum of all the probabilities is : (A) 0 (B) 1 (C) -1 (D) ∞
2	The standard deviation is always computed from : (A) Mean (B) Median (C) Mode (D) G.M
3	Which one is correct : (A) G.M > H.M (B) H.M > G.M (C) H.M > A.M (D) G.M > A.M
4	When 'r' objects chosen from 'n' objects without regard of order is called : (A) Permutation (B) Combination (C) Factorial (D) Multiplication
5	The price index $P_{on} = \frac{\Sigma p_n q_n}{\Sigma p_o q_n} \times 100$ is : (A) Value index (B) Fisher's index (C) Laspeyre's index (D) Paasche's index
6	A numerical characteristics of a sample is called : (A) Statistic (B) Parameter (C) Variable (D) Population
7	In a hypergeometric distribution N = 6, n = 2, K = 3 then the mean is : (A) 2 (B) 3 (C) 1 (D) 4
8	If $\Sigma (X - 20) = 25$ and $\Sigma (X - 18) = 0$, then arithmetic mean is : (A) 20 (B) 18 (C) 25 (D) Zero

(Turn Over)

1-9	If $P (A \cap B) = 0$ then events 'A' and 'B' are called : (A) Mutually exclusive (B) Exhaustive (C) Independent (D) Dependent
10	Life of a T.V. tube is a : (A) Discrete variable (B) Continuous variable (C) Qualitative variable (D) Constant
11	If P_{01} (Laspeyre's) = 110, P_{01} (Paasche's) = 120 then P_{01} (Fisher's) is : (A) 110 (B) 120 (C) Zero (D) 114.89
12	Classification of data according to locations or areas is called --- classification : (A) Temporal (B) Qualitative (C) Geographical (D) Quantitative
13	For a binomial distribution $p = q = \frac{1}{2}$ then the distribution is : (A) Symmetrical (B) Positively skewed (C) Negatively skewed (D) Not exists
14	A number assigned to outcome of a random experiment is called : (A) Random number (B) Random variable (C) Constant (D) Sample space
15	The parameters of hypergeometric distribution are : (A) n, N (B) n, K (C) N, K (D) n, N, K
16	Mean deviation for data 5, 5, 5 is : (A) 5 (B) 25 (C) Zero (D) Negative
17	An ogive is a : (A) Frequency curve (B) Frequency polygon (C) Histogram (D) Cumulative frequency polygon

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Roll No _____ _____ (To be filled in by the candidate) **(Academic Sessions 2020 – 2022 to 2023 – 2025)**

STATISTICS 224-1st Annual-(INTER PART – I) Time Allowed : 2.40 hours

PAPER – I (Essay Type) Maximum Marks : 68

SECTION – I

2. Write short answers to any EIGHT (8) questions : **16**

(i) Describe the limitations of Statistics.

(ii) Differentiate between parameter and statistic.

(iii) Write sources of secondary data.

(iv) What is meant by " Measures of Central Tendency"?

(v) Calculate mean if n = 10, $\Sigma u = 100$, h = 2, where D = X – 50

(vi) Write down any two properties of geometric mean.

(vii) Find the value of median for the data : 3, -2, -1, -3, 0

(viii) If mode = 75, mean = 70, find median.

(ix) Name the 3 basic types of index numbers.

(x) Differentiate between simple and composite index number.

(xi) How link relatives are computed?

(xii) Given $\Sigma p_0 = 2550$ and $\Sigma p_1 = 2590$. Find price index number by using simple aggregative index method.

3. Write short answers to any EIGHT (8) questions : **16**

(i) What is classification?

(ii) Write down the main parts of the table.

(iii) Define the term relative frequency and cumulative frequency.

(iv) Describe absolute dispersion.

(v) Given $\bar{x} = 10$ and var (x) = 4, find $\bar{y}$ and var (y) when y = 2x – 1

(vi) If lower quartile is 20 and quartile deviation is 5, find upper quartile.

(vii) Define range and its co-efficient.

(viii) If S.D. of a distribution is 4, find 2nd moment about mean.

(ix) Explain properties of random experiment.

(x) Write the sample space when 3 coins are tossed.

(xi) Differentiate between simple and compound events.

(xii) What is meant by conditional probability?

4. Write short answers to any SIX (6) questions : **12**

(i) Define continuous random variable.

(ii) What is random experiment?

(iii) What is meant by mathematical expectation?

(iv) If E(X) = 2, then find E (2X + 3)

(v) Calculate mean and variance of binomial distribution, if n = 5 and $q = \frac{1}{3}$

(vi) Write down the probability function of hypergeometric distribution.

(vii) Explain and define binomial experiment.

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4. (viii) Which type of sampling is associated with binomial distribution?

(ix) Write down the parameters of hypergeometric distribution.

SECTION – II

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Note : Attempt any THREE questions.

5. (a) The A.M. and G.M of three numbers are 34 and 18 respectively. Find all three numbers, when the G.M of the first two numbers is 9. 4

(b) The following data has been obtained from a frequency distribution of a continuous variable x after making the substitution : $u = \frac{x - 136.5}{6}$: 4

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

Calculate H.M.

6. (a) What will be the standard deviation and the variance in each of the following cases : 4
(i) 2x (ii) x + 2 (iii) 2x +4 if var(x) = 25

(b) Calculate the first three moments about mean for the observations : 4
81, 87, 90, 93, 94, 95

7. (a) Construct the following weighted I.No's of prices for the year 1981 from the data given below : 4
(i) Laspayre's I.No (ii) Paasche's I.No.

Commodity	Prices		Quantity	
	1980 (Base)	1981	1980 (Base)	1981
A	10	12	20	22
B	8	8	16	18
C	5	6	10	11
D	4	4	7	8

(b) Find the probability $P(A \cap B) = ?$ given that $P(A) = 0.25$, $P(B) = 0.60$ Assuming that A and B are independent. 4

8. (a) Let X be a random variable with the probability distribution as follows : 4

X	1	2	3	4	5
f (X)	0.125	0.350	0.300	0.125	0.100

Show that E (3X - 2) = 3E (X) - 2

(b) A continuous random variable ' x ' has density function : 4

$f(x) = 2x$ for $0 \le x \le 1$

$= 0$ elsewhere

Find $P (0 \le x \le 0.5)$

9. (a) If 20% of the bolts produced by a machine are defective, determine the probability that out of 4 bolts chosen at random (i) Zero defective (ii) 2 bolts are defective 4

(b) A committee of size 3 is selected from 4 men and 2 women. Find the probability distribution by hypergeometric experiment for the number of men on the committee. 4

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Objective Paper Code **6185**

Intermediate Part First

STATISTICS (Objective)

Time: 20 Minutes Marks: 17

Roll No. : _____

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 fype question paper and leave other circles blank.**

S.#	Questions	A	B	C	D
1	When the price of a year is divided by the price of the preceding year, we get:	Value index	Link relative	Simple relative	Quantity index
2	The range of the values 6, 8, 10, –5, –10 is:	20	10	0	– 10
3	In a symmetrical distribution, $Q_3 - Q_1 = 20$, median = 15. Q_3 is equal to:	10	15	20	25
4	If $\bar{X} = 33$, which will be minimum?	$\sum X^2$	$\sum (X-66)^2$	$\sum (X-33)^2$	$\sum (X+33)^2$
5	A distribution with two modes is called:	Unimodal	Bimodal	Multimodal	Normal
6	A frequency polygon is a closed figure which is:	One sided	Two sided	Three sided	Many sided
7	The headings of the rows of a table are called:	Captions	Titles	Stubs	Prefactory notes
8	A measure computed on the basis of a census is called:	Parameter	Statistic	Constant	Class mark
9	A set of all units of interest in a study is called:	Sample	Population	Parameter	Statistic
10	The mean of the hypergeometric distribution is:	$\frac{nk}{N}$	$\frac{Nk}{n}$	$\frac{Nn}{k}$	$\frac{n+k}{N}$
11	In binomial experiment, the successive trials are:	Variable	Dependent	Independent	Without replacement
12	The binomial probability distribution is symmetrical when:	$P = 0.1$	$P = q$	$P < q$	$P > q$
13	If k is a constant in a continuous probability distribution, then $P(X = k)$ is always equal to:	0	1	– 1	k
14	An expected value of a random variable is equal to its:	Variance	Standard deviation	Mode	Mean
15	A fair die is rolled. Probability of getting face more than 4 is:	$\frac{1}{2}$	$\frac{2}{3}$	$\frac{1}{3}$	$\frac{5}{6}$
16	For every event A, probability of A is:	≤ 0	≥ 0	> 1	< 0
17	Base year quantities are used, as weights, in:	Laspeyre's method	Paasche's method	Fisher's method	Chain base method

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11th Class Statistics Subjective Paper Faisalabad Board 2024

1119-XI124

Intermediate Part First

STATISTICS (Subjective)

Time: 02:40 Hours Marks: 68

Roll No. _____

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SECTION – I

2. **Write short answers of any EIGHT parts.** 16

(i) Explain the concept of cost of living index number.
(ii) What is Laspeyre's price index number. Write its formula.
(iii) Given $\sum P_0q_n = 950$ and $\sum P_nq_n = 1310$ find Paasche's price index number.
(iv) Define harmonic mean and write its formula for grouped data.
(v) If mean = 5, median = 6, find mode.
(vi) Describe two uses of index number.
(vii) Describe two demerits of geometric mean.
(viii) Given $\sum(x-10) = 0$, n = 5 find mean.
(ix) What is difference between simple arithmetic mean and weighted mean?
(x) What is meant by secondary data? Write sources of secondary data.
(xi) Narrate differences between descriptive and inferential statistics.
(xii) Define discrete variable with an example.

3. **Write short answers of any EIGHT parts.** 16

(i) Write a note on two way classification.
(ii) Differentiate between ungrouped and grouped data.
(iii) Describe the main parts of a table.
(iv) What are the raw moments?
(v) Find the range of: – 1, – 4, 0, 7, 4
(vi) Compute the value of σ_y if $Y = 3X + 10$ and $V(X) = 2$
(vii) Define the mesokurtic distribution.
(viii) Give any two properties of the mean deviation.
(ix) Verify that: ${}^{10}C_4 = {}^{10}C_6$
(x) State the addition law of probability.
(xi) Differentiate between mutually and not mutually exclusive events.
(xii) Find $P(\frac{B}{A})$ so that $P(A \cap B) = 0.25$ and $P(A) = 0.75$.

4. **Write short answers of any SIX parts.** 12

(i) What is difference between discrete and continuous random variables?
(ii) Define probability density function and write its properties.
(iii) If E(X) = 3 and Variance (X) = 1.2 find E(2X – 1) and Var (2X – 1)
(iv) For a binomial distribution n = 10 and p = 0.7 . Find P(X = 7)
(v) Given $f(x) = \frac{k}{x}$ for x = 1, 2, 3. Find k.
(vi) Explain what is meant by Bernoulli trials.
(vii) Explain and write the formula for hypergeometric distribution.
(viii) Find P(X = 0) for hypergeometric distribution with n = 4, N = 10 and K = 3.
(ix) Point out the fallacy if any if mean of a binomial distribution is 5 and its standard deviation is 3 .

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

5. (a) Find arithmetic mean for the given data: 04

Marks	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34
f	8	10	15	7	4

(b) Find geometric mean from the following frequency distribution: 04

X	2	3	4	5	6
f	5	7	8	3	2

(Continued P . . . . . 2)

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6. (a) Calculate variance for the marks of 100 students given in the following frequency distribution: 04

Marks	1 – 3	3 – 5	5 – 7	7 – 9
f	40	30	20	10

(b) First three moments of distribution about Y = 2 are 1, 2.5 and 5.5. Calculate mean and co-efficient of variation. 04

7. (a) Compute index number of prices for the following data taking 2000 as base year using median as an average: 04

Years	Prices		
	A	B	C
2000	18	85	52
2001	22	76	60
2002	28	80	66
2003	31	95	80

(b) If $P(A) = 0.60$, $P(B) = 0.08$ and $P(A \cap B) = 0.01$, calculate $P(A \cup B)$, if:
(i) A and B are not mutually exclusive (ii) A and B are mutually exclusive 04

8. (a) Let X be random variable with probability distribution as follows: 04

x	1	2	3	4	5
f(x)	0.125	0.450	0.250	0.050	0.125

Find mean and variance.

(b) A continuous random variable X having values only between 0 and 4 has a density function given by:

$f(x) = \frac{1}{2} - ax$, where "a" is any constant: Find (i) a (ii) $P(1 < X < 2)$ 04

9. (a) An event has the probability $P = \frac{2}{5}$. Find the complete binomial distribution for n = 5 trials. 04

(b) An urn contains nine balls. Five of them are red and four blue. Three balls are drawn without replacement. Find the probability distribution for number of red balls. 04

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11th Class Statistics Objective Paper Gujranwala Board 2024

Roll No. Candidate: _____

STATISTICS **Intermediate Part-I , Class 11th (1stA 324- IV)** **PAPER: I**

Time: 20 Minutes **OBJECTIVE** **Marks: 17**

Code: 6187

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. Use marker or pen to fill the circles. Cutting or filling two more circles will result in zero mark in that question.

1- 1- The index numbers computed for a group of things are called _____ index numbers.
(A) simple (B) composite (C) weighted (D) price relative

2- For a set of positive values, which one has the least value?
(A) A.M. (B) G.M. (C) M.D. (D) H.M.

3- For a normal distribution, $\overline{X} \pm 2S$ include of the observations
(A) 68.27% (B) 88.27% (C) 95.45% (D) 99.73%

4- For a binomial distribution, the value of p is 0.7 , then distribution will be
(A) symmetrical (B) positively skewed (C) negatively skewed (D) not sure

5- The total area of the probability function is
(A) 0 (B) –1 (C) 1 (D) ∞

6- Two cards are drawn from a pack of 52 cards with replacement, then the probability of both aces is
(A) $\frac{1}{169}$ (B) $\frac{2}{13}$ (C) $\frac{3}{26}$ (D) $\frac{1}{221}$

7- Weight of any object is an example of
(A) constant (B) geographical data (C) continuous data (D) discrete data

8- The H.M. of 0 , 1 and 2 is
(A) 0 (B) 1 (C) 2 (D) cannot be found

9- In Histogram, _____ is taken along y-axis.
(A) class mark (B) frequency
(C) cumulative frequency (D) class boundaries

10- In hypergeometric distribution , the successive trials are
(A) dependent (B) independent (C) fixed (D) disjoint

11- If Var (X) = 1 , Var (Y) = 3 , then S.D. (X – Y) = ?
(A) 2 (B) 3 (C) 4 (D) – 2

12- Var (X – Y) = ?
(A) Var (X) – Var (Y) (B) $\sqrt{Var(X) - Var(Y)}$ (C) Var (X) + Var (Y) (D) $\sqrt{Var(X) + Var(Y)}$

13- In binomial distribution , n = 5 , p = 0.5 then P(x = – 2) = ?
(A) 1 (B) 0.5 (C) 0.8 (D) zero

14- Mid-point of the class 65 – 84 is
(A) 54.5 (B) 64.5 (C) 74.5 (D) 84.5

15- A portion of population selected for study is
(A) parameter (B) statistics (C) population (D) sample

16- The value of (–3)! Will be
(A) –6 (B) 6 (C) 0 (D) not defined

17- Which is link relative in chain indices?
(A) $\frac{P_n}{P_{n-1}} \times 100$ (B) $\frac{P_o}{P_n} \times 100$ (C) $\frac{P_n}{P_o} \times 100$ (D) $\frac{P_{n-1}}{P_n} \times 100$

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11th Class Statistics Subjective Paper Gujranwala Board 2024

S.. TISTICS | Intermediate Part-I , Class 11th (1st A 324) | PAPER: I

..ne: 2:40 Hours | SUBJECTIVE | Marks: 68

Note: Section-I is compulsory. Attempt any Three (3) questions from Section-II.

SECTION – I

2. Write short answers to any EIGHT (8) questions: **(2 x 8 = 16)**

i- Differentiate between parameter and statistics.

ii- What is meant by secondary data?

iii- How many significant digits are there in each of the following numbers?

(a) 400 (b) 0.00394

iv- Define Mode.

v- In a skewed distribution, Mode = 15 and Mean = 10.5 . Find Median.

vi- What is relationship among A.M. , G.M. and H.M. ?

vii- Find the arithmetic mean if $u = \frac{x-57}{5}$, $\sum u = 23$ and $n = 20$

viii- Write a formula for P_{37} (37^{th} percentile) for grouped data.

ix- Differentiate between Price Relative and Link Relative.

x- What are the steps in the construction of Index Numbers?

xi- If Laspeyre's Price Index is 116.51 and Paasche's Price Index is 118.39 then find Fisher Price Index.

xii- What is difference between Aggregative Expenditure Method and Family Budget Method?

3. Write short answers to any EIGHT (8) questions: **(2 x 8 = 16)**

i- What is frequency distribution?

ii- Differentiate between box – head and stub.

iii- Define Histogram.

iv- Given $\sum f = 120$, $\sum fx = 296$, Mode = 2.944 , find Median.

v- Given $Q_3 = 178.25$, Q.D = 53.725 , find Q_1

vi- Define standard deviation and give its formulas.

vii- $\bar{X} = 200$, C.V = 7 , find Standard Deviation (S.D)

viii- Given $X_m = 15$, $X_o = 3$, find Range and its co-efficients.

ix- Differentiate between simple event and compound event.

x- Define combination.

xi- Given that $P(A) = 1/3$, $P(B) = 1/2$, $P(\bar{A} \cap B) = 1/2$, find $P(A \cap B)$

xii- Given that $P(A) = 1/4$, $P(B/A) = 1/2$, $P(A/B) = 1/4$, then find $P(\bar{A}/\bar{B})$

4. Write short answers to any SIX (6) questions: **(2 x 6 = 12)**

i- Define probability density function.

ii- Write down the properties of probability density function.

iii- If $E(x) = 0.63$, $var(x) = 0.2331$ then find $E(x^2)$.

iv- Given $x = 0 , 1 , 2$ and $p(x) = 4c , 3c , c$ then find the value of c.

v- Define binomial probability distribution.

vi- Given $n = 6$, $p = \frac{1}{2}$, then compute its mean and S.D.

vii- Write down the formula of hypergeometric distribution.

viii- Discuss the statement that in binomial distribution, mean = 5 and S.D = 3

ix- Write any two properties of hypergeometric distribution.

(Turn over)

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SECTION – II

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5- **(a)** A variable Y is determined from a variable X by the equation $Y = 14 - 5X$. Find Y when $X = -3, -2, -1, 0, 1, 2, 3, 4, 5$ and show that $\overline{Y} = 14 - 5\overline{X}$ **4**

(b) Calculate the Geometric mean for the following data : **4**

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

6- **(a)** Find the co-efficient of Q.D from the following data : **4**

Groups	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29
f	3	4	12	6	5

(b) Estimate the co-efficient of skewness from the given information. **4**

$n = 100$, $\sum x = 6000$, $\sum x^2 = 360900$, Median $= 60$

7- **(a)** Construct the cost of living I. No. of 1990 on the basis of 1986 using the family budget method. **4**

Expense on	Food	Rent	Clothing	Fuel	Misc.
	35%	15%	20%	10%	20%
Price 1986	150	30	75	25	40
Price 1990	145	30	65	23	45

(b) A bag contains 5 white and 4 black balls. Two balls are drawn together. Find the probability that **4**

i) both are white ii) both are black

8- **(a)** From the following probability distribution, find mean and variance **4**

x	0	1	2	3	4
P(x)	$\frac{1}{16}$	$\frac{4}{16}$	$\frac{6}{16}$	$\frac{4}{16}$	$\frac{1}{16}$

(b) A continuous random variable "x" has density function as **4**

$$f(x) = \begin{cases} 2x & \text{for} \quad 0 \le x \le 1 \\ 0 & \text{elsewhere} \end{cases}$$

Find i) $P\left(x < \frac{1}{4}\right)$ ii) $P(0.25 < x < 0.50)$

9- **(a)** A and B play a game in which A's chances of winning are 2/3. A series of 5 games is played. Find the probability that **4**

i) A will win 3 games

ii) A will win at least 3 games.

(b) Given that "x" is a hypergeometric random variable with N = 8 , n = 3 and K = 5 , then find **4**

i) $P(x \le 1)$

ii) $P(x > 1)$

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	(Objective Type)	Inter (Ist – A – Exam – 2024)	
Time :	20 Minutes	Inter (Part – I)	Session (2022 – 24) & (2023 – 25)
Marks :	17	pakcity.org	

Note : Four choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. on the Objective Bubble Sheet. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

11th Class Statistics Objective Paper Bahawalpur Board 2024

Q.No.1 (1)	A quantity calculated from population is called : (A) Frequency (B) Statistic (C) Parameter (D) Sample
(2)	Measurement usually provide : (A) Qualitative Data (B) Discrete Data (C) Primary Data (D) Continuous Data
(3)	Cumulative Frequency Curve is also called : (A) Histogram (B) Frequency Curve (C) Ogive (D) Historigram
(4)	In a Statistical table , Column Captions are called : (A) Box Head (B) Stub (C) Body (D) Title
(5)	The value of the data lying between Q_1 and Q_3 are : (A) 50% (B) 25% (C) 75% (D) 100%
(6)	The Sum of Squares of deviation is least from : (A) Median (B) Mean (C) Mode (D) G.M
(7)	Mean Deviation is least , if deviation are calculated from : (A) Mean (B) Mode (C) Median (D) G.M
(8)	Var (2x ± 3) is : (A) 5 Var (x) (B) 4 Var (x) (C) 4 Var (x) + 3 (D) 4 Var (x) + 9
(9)	In Fixed Base Method , the base period should be : (A) Abnormal (B) Middle (C) Normal (D) For Distant
(10)	Simple Index Number involves Commodities : (A) 2 (B) 3 (C) 4 (D) 1
(11)	A Coin and a Die can throw together : (A) 12 Ways (B) 6 Ways (C) 2 Ways (D) 36 Ways
(12)	Probability of drawing a Card of Ace is : (A) $\frac{1}{2}$ (B) $\frac{1}{13}$ (C) $\frac{1}{4}$ (D) $\frac{1}{5}$
(13)	$E(x^2) = 29$ and $E(x) = 4$ then Var (x) =.... : (A) 25 (B) 5 (C) 13 (D) 33
(14)	A Discrete Probability distribution may be presented by : (A) Table (B) Mathematical Equation (C) Diagram (D) All these
(15)	In a Binomial Distribution n = 10 , p = 0 . 5 then Mean is : (A) 0 . 5 (B) 5 (C) 10 (D) 2 . 5
(16)	The Parameters of Hypergeometric Distribution are : (A) 3 (B) 2 (C) 1 (D) 4
(17)	The Sum of p and q is always : (A) 0 (B) 2 (C) 1 (D) 4

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Statistics (Subjective)	Inter (Ist – A – Exam 2024)	Time 2 : 40 Hours Marks : 68

Note : It is compulsory to attempt any (8 – 8) Parts each from Q.No.2 and Q.No.3 while attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part – II .Write same Question No. and its Part No. as given in the Question Paper.

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11th Class Statistics Subjective Paper Bahawalpur Board 2024

(Part - I)

22 x 2 = 44

Q.No.2	(i)	Differentiate between Variable and Constant.	(ii)	Write down the Limitations of Statistics. (any two)
	(iii)	Describe Qualitative Variable.	(iv)	Enlist any two merits of Median.
	(v)	Define Central Tendency.	(vi)	Find Mode : 2 , 4 , 6 , 8 , 10 , 12
	(vii)	Find Harmonic Mean (H . M) : If $\sum f = 80$, $\sum(f/x) = 0.5\,8813$	(viii)	Find Median : 13 , 17 , 11 , 14 , 19 , 21 , 15
	(ix)	Define Paasche's Index Number .	(x)	Write down any two uses of an Index Number.
	(xi)	Describe any two limitations of Index Number.		
	(xii)	If Laspeyre 's Index Number = 105 . 4 , Paasche 's Index Number = 103 . 2 Find Fisher 's Ideal Index number.		
Q.No.3	(i)	Define Classification.	(ii)	Differentiate between Histogram and Historigram.
	(iii)	What is Pie Chart ? Explain.	(iv)	Write down names of Absolute Measures of Dispersion.
	(v)	If Range = 60 , Class Interval = 6 , then calculate No . of Classes .	(vi)	If Var (x) = 10 , find the Var (y) , If Y = 3x + 10
	(vii)	Define Skewness.	(viii)	If Standard Deviation of a distribution is 4 , find 2nd Moment about Mean.
	(ix)	Write down Sample Space , if " 3 " coins are tossed .	(x)	What is meant by Simple Event?
	(xi)	State Addition Law of Probability for Not Mutually Exclusive Events.	(xii)	If P(A) = 0 . 2 and P(B) = 0 . 15 find $P(A \cap B)$, if A and B are independent events.
Q.No.4	(i)	What is a Random Variable?	(ii)	Explain the Concept of Discrete Probability Distribution.
	(iii)	Given E(x) = 0 . 55, Var(x) = 1 . 35 and y = 2x + 1 Find E(y) and Var (y) .	(iv)	Write down the Properties of Expected Values.
	(v)	What is Binomial Experiment?	(vi)	A Random Variable ' x ' has a Binomial Distribution with n = 5 and P = 0 . 2 , find P (x = 2).
	(vii)	In a Binomial Distribution Mean = 2 . 4 and S.D = 1 . 2 Find the value of " n " .	(viii)	Enlist any two properties of Hypergeometric Experiment .
	(ix)	If N = 10 , n = 5 , k = 3 , find Mean of the Hypergeometric Distribution.		

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P.T.O.

Q.No.5 (a) Find the Geometric Mean for the following data : (04)

Age (years)	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60
f	6	7	9	6	4

(b) The Average Wage of 4 men is Rs 17/- per hour . What is the Average Wage of further 6 Men if the Average Wages of all 10 Men is Rs 20/- ? (04)

Q.No.6 (a) Find Coefficient of Quartile Deviation from the following Table : (04)

Weights (grams)	160 – 170	170 – 180	180 – 190	190 – 200	200 – 210	210 – 220
No . of Apples	7	13	30	42	35	23

(b) Given that $\sum f = 120$, $\sum fx = 296$, Mode = 2 . 944 and Second Moment about Mean is 1 . 4884 . Calculate Coefficient of Skewness . (04)

Q.No.7 (a) Calculate Chain Indices. (04)

Commodity	1928	1929	1930	1931
Rice	7 . 3	7 . 7	5 . 8	4 . 1
Wheat	7 . 5	5 . 5	3 . 6	2 . 7
LinSeed	7 . 0	8 . 0	6 . 5	4 . 2
Gur	6 . 3	7 . 3	6 . 2	4 . 2
Cotton	34 . 1	25 . 8	17 . 3	13 . 3
Tobacco	17 . 3	17 . 1	14 . 5	11 . 6

(b) A Pair of dice is rolled . Let " A " denote the event that the sum shown is " 6 " and " B " be the event that the two dice had the same no. Find : (04)
(i) P (A/B) (ii) P (B/A)

Q.No.8 (a) The Probability distribution of a Discrete Random Variable ' x ' is given by (04)
$f(x) = \binom{3}{x} \left(\frac{1}{4}\right)^x \left(\frac{3}{4}\right)^{3-x}$; x = 0 , 1 , 2 ,3 Find E (x) and E (x^2)

(b) A Continuous Random Variable " X " has Probability Density Function given by f (x) = cx , for 0 < x < 2 Find (i) C (ii) P (1 < x < 1 . 5) (04)

Q.No.9 (a) If ' X ' is the number of successes with Probability of success is $\frac{1}{4}$ in each of 5 independent trails . Then , find (i) P (x = 0) (ii) P (x ≤ 3) (04)

(b) Three balls are drawn from a bag containing 5 white and 3 black balls . If ' x ' denotes the number of white balls , then find the Probability Distribution of ' x ' and find its Mean. (04)

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	OBJECTIVE	**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 circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1 11th Class Statistics Objective Paper DG Khana Board 2024

1 Statistical results are

(A) exact (B) always true (C) not true (D) true on average

2 If C is a constant, then $\sum_{i=1}^{8} C$ is equal to

(A) 8 + C (B) 8 - C (C) 8 C (D) $\frac{8}{C}$

3 The number of items of data in a class is called

(A) Frequency (B) Variable (C) Parameter (D) Mid point

4 Ogive can be used for the calculation of

(A) Mean (B) Median (C) Mode (D) Harmonic mean

5 Mode of the series 10 , 13 , 12 , 10 , 20 , 11 , 15 , 10 , 14 , 12 is

(A) 10 (B) 12 (C) 15 (D) 20

6 If $\sum_{i=1}^{10} (X_i - 50) = 100$, then sample mean $\overline{X}$ will be

(A) 10 (B) 50 (C) 60 (D) 100

7 Second moment about mean is

(A) Zero (B) Variance (C) Range (D) Mode

8 Mean deviation of values 6 , 6 , 6 , 6 , 6 , 6 is

(A) 36 (B) 6 (C) 1 (D) 0

9 Cost of living index numbers are

(A) Simple index (B) Composite index (C) Chain index (D) Unweighted index

10 The most suitable average in chain base method is

(A) Median (B) Mode (C) Arithmetic mean (D) Geometric mean

11 The orderly arrangement of units is called

(A) Permutation (B) Combination (C) Probability (D) Factorial

12 A set of all possible outcomes of an experiment is called

(A) Combination (B) Sample point (C) Sample space (D) Simple event

13 A discrete probability function $f(x)$ is always

(A) Non-negative (B) Negative (C) One (D) Zero

14 The appropriate graph of probability density function is

(A) Polygon (B) Curve (C) Histogram (D) Historigram

15 In a Bernoulli trial the experiment is performed

(A) Once (B) Twice (C) Thrice (D) More than once

16 The parameters of the binomial distribution are

(A) n and x (B) p and x (C) p and q (D) n and p

17 In a hypergeometric distribution N = 6 , n = 4 and K = 3 , then mean is equal to

(A) 1 (B) 2 (C) 3 (D) 4

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QUESTION NO. 2 Write short answers to any Eight (8) parts of the following 16

(i)	Define Discret Variable.	(ii)	Describe the importance of Statistic in Economics.
(iii)	Write any two characteristics of Statistics.	(iv)	Enlist any two advantages of mode.
(v)	Find Geometric Mean (G.M) If $\sum f \log x = 170.69902$, $\sum f = 80$	(vi)	If median = 65 & mode = 85 Find the value of mean.
(vii)	Define Harmonic Mean (H.M)	(viii)	Find Mode 2 , 5 , 7 , 11 , 3 , 5 , 11 , 13 , 5
(ix)	Given $\sum p_0 q_1 = 402$ & $\sum p_1 q_1 = 481$ Find current year Weighted index number.	(x)	Given $\sum p_1 q_0 = 900$ & $\sum p_0 q_0 = 897$ Find Cost of Living index number.
(xi)	Define Fisher's Ideal index number.	(xii)	Write any two uses of index Number

QUESTION NO. 3 Write short answers to any Eight (8) parts of the following 16

(i)	Define relative frequency.	(ii)	What is one way and two way classification?
(iii)	Differentiate between class limits and class boundaries.	(iv)	Compute coefficient of quartile deviation if $Q_1 = 12$, $Q_3 = 48$
(v)	Define mean deviation.	(vi)	Describe any two demerits of Range.
(vii)	Given $\bar{x} = 12$ and Var(x) = 3 , Find $\bar{y}$ and Var($\bar{y}$) When y = 2x - 3	(viii)	Compute coefficient of variation if mean = 1.2 and S = 1.307
(ix)	Make a sample space if we toss a fair coin three times.	(x)	How many permutations can be formed from the word " STATISTICS ".
(xi)	Give the statement of addition law of probability for two non-mutually exclusive events.	(xii)	If P (A) = $\frac{1}{4}$, P (B) = $\frac{1}{3}$ and P (A/B) = $\frac{1}{6}$, then find P (B/A).

QUESTION NO. 4 Write short answers to any Six (6) parts of the following 12

(i)	Explain the continuous random variable with example.	(ii)	Write the properties of Distribution function.
(iii)	For the probability function $f(x) = A\,x$, $x = 1 , 2 , 3$, Compute the value of A.	(iv)	Check whether $f(x) = \frac{x}{10}$, $x = 1 , 2 , 3 , 4$ is a probability density function.
(v)	Find the E(X) for a binomial distribution with n = 6 and p = $\frac{3}{5}$	(vi)	Describe the shape of binomial distribution with p = 0.5
(vii)	A hypergeometric distribution has parameters N = 8 , k = 4 and n = 3 Give its mean.	(viii)	Enlist any two properties of hypergeometric distribution
(ix)	Give the range of the hypergeometric random variable.		

SECTION-II

Note: Attempt any Three questions from this section **8×3 = 24**

Q. 5

(A) Find Median and D_7 from the given data 15 , 7 , 3 , 0 , 9 , 6 , 4 , 5

(B) Find Mode from the following distribution.

Height (in)	60 – 62	63 – 65	66 – 68	69 – 71
No. of Students	5	18	27	8

Q. 6

(A) Find Standard Deviation and Variance.

Classes	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 - 70	70 - 80
f	02	03	04	20	15	07	05

(B) From the data 1 , 4 , 7 , 8 , 10 calculate first four moments about mean.

Q. 7

(A) Compute the index numbers of price , taking 1962 as base (i) Mean (ii) G.M are used as average.

Years	Commodities			
	Fire wood	Short cake	Kerosene oil	Matches
1962	3.25	2.50	0.20	0.06
1963	3.44	2.80	0.22	0.06
1964	3.50	2.00	0.25	0.06
1965	3.75	2.50	0.25	0.06

(B) From a well shuffled pack of 52 playing cards, two cards are drawn at random, what is the probability (i) One is a king and other is queen (ii) both are aces (iii) both are black (iv) both are spade cards ?

Q. 8

(A) Given that

X	2	4	6
P(X)	$2/6$	$2/6$	$2/6$

Find (i) E(X) (ii) $E(X^2)$

(B) A continuous random variable X which can assume values between X = 2 and X = 8 inclusive has a density Function , $f(x) = A\,(x+3)$, where 'A' is constant , Find (i) A (ii) $P(3 \le x \le 5)$

Q. 9

(A) A fair die is thrown 6 times. Let X be a random variable showing number of sixes. Find (i) P (X = 2) (ii) P(X = 6)

(B) A Committee of size 3 is selected from 4 men and 2 women. Obtain the probability distribution by the hypergeometric experiment for the number of men in the committee.

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☆☆	Roll No _____

Inter - (Part-I) - A / 2024
(For All Sessions)

Paper Code	6	1	8	4

Statistics (Objective)

Marks : 17 Time: 20 Minutes

Note:- Write answers to the questions on the objective answer sheet provided. Four possible answers are given. Which answer you consider correct fill the corresponding circle A,B,C or D in front of each question with marker or ink on the answer sheet provided.

1.1 The sum of the probability in discrete probability distribution is :

(A) One (B) Two (C) Zero (D) -1

2. A binomial probability distribution has variance :

(A) npq (B) nq (C) $\sqrt{npq}$ (D) $n^2p^2q^2$

3. Hypergeometric probability distribution has parameters :

(A) 1 (B) 2 (C) 3 (D) 4

4. In Binomial probability distribution trials are :

(A) Independent (B) Dependent
(C) Sometimes Independent (D) Always dependent

5. A quantity computed from sample is called :

(A) Parameter (B) Statistic (C) population (D) Sample

6. Statistical laws are true:

(A) Always (B) Not in the long run (C) On the average (D) None of these

7. Total of relative frequency is :

(A) Two (B) Half (C) Three (D) One

8. A pie diagram is represented by a :

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

9. The sum of deviations from Arithmetic Mean is :

(A) 1 (B) 2 (C) 3 (D) 0

10. Geometric Mean of 2,4,8 is :

(A) 4 (B) Zero (C) 6 (D) 16

11. The variance of 5,5,5 and 5 is :

(A) 5 (B) Zero (C) 25 (D) 125

12. For a symmetrical distribution

(A) $b_1 > 0$ (B) $b_1 < 0$ (C) $b_1 = 0$ (D) $b_1 = 3$

13. Link relatives can be obtained by dividing P_n by :

(A) P_0 (B) q_n (C) q_{n-1} (D) p_{n-1}

14. Index Number for base period is always :

(A) 100 (B) 150 (C) 50 (D) 200

15. The probability of red card out of 52 cards is :

(A) $\frac{1}{4}$ (B) $\frac{4}{52}$ (C) $\frac{1}{2}$ (D) Zero

16. If $A \cap B = \emptyset$ then A and B are :

(A) Not Mutually Exclusive (B) Equally likely
(C) Exhaustive (D) Mutually Exclusive

17. The expected value of a random variable is equal to its :

(A) Variance (B) S.D. (C) Mean (D) Covariance

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Roll No _____

HSSC - (Part-I) – A / 2024
(For All Sessions)

Statistics (Subjective)

Time: 2:40 Hours Marks : 68

Section - I

2. Give short answers of any eight parts from the following . (2x8=16)

(i) Explain giving examples, the term data.
(ii) Narrate any two sources of collecting primary data.
(iii) Describe any two characteristics of Statistics.
(iv) Explain combined mean with formula.
(v) Describe the empirical relation between mean, median and mode for moderately skewed distribution.
(vi) Given that $u = \frac{X-150}{5}$, $\sum fu = 100$ and $\sum f = 200$. Find $\overline{X}$.
(vii) Find the Modal letter of the word "DISTRIBUTION"
(viii) Describe the weighted aggregative price index number.
(ix) Define the term price relative with formula.
(x) If link relatives are 100,107,114 and103. Find chain indices.
(xi) Given that $X_1 = 4$ and $X_2 = 16$. Show that G.M. = $\sqrt{A.M. \times H.M.}$
(xii) Given that $\sum p_1 q_1 = 1400$, $\sum p_2 q_2 = 1600$, $\sum p_0 q_1 = 1360$ and $\sum p_0 q_2 = 1560$. Compute Paasche's price index number.

3. Give short answers of any eight parts from the following . (2x8=16)

(i) Define primary data.
(ii) Enlist the methods of collecting Secondary data.
(iii) What is frequency distribution?
(iv) Define Q.D.(Quartile Deviation).
(v) $n = 15$, $\sum X = 480$, $\sum X^2 = 15735$. Find the Coefficient of Variation.
(vi) $\overline{X} = 200$, C.V. = 7 %. Find the value of variance.
(vii) Mean = 29.6, Mode = 24.8, S= 15, Find Coefficient of skewness.
(viii) What is venn-diagram?
(ix) Define moments.
(x) Suppose $P(A) = \frac{1}{3}$, $P(B) = \frac{1}{2}$ and $P(\bar{A} \cap B) = \frac{1}{2}$. Find $P(\bar{A} \cap \bar{B})$
(xi) Define the terms sample space and events.
(xii) If A and B are two independent events such that P(A) = 0.2, P(B) = 0.15, then evaluate P(A /B).

4. Give short answers of any six parts from the following. (2x6=12)

(i) Describe two properties of mathematical expectation.
(ii) Write down the properties of probability density function.
(iii) If Var(X) = 3, compute Var(3X).
(iv) Given that E(X) = 200 and C.V. = 7%. Find Var(X).
(v) Write down formulae for mean and standard deviation of binomial distribution.
(vi) In a binomial distribution n = 5, $q = \frac{1}{2}$. Find P(X=3).
(vii) Is it possible that in a binomial distribution mean is 6 and variance is 6.25. Give reason.
(viii) In a hypergeometric distribution n = 5, k = 4 and N = 11. Compute its mean.
(ix) A committee of size 3 is selected from 4 men and 2 women. Find the probability that there is only one man in the committee.

Section - II

Note:- Attempt any three questions from the following. (8x3=24)

5. (a) The following data is the frequency distribution of number of leaves on the branches of a tree: (4)

No. of leaves	5	6	7	8	9	10
No. of branches	3	8	11	18	20	13

Find the mean and the mode of number of leaves per branch.

(b) The reciprocals of 8 values of X are given below : (4)
0.0400, 0.0345, 0.0540, 0.0333, 0.0175, 0.0632, 0.0113, 0.0210. Calculate the Arithmetic Mean and Harmonic Mean.

6. (a) Calculate mean deviation from median from the following data : (4)

Classes	15-19	20-24	25-29	30-34
f	2	4	6	3

(b) What can you say about skewness in each of the following cases : (4)
(i) Median = 26, $Q_3 = 38$, $Q_1 = 14$ (ii) Mean = 1403, Mode = 1487, Standard Deviation = 12

7. (a) From the data given below, construct Consumer price Index Number of 1986 on the basis of 1976 by using Aggregate expenditure method: (4)

Food	Prices		Quantity
	1976	1986	1976
Wheat	8	14	4
Rice	15	21	2
Daal	10	14	1
Oil	20	30	5
Ghee	6	12	3

(b) A pair of fair dice is thrown. If the two numbers appearing are different, find the probability that : (4)
(i) The sum is 6. (ii) The sum is four or less.

8. (a) From an urn containing 4 red and 6 white round marbles, a man draws three marbles at random without replacement. If X is a random variable which denotes the number of red marbles drawn, then what is the probability distribution of X. (4)

(b) A continuous random variable X has probability density function given by : $f(x) = \frac{2}{27}(x+1)$; for $2 \le x \le 5$. Find: (4)
(i) $P(X < 4)$ (ii) $P(3 \le X \le 4)$

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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

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11th Class Statistics Subjective Paper Sahiwal Board 2024

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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