

INTERMEDIATE PART-I (11th CLASS)**STATISTICS PAPER-I (NEW SCHEME) (SESSION 2015-2017)**

TIME ALLOWED: 2.40 Hours

SUBJECTIVE

MAXIMUM MARKS: 68

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 × 2 = 16**

- (i) Write down main characteristics of Statistics.
- (ii) Differentiate between Descriptive and Inferential Statistics.
- (iii) Define Harmonic Mean.
- (iv) Write down the advantages of Arithmetic Mean.
- (v) What is meant by Measures of Central Tendency?
- (vi) The sum of deviations from $X = 15$ for 10 values is 25, find the mean.
- (vii) In a skewed distribution, mean = 120 and median = 110, find value of mode.
- (viii) Define Index Number.
- (ix) Explain the Fixed Base Method.
- (x) Distinguish between Weighted and Unweighted Index Number.
- (xi) Given $\sum p_o q_o = 1500$ and $\sum p_n q_o = 2040$. Find base year weighted index number.
- (xii) Define Paasche's Index Number.

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

- (i) What is Classification?
- (ii) Define Histogram.
- (iii) Define Absolute Dispersion.
- (iv) What is Positive Skewness?
- (v) What is Standard Deviation?
- (vi) What are the values of β_1 and β_2 in a symmetrical distribution?
- (vii) If $Q_1 = 25$ and $Q_3 = 75$, find quartile deviation and inter-quartile range.
- (viii) What is co-efficient of variation?
- (ix) What is a random experiment?
- (x) Define the term probability.
- (xi) State the addition Law of Probability for any two events.
- (xii) If $P(A) = \frac{1}{3}$, $P(B) = \frac{1}{2}$ and A and B are independent events then find $P(A \cap B)$

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

- (i) Define Discrete Random Variable. Give examples.
- (ii) Define the Discrete Probability Distribution.
- (iii) What are two properties of Probability density function?
- (iv) If $E(X) = 10$, $Y = 2X + 5$, Find $E(Y)$
- (v) If a coin is tossed twice, write the p.d for the no of heads.
- (vi) Define Binomial Experiment.
- (vii) If $n = 10$, $p = 0.4$, find mean and variance of binomial r.v.x.
- (viii) Define Hypergeometric Probability Distribution.
- (ix) If $n = 45$, $N = 6$, $K = 3$, find $P(X = 1)$

SECTION-II**NOTE: - Attempt any three questions.**

- 5.(a) The number of children in 12 different families are 5, 2, 8, 3, 4, 3, 5, 6, 5, 4, 2, 1. Compute mean, median and mode. 4

- (b) Calculate Median and Mode for the following data:- 4

Marks	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59
Number of students	05	25	40	20	10

- 6.(a) Calculate Standard Deviation, Variance and Co-efficient of Variation from the following data:- 4

y	525	500	475	450	425	400	375
f	24	35	46	37	47	34	22

- (b) Lower and upper quartiles of a distribution are 142.36 and 167.73 respectively while median is 153.50. Find Co-efficient of Skewness. 4

- 7.(a) Compute the index numbers by Fisher's Idea formula for the data given below:- 4

$$\begin{aligned}\sum p_1 q_0 &= 8800, & \sum p_0 q_1 &= 7800 \\ \sum p_1 q_1 &= 15400, & \sum p_0 q_2 &= 13710 \\ \sum p_2 q_0 &= 11000, & \sum p_2 q_2 &= 23000 \\ \sum p_0 q_2 &= 16370\end{aligned}$$

- (b) Two uniform coins are tossed. Find the following probabilities:- 4
- (i) Both are heads (ii) Both faces are same
(iii) Only one is head (iv) At least one is head

- 8.(a) An urn contains 5 white ball and 3 black balls. Two balls are drawn at random without replacement. If X denotes the number of white balls, then find the probability distribution of " X ". 4

- (b) A continuous random variable X which assumes the values between $X = 2$ and $X = 4$ has the density function given by:- 4

$$f(x) = \frac{(x+1)}{8}, \quad 2 \leq x \leq 4$$

- (i) Show that $P(2 < x < 4) = 1$ (ii) Find $P(2.4 \leq x \leq 3.5)$

- 9.(a) If the probability of a defective bolt is 0.1. Find mean and the standard deviation of the distribution of defective bolts in a total of 500. 4

- (b) A committee of size 5 is to be selected at random from three women and five men. Find the expected number of women on the committee. 4

STATISTICS PAPER-I (NEW SCHEME) (SESSION 2015-2017)

TIME ALLOWED: 20 Minutes

OBJECTIVE

MAXIMUM MARKS: 17

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Q.No.1

- (1) A variable which takes measurable values is called a ____ variable.
(A) Continuous (B) Qualitative (C) Discrete (D) Constant
- (2) The part of the table containing row captions is called:-
(A) Box-head (B) Body (C) Data (D) Stub
- (3) Histogram is a graph of:-
(A) Time series
(B) Frequency distribution (C) Regression (D) Cumulative Frequency Distribution
- (4) The sum of deviations from mean is always:-
(A) Negative (B) Positive (C) More than one (D) Zero
- (5) Geometric mean is always ____ than Harmonic Mean.
(A) Less (B) More (C) Equal to Mode (D) None of these
- (6) Positive square root of variance is called:-
(A) Mean Deviation (B) Range (C) Quartile Deviation (D) Standard Deviation
- (7) Coefficient of variation is a measure of ____ dispersion.
(A) Relative (B) Absolute (C) Square (D) None of these
- (8) In a mesokurtic distribution the β_2 is:-
(A) Less than 3 (B) More than 3 (C) Zero (D) Equal to 3
- (9) The index number for base period is always equal to:-
(A) 1 (B) 200 (C) 100 (D) Zero
- (10) The most suitable average used in construction of index number is:-
(A) Arithmetic mean (B) Harmonic mean (C) Mode (D) Geometric mean
- (11) If $A \cap B = \phi$, then A and B are ____ events.
(A) Equally likely (B) Mutually exclusive (C) Exhaustive (D) Impossible
- (12) The probability of a certain event always lies between:-
(A) -1 and 1 (B) -1 and 0 (C) 0 and 1 (D) $-\infty$ to 0
- (13) An experiment which produces different outcomes is called ____ experiment.
(A) Random (B) Special (C) Exact (D) Simple
- (14) A set of all possible outcomes of random experiment is called:-
(A) Sub space (B) Outer space (C) Sample space (D) Random space
- (15) A subset of sample space having outcomes of interest is called an:-
(A) Event (B) Variable (C) Constant (D) None of these
- (16) In a Binomical experiment, the individual trials are:-
(A) Dependent (B) Same (C) Unequal (D) Independent
- (17) The Hypergeometric probability distribution has ____ parameters.
(A) One (B) Three (C) Zero (D) Two

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(B) Frequency distribution (C) Regression (D) Cumulative Frequency Distribution
- (8) The sum of deviations from mean is always:-
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- (9) Geometric mean is always _____ than Harmonic Mean.
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STATISTICS PAPER-I (NEW SCHEME) (SESSION 2015-2017)

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STATISTICS PAPER-I (NEW SCHEME) (SESSION 2015-2017)

TIME ALLOWED: 20 Minutes

OBJECTIVE

MAXIMUM MARKS: 17

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- (17) The sum of deviations from mean is always:-
(A) Negative (B) Positive (C) More than one (D) Zero

INTERMEDIATE PART-I (11th CLASS)**STATISTICS PAPER-I (OLD SCHEME) (SESSION 2012-2014)**

TIME ALLOWED: 3.10 Hours

SUBJECTIVE

MAXIMUM MARKS: 83

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 × 2 = 16**
- Define Statistics as a Discipline of Science.
 - Define Inferential Statistics.
 - What is an average?
 - For a certain distribution, if $\sum(X - 15) = 5$, $\sum(X - 18) = 0$ and $\sum(x - 21) = -21$ then what is the value of mean and why?
 - If $n_1 = 3$, $n_2 = 2$, $\bar{y}_1 = 3$, $\bar{y}_2 = 4$, then find \bar{y}_c .
 - If mean = 20, Median = 18.67, find Mode.
 - Define Quartiles.
 - Define Price Relative.
 - What is Fixed Base Method?
 - Define Weighted Index Numbers.
 - Given $\sum p_0 q_0 = 1500$ and $\sum p_n q_0 = 2040$. Find base year weighted index number.
 - What is Consumer Price Index Number?
3. **Attempt any eight parts.** **8 × 2 = 16**
- Write the names of four main parts of table.
 - Define Histogram.
 - Define Range.
 - What are main Relative Measures of Dispersion?
 - Define Variance.
 - Write down any two properties of Mean Deviation.
 - Define Moment about Mean.
 - What is Skewness?
 - Define Random Experiment.
 - What is Classical or "A Priori"? Define Probability.
 - State the Multiplication Law of Probability.
 - If $P(A) = .5$ and $P(A \cap B) = .15$ then find $P\left(\frac{B}{A}\right)$.
4. **Attempt any six parts.** **6 × 2 = 12**
- Four coins are tossed. Give the values of random variable X (No. of heads).
 - Define Mathematical Expectation.
 - Define Constant. What is its expectation?
 - If $f(x) = Ax$, $x = 0, 1, 2, 4$. Find the value of A .
 - If $E(x) = 3.2$, then find $E(7 - 2E(x))$.
 - Define Binomial Random Variable.
 - If $n = 7$ and $p = 0.7$. Find mean and variance.
 - Give accurate range of hypergeometric variable.
 - Give the mean and variance of hypergeometric distribution.

SECTION-II**NOTE: - Attempt any three questions.**

- 5.(a) The deviations from $X = 22.5$ of different values of X are $-12, -8.5, 3.0, 0, 2.5, 6.6, 9.2, 1.6, 0.5$ and 0.4 . Find the lower quartile of X . 4

- (b) The A.M. of the series is 30.5 marks. Calculate median. 4

Marks	10	20	30	40	50
Frequency	8	10	20	15	7

- 6.(a) Find the first three moments about mean of the following data:- 4

x_i	87	91	89	88	89	91	87
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- (b) Find the mean deviation of the following data:- 4

Group	1 - 3	4 - 7	7 - 9	10 - 12	13 - 15
Frequency	3	12	20	7	2

- 7.(a) Compute chain index numbers for the following data taking 1997 as base year:- 4

Year	1997	1998	1999	2000	2001	2002	2003
Price	180	185	194	200	204	218	220

- (b) If three cards are chosen from a well-shuffled deck of 52 playing cards. What is the probability of selecting:- (i) 3 red cards (ii) no heart cards? 4

- 8.(a) A committee of size 3 is to be selected at random from 3 women and 5 men. Obtain probability distribution for the number of women selected for the committee. 4

- (b) A continuous random variable X which can assume values between $X = 2$ and $X = 8$ inclusive has a density function given by $a(x + 30)$ where a is a constant. Find (i) a and (ii) $P(x \geq 4)$ 4

- 9.(a) A fair die is rolled 5 times and the number of sixes is counted. Find the probability of (i) No six (ii) At least one six 4

- (b) In Hyper Geometric Distribution $n = 4$, $N = 10$ and $K = 3$, Then find (i) $P(X \leq 2)$ (ii) $P(X = 4)$ 4

SECTION-III (PRACTICAL)

10. Attempt any three parts.

3 × 5 = 15

- (A) The logarithm of five values of X are given as 1, 1.2, 1.3, 2, 4. Find Geometric Mean.

- (B) For a set of ungrouped values, the following sums are found, $n = 15$, $\sum x = 480$, $\sum x^2 = 15735$. Find coefficient of Variation.

- (C) Calculate the weighted average of given index numbers when food, fuel and light, and clothing are given weights of 5, 1 and 3 respectively.

Commodity	Food	Fuel and light	Clothing
Index number (I)	111	105	106

- (D) A machine produces parts which are graded A or B with proportion 2 : 1. Calculate the probabilities of obtaining 0, 1, 2, 3, 4, 5 parts of finish A in a sample of 5.

- (E) A bag contains 4 red and 6 black balls. A sample of 4 balls is selected from the bag without replacement. Let X be the number of red balls. Find the probability distribution of X .

STATISTICS PAPER-I (OLD SCHEME) (SESSION 2012-2014)

TIME ALLOWED: 20 Minutes

OBJECTIVE

MAXIMUM MARKS: 17

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Q.No.1

- (1) A Statistic which is not measurable is called:-
 (A) A constant (B) An attribute (C) A variable (D) A parameter
- (2) Data which has been arranged in ascending or descending order is called:-
 (A) Raw data (B) Grouped data (C) Arrayed data (D) Ungrouped data
- (3) A table has at least:-
 (A) Three parts (B) Five parts (C) Two parts (D) Four parts
- (4) The geometric mean of a and b is:-
 (A) ab (B) $(ab)^{\frac{1}{2}}$ (C) $\sqrt{a+b}$ (D) $\frac{a+b}{2}$
- (5) If any value in a series is zero, then we can not calculate the:-
 (A) Mean (B) Mode (C) Median (D) Harmonic Mean
- (6) Corrected variance is equal to:-
 (A) $S^2 - \frac{h}{2}$ (B) $S^2 - \frac{h^2}{12}$ (C) $S^2 - \frac{h}{12}$ (D) $\frac{h}{12}$
- (7) The second moment about mean is equal to:-
 (A) S.D (B) Skewness (C) Variance (D) m'_2
- (8) For Leptokurtic Distribution:-
 (A) $b_2 = 3$ (B) $b_2 > 3$ (C) $b_2 < 3$ (D) $b_1 > 3$
- (9) In chain base method, the base period is:-
 (A) Fixed (B) Changed (C) Constant (D) None of these
- (10) An index number is called simple index number when it is computed from:-
 (A) Simple Index (B) Single Variable (C) Two Variables (D) None of these
- (11) _____ is the probability of getting two heads when three balance coins are tossed once.
 (A) $\frac{2}{8}$ (B) $\frac{5}{8}$ (C) $\frac{3}{8}$ (D) $\frac{1}{2}$
- (12) If $P(A) = 0.60$, $P(B) = 0.50$, $P(A \cap B) = 0.30$ then $P(A \cup B)$ is equal to:-
 (A) 0.8 (B) 0.9 (C) 0.4 (D) None of these
- (13) Probability density function is the probability function of _____ random variable.
 (A) Qualitative (B) Continuous (C) Discrete (D) None of these
- (14) If $Y = 5X + 10$, then $S.D.(Y)$ is:-
 (A) $5 S.D.(X)$ (B) $25 S.D.(X)$ (C) $10 S.D.(X)$ (D) $5 S.D.(X) + 10$
- (15) Binomial distribution is positively skewed when:-
 (A) $p = q$ (B) $p > q$ (C) $p < q$ (D) $p = \frac{1}{2}$
- (16) In binomial distribution the range of X is:-
 (A) 0 to ∞ (B) 0 to n (C) $-\infty$ to $+\infty$ (D) 1 to n
- (17) In hypergeometric distribution, the trials are:-
 (A) Independent (B) Dependent (C) Continuous (D) None of these

STATISTICS PAPER-I (OLD SCHEME) (SESSION 2012-2014)

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- (3) In hypergeometric distribution, the trials are:-
 (A) Independent (B) Dependent (C) Continuous (D) None of these
- (4) A Statistic which is not measurable is called:-
 (A) A constant (B) An attribute (C) A variable (D) A parameter
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STATISTICS PAPER-I (OLD SCHEME) (SESSION 2012-2014)

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 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. 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 question 6 on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) For Leptokurtic Distribution:-

- (A) $b_2 = 3$ (B) $b_2 > 3$ (C) $b_2 < 3$ (D) $b_1 > 3$

(2) In chain base method, the base period is:-

- (A) Fixed (B) Changed (C) Constant (D) None of these

(3) An index number is called simple index number when it is computed from:-

- (A) Simple Index (B) Single Variable (C) Two Variables (D) None of these

(4) _____ is the probability of getting two heads when three balance coins are tossed once.

- (A) $\frac{2}{8}$ (B) $\frac{5}{8}$ (C) $\frac{3}{8}$ (D) $\frac{1}{2}$

(5) If $P(A) = 0.60$, $P(B) = 0.50$, $P(A \cap B) = 0.30$ then $P(A \cup B)$ is equal to:-

- (A) 0.8 (B) 0.9 (C) 0.4 (D) None of these

(6) Probability density function is the probability function of _____ random variable.

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

(7) If $Y = 5X + 10$, then $S.D.(Y)$ is:-

- (A) $5 S.D.(X)$ (B) $25 S.D.(X)$ (C) $10 S.D.(X)$ (D) $5 S.D.(X) + 10$

(8) Binomial distribution is positively skewed when:-

- (A) $p = q$ (B) $p > q$ (C) $p < q$ (D) $p = \frac{1}{2}$

(9) In binomial distribution the range of X is:-

- (A) 0 to ∞ (B) 0 to n (C) $-\infty$ to $+\infty$ (D) 1 to n

(10) In hypergeometric distribution, the trials are:-

- (A) Independent (B) Dependent (C) Continuous (D) None of these

(11) A Statistic which is not measurable is called:-

- (A) A constant (B) An attribute (C) A variable (D) A parameter

(12) Data which has been arranged in ascending or descending order is called:-

- (A) Raw data (B) Grouped data (C) Arrayed data (D) Ungrouped data

(13) A table has at least:-

- (A) Three parts (B) Five parts (C) Two parts (D) Four parts

(14) The geometric mean of a and b is:-

- (A) ab (B) $(ab)^{\frac{1}{2}}$ (C) $\sqrt{a+b}$ (D) $\frac{a+b}{2}$

(15) If any value in a series is zero, then we can not calculate the:-

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

(16) Corrected variance is equal to:-

- (A) $S^2 - \frac{h}{2}$ (B) $S^2 - \frac{h^2}{12}$ (C) $S^2 - \frac{h}{12}$ (D) $\frac{h}{12}$

(17) The second moment about mean is equal to:-

- (A) S.D (B) Skewness (C) Variance (D) m'_2

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