

INTERMEDIATE PART-I (11th CLASS)**STATISTICS PAPER-I**

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-I2. **Attempt any eight parts.****8 × 2 = 16**

- (i) What is meant by Primary Data?
- (ii) Define Inferential Statistics.
- (iii) Define G.M.
- (iv) Write two qualities of Good Average.
- (v) Define Mode with formula.
- (vi) Sum of deviations of 15 values from 20 is 45. Find A.M.
- (vii) If mode = 15 and mean = 10.5. Find Median.
- (viii) Define Price Relatives.
- (ix) $\Sigma p_1 q_0 = 505$, $\Sigma p_0 q_0 = 425$. Find index number.
- (x) Give most suitable average for index number, with reason.
- (xi) Given $W = 20, 30, 40, 50$, $I = 100, 105, 110, 120$ Find Weighted index.
- (xii) What are Quantity Index Numbers?

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

- (i) Define Classification.
- (ii) Define Histogram.
- (iii) Define Tabulation.
- (iv) What is the relationship between mean, median and mode in a positively skewed distribution?
- (v) Define Skewness.
- (vi) For a normal distribution that is the Percentage of Values lying between $\bar{X} \pm S$?
- (vii) Define Absolute Dispersion.
- (viii) Given $\Sigma X = 180$, $\Sigma X^2 = 6660$ and $n = 5$ Find Co-efficient of Variation.
- (ix) If a coin is tossed, what is the probability that head comes up?
- (x) Given that $P(\bar{A}) = 4/9$, Find $P(A)$.
- (xi) Define Independent Events.
- (xii) State the addition law of probability for two not-mutually exclusive events.

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

- (i) Define Random Experiment.
- (ii) What is Mathematical Expectation?
- (iii) Define continuous Random Variable.
- (iv) Give the properties of Probability Distribution.
- (v) If $E(X) = 2$ and $E(X^2) = 20$. Find Standard Deviation of X .
- (vi) Give two properties of a Binomial Experiment.
- (vii) In a Binomial Distribution $n = 10$ and $P = 0.5$. Find its Variance.
- (viii) Give two properties of Hypergeometric Experiment.
- (ix) If $N = 8$, $n = 2$, $K = 4$, then find Variance of hypergeometric distribution.

SECTION II**NOTE: - Attempt any three questions.**5.(a) If $D = X - 18$ Find Mean and G.M

4

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

(b) Find Median and Mode.

4

Classes	5 - 9	10 - 14	15 - 19	20 - 24
f	7	18	13	4

6.(a) Find mean deviation from mean to the following data:-

4

Marks	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79
Frequencies	8	87	190	86	20

(b) Find first moment about mean and second moment about mean of the following data:-

4

X	12	14	16	18	20
f	1	4	6	10	7

- 7.(a) Compute Chain Indices for the following data taking 2003 as base year:-

4

Years	2003	2004	2005	2006	2007	2008	2009
Prices	185	190	199	205	209	223	225

- (b) An Integer is chosen at random from first 100 positive integers. What is the probability that integer chosen is divisible by 3 or 4.

4

- 8.(a) The probability distribution of a random variable X is given below:-

4

x	1	2	3	4	5
P(x)	0.1	0.3	K	0.2	0.1

Find (i) The value of K (ii) Mean and variance of this distribution.

- (b) For a continuous random variable X,

$f(x) = Cx$, $0 \leq x \leq 2$. Find (i) C

(ii) $P(X \leq 1)$

4

- 9.(a) Find the probability that in 5 Tosses of a fair die "3 or 4" appears:-

4

(i) at no time (ii) One (iii) Twice (iv) at most twice

- (b) Given that X is a hypergeometric random variable with $N = 8$, $n = 3$ and $k = 5$ Find $P(x \leq 3)$

4

SECTION-III (PRACTICAL)

10. Attempt any three parts.

3 × 5 = 15

- (A) Show that with the help of data that A.M > G.M

Groups	16 – 20	21 – 25	26 – 30	31 – 35	36 – 40	41 – 45
f	32	38	45	106	75	16

- (B) Given the following informations:-

$$n_1 = 100 \quad S_1 = 2.4 \quad \bar{X}_1 = 120$$

$$n_2 = 120 \quad S_2 = 4.2 \quad \bar{X}_2 = 15.8$$

$$n_3 = 150 \quad S_3 = 3.7 \quad \bar{X}_3 = 10.5$$

Find combined variance

- (C) Find price relatives for the following data taking.

(i) 2000 as base year (ii) Average of first 7 years as base

Years	2000	2001	2002	2003	2004	2005	2006	2007
Prices	25	23	28	29	30	32	33	40

- (D) Let X be a random variable with probability distribution is:-

X	1	2	3	4	5
P(x)	0.125	0.45	0.25	0.05	0.125

Show that (i) $E(4x+5) = 4E(x) + 5$ (ii) $E(2y+3) = 2E(y) + 3$

- (E) For a binomial distribution, $n = 6$ $p = 1/3$

Find (a) $P(X = -1)$ (b) $P(X = 2.5)$ (c) $P(X = 2)$ (d) $P(X = 10)$

STATISTICS PAPER-I

TIME ALLOWED: 20 Minutes

MAXIMUM MARKS: 17

OBJECTIVE

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) The data which has not undergone any statistical treatment are:-
 (A) Primary data (B) Secondary data (C) Discrete data (D) Qualitative data
- (2) Histogram is a graph of:-
 (A) Frequency distribution (B) Time series (C) Qualitative data (D) Ogive
- (3) Frequency is denoted by:-
 (A) c (B) q (C) p (D) f
- (4) Departure from symmetry is called:-
 (A) Kurtosis (B) Skewness (C) Dispersion (D) None of these
- (5) The arithmetic mean is affected by change of:-
 (A) Origin (B) Scale (C) Both A and B (D) None of these
- (6) The standard deviation is independent change of:-
 (A) Origin (B) Scale (C) Origin and Scale (D) None of these
- (7) The distribution is symmetrical if the moment coefficient of skewness $\sqrt{b_1}$ is:-
 (A) Negative (B) Positive (C) Zero (D) 3
- (8) Second moment about mean is equal to:-
 (A) Zero (B) 1 (C) Variance (D) None of these
- (9) For computing chain index, we compute:-
 (A) Price relatives (B) Link relatives (C) Weighted indices (D) None of these
- (10) Base year weighted index number is also called:-
 (A) Laspeyre's (B) Paashes's (C) Fisher's (D) None of these
- (11) When two dice are rolled, the number of possible sample points is:-
 (A) 6 (B) 12 (C) 36 (D) 48
- (12) If $P(A \cap B) = P(A) \cdot P(B/A)$; then A and B are :-
 (A) Independent events (B) Mutually exclusive events (C) Dependent events (D) None of these
- (13) If X and Y are random variables, then $E(x - y)$ is equal to :-
 (A) $E(x) + E(y)$ (B) $E(x) - E(y)$ (C) $X - E(y)$ (D) $E(x) - Y$
- (14) The expected value of a random variable is equal to its:-
 (A) Mean (B) Variance (C) Standard deviation (D) Covariance
- (15) The binomial distribution, if $N = 10$ and $P = \frac{3}{5}$, then the mean is:-
 (A) 1 (B) 3 (C) 6 (D) 10
- (16) The binomial distribution is positively skewed when:-
 (A) $P = q$ (B) $P > q$ (C) $P < q$ (D) None of these
- (17) In hypergeometric distribution, the trials are:-
 (A) Independent (B) Dependent (C) Undefined (D) None of these

STATISTICS PAPER-I

TIME ALLOWED: 20 Minutes

MAXIMUM MARKS: 17

OBJECTIVE

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) The expected value of a random variable is equal to its:-
 (A) Mean (B) Variance (C) Standard deviation (D) Covariance
- (2) The binomial distribution, if $N = 10$ and $P = \frac{3}{5}$, then the mean is:-
 (A) 1 (B) 3 (C) 6 (D) 10
- (3) The binomial distribution is positively skewed when:-
 (A) $P = q$ (B) $P > q$ (C) $P < q$ (D) None of these
- (4) In hypergeometric distribution, the trials are:-
 (A) Independent (B) Dependent (C) Undefined (D) None of these
- (5) The data which has not undergone any statistical treatment are:-
 (A) Primary data (B) Secondary data (C) Discrete data (D) Qualitative data
- (6) Histogram is a graph of:-
 (A) Frequency distribution (B) Time series (C) Qualitative data (D) Ogive
- (7) Frequency is denoted by:-
 (A) c (B) q (C) p (D) f
- (8) Departure from symmetry is called:-
 (A) Kurtosis (B) Skewness (C) Dispersion (D) None of these
- (9) The arithmetic mean is affected by change of:-
 (A) Origin (B) Scale (C) Both A and B (D) None of these
- (10) The standard deviation is independent change of:-
 (A) Origin (B) Scale (C) Origin and Scale (D) None of these
- (11) The distribution is symmetrical if the moment coefficient of skewness $\sqrt{\frac{b_1}{b_1}}$ is:-
 (A) Negative (B) Positive (C) Zero (D) 3
- (12) Second moment about mean is equal to:-
 (A) Zero (B) 1 (C) Variance (D) None of these
- (13) For computing chain index, we compute:-
 (A) Price relatives (B) Link relatives (C) Weighted indices (D) None of these
- (14) Base year weighted index number is also called:-
 (A) Laspeyre's (B) Paashes's (C) Fisher's (D) None of these
- (15) When two dice are rolled, the number of possible sample points is:-
 (A) 6 (B) 12 (C) 36 (D) 48
- (16) If $P(A \cap B) = P(A) \cdot P(B/A)$; then A and B are :-
 (A) Independent events (B) Mutually exclusive events (C) Dependent events (D) None of these
- (17) If X and Y are random variables, then $E(x - y)$ is equal to :-
 (A) $E(x) + E(y)$ (B) $E(x) - E(y)$ (C) $X - E(y)$ (D) $E(x) - Y$

STATISTICS PAPER-I

TIME ALLOWED: 20 Minutes

MAXIMUM MARKS: 17

OBJECTIVE

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) Second moment about mean is equal to:-
 (A) Zero (B) 1 (C) Variance (D) None of these
- (2) For computing chain index, we compute:-
 (A) Price relatives (B) Link relatives (C) Weighted indices (D) None of these
- (3) Base year weighted index number is also called:-
 (A) Laspeyre's (B) Paashes's (C) Fisher's (D) None of these
- (4) When two dice are rolled, the number of possible sample points is:-
 (A) 6 (B) 12 (C) 36 (D) 48
- (5) If $P(A \cap B) = P(A) \cdot P(B/A)$; then A and B are :-
 (A) Independent events (B) Mutually exclusive events (C) Dependent events (D) None of these
- (6) If X and Y are random variables, then $E(x - y)$ is equal to :-
 (A) $E(x) + E(y)$ (B) $E(x) - E(y)$ (C) $X - E(y)$ (D) $E(x) - Y$
- (7) The expected value of a random variable is equal to its:-
 (A) Mean (B) Variance (C) Standard deviation (D) Covariance
- (8) The binomial distribution, if $N = 10$ and $P = \frac{3}{5}$, then the mean is:-
 (A) 1 (B) 3 (C) 6 (D) 10
- (9) The binomial distribution is positively skewed when:-
 (A) $P = q$ (B) $P > q$ (C) $P < q$ (D) None of these
- (10) In hypergeometric distribution, the trials are:-
 (A) Independent (B) Dependent (C) Undefined (D) None of these
- (11) The data which has not undergone any statistical treatment are:-
 (A) Primary data (B) Secondary data (C) Discrete data (D) Qualitative data
- (12) Histogram is a graph of:-
 (A) Frequency distribution (B) Time series (C) Qualitative data (D) Ogive
- (13) Frequency is denoted by:-
 (A) c (B) q (C) p (D) f
- (14) Departure from symmetry is called:-
 (A) Kurtosis (B) Skewness (C) Dispersion (D) None of these
- (15) The arithmetic mean is affected by change of:-
 (A) Origin (B) Scale (C) Both A and B (D) None of these
- (16) The standard deviation is independent change of:-
 (A) Origin (B) Scale (C) Origin and Scale (D) None of these
- (17) The distribution is symmetrical if the moment coefficient of skewness $\sqrt{b_1}$ is:-
 (A) Negative (B) Positive (C) Zero (D) 3

STATISTICS PAPER-I

TIME ALLOWED: 20 Minutes

MAXIMUM MARKS: 17

OBJECTIVE

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) The arithmetic mean is affected by change of:-
 (A) Origin (B) Scale (C) Both A and B (D) None of these
- (2) The standard deviation is independent change of:-
 (A) Origin (B) Scale (C) Origin and Scale (D) None of these
- (3) The distribution is symmetrical if the moment coefficient of skewness $\sqrt{b_1}$ is:-
 (A) Negative (B) Positive (C) Zero (D) 3
- (4) Second moment about mean is equal to:-
 (A) Zero (B) 1 (C) Variance (D) None of these
- (5) For computing chain index, we compute:-
 (A) Price relatives (B) Link relatives (C) Weighted indices (D) None of these
- (6) Base year weighted index number is also called:-
 (A) Laspeyre's (B) Paashes's (C) Fisher's (D) None of these
- (7) When two dice are rolled, the number of possible sample points is:-
 (A) 6 (B) 12 (C) 36 (D) 48
- (8) If $P(A \cap B) = P(A) \cdot P(B/A)$; then A and B are :-
 (A) Independent events (B) Mutually exclusive events (C) Dependent events (D) None of these
- (9) If X and Y are random variables, then $E(x - y)$ is equal to :-
 (A) $E(x) + E(y)$ (B) $E(x) - E(y)$ (C) $X - E(y)$ (D) $E(x) - Y$
- (10) The expected value of a random variable is equal to its:-
 (A) Mean (B) Variance (C) Standard deviation (D) Covariance
- (11) The binomial distribution, if $N = 10$ and $P = \frac{1}{5}$, then the mean is:-
 (A) 1 (B) 3 (C) 6 (D) 10
- (12) The binomial distribution is positively skewed when:-
 (A) $P = q$ (B) $P > q$ (C) $P < q$ (D) None of these
- (13) In hypergeometric distribution, the trials are:-
 (A) Independent (B) Dependent (C) Undefined (D) None of these
- (14) The data which has not undergone any statistical treatment are:-
 (A) Primary data (B) Secondary data (C) Discrete data (D) Qualitative data
- (15) Histogram is a graph of:-
 (A) Frequency distribution (B) Time series (C) Qualitative data (D) Ogive
- (16) Frequency is denoted by:-
 (A) c (B) q (C) p (D) f
- (17) Departure from symmetry is called:-
 (A) Kurtosis (B) Skewness (C) Dispersion (D) None of these

ثانوی و اعلیٰ ثانوی تعلیمی بورڈ، ملتان

مورخہ: 16-11-2016 نمونہ: شماریات پرچہ: I گروپ:

جزل ہدایات برائے مارکنگ Key اسکیم اولڈ اسکیم (مارکنگ اسکیم)

انٹر پارٹ فرسٹ ایکنڈ سالانہ امتحان 2016ء

Section I

Q2

Attempt any eight ~~parts~~ parts

2 mark to each part:

$$8 \times 2 = 16$$

vi) $\bar{x} = A + \frac{\sum D}{n} = 20 + \frac{45}{15} = 20 + 3 = 23$

vii) Mode = 3 Median - 2 mean

$$15 = 3(\text{med}) - 2(10.5)$$

$$\Rightarrow \text{median} = \frac{36}{3} = 12$$

ix) $P_{0n} = \frac{505}{425} \times 100 = 118.8$

x) $P_{0n} = \frac{\sum f_w}{\sum w} = \frac{100(20) + 105(30) + 110(40) + 120(50)}{20 + 30 + 40 + 50} = \frac{15550}{140} = 111.07$

Q3

Attempt any eight parts.

2 marks to each part:

$$8 \times 2 = 16$$

viii) $\bar{x} = 36, s = 6, C.V = \frac{s}{\bar{x}} \times 100 = \frac{6}{36} \times 100 = 16.67\%$

x) $P(A) = 1 - \frac{4}{9} = \frac{5}{9}$

Q4

Attempt any six parts.

Each part of 2 marks:

$$6 \times 2 = 12$$

vi) $\sigma^2 = E(X^2) - (EX)^2 = 20 - (2)^2 = 16$

$$\sigma = \sqrt{16} = 4$$

vii) $n = 10, p = 0.5$

$$\text{Var} = npq = 10 \times 0.5 \times 0.5 = 2.5$$

ix) $\text{Var} = n \left(\frac{K}{N} \right) \left(\frac{N-K}{N} \right) \left(\frac{N-n}{N-1} \right) = 2 \left(\frac{4}{8} \right) \left(\frac{4}{8} \right) \left(\frac{6}{7} \right) = \frac{192}{448} = 0.428$

general instructions

P.T.O.

**BOARD OF INTERMEDIATE AND SECONDARY EDUCATION,
MULTAN**

OBJECTIVE KEY FOR INTER (PART I/II) Supply Examination, 2016.

Name of Subject Statistics

Session 2012-14

Q. Nos.	Paper Code 6181	Paper Code 6183	Paper Code 6185	Paper Code 6187
1.	A	A	C	C
2.	A	C	B	A
3.	D	C	A	C
4.	B	B	C	C
5.	C	A	C	B
6.	A	A	B	A
7.	C	D	A	C
8.	C	B	C	C
9.	B	C	C	B
10.	A	A	B	A
11.	C	C	A	C
12.	C	C	A	C
13.	B	B	D	B
14.	A	A	B	A
15.	C	C	C	A
16.	C	C	A	D
17.	B	B	C	B
18.				
19.				
20.				

سرٹیفکیٹ بابت تصحیح سوالیہ پرچہ/مارکنگ Key

ہم نے مضمون شماریات پرچہ I گروپ اسکیم اولڈ انٹر میڈیٹ امتحان 2016ء کا سوالیہ پرچہ لکھ کر پیش کیا ہے۔

(Subjective & Objective) کو نظر میں چیک کر لیا ہے یہ پرچہ سلیبس کے عین مطابق Set کیا گیا ہے۔ اس سوالیہ پرچہ میں کسی قسم کی کوئی

غلطی نہ ہے۔ ہم نے سوالیہ پرچہ کا اردو اور انگریزی Version بھی چیک کر لیا ہے یہ Version آپس میں مطابقت رکھتے ہیں اور سلیبس (Syllabus)

کے مطابق بھی ہیں۔ نیز اس پرچہ کی Key کی بابت بھی تصدیق کی جاتی ہے کہ یہ بھی درست بنائی گئی ہے۔ اس میں بھی کسی قسم کی کوئی غلطی نہ ہے۔

مزید یہ کہ ہم نے Key بنانے سے متعلق دفتر کی جانب سے تیار کردہ ہدایات وصول کر کے ان کا بغور مطالعہ کر لیا ہے اور ان کی روشنی میں Key بنائی ہے۔

PREPARED & CHECKED BY

Sr. No. Name Designation Institution Mobile No. Signature.

1. Nasir Abbas Sipra A.P. G.C. Khanewal 0345-7380055

2. AMIR-AHMAD A.P. G.C. of Sraan 0366-8689330

3. M. Naeem Amin A.P. Govt. Engrs. 0300 6347745

CAICG, Multan