2016 (S)   Roll No: _____

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-I

2.   **Attempt any eight parts.** $8 \times 2 = 16$
- (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.** $8 \times 2 = 16$
- (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.** $6 \times 2 = 12$
- (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

P.T.O

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 0r 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,
$f(x) = Cx,$ $O \leq x \leq 2.$ 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 4
$N = 8,$ $n = 3$ and $k = 5$ $Find$ $P(x \leq 3)$

SECTION-III (PRACTICAL)

10. **Attempt any three parts.** $3 \times 5 = 15$

(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:-
$n_1 = 100$ $S_1 = 2.4$ $\overline{X}_1 = 120$
$n_2 = 120$ $S_2 = 4.2$ $\overline{X}_2 = 15.8$
$n_3 = 150$ $S_3 = 3.7$ $\overline{X}_3 = 10.5$
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) $P(X = 10)$

37-2016(S)-200 **(MULTAN)**

STATISTICS PAPER-I

OBJECTIVE

TIME ALLOWED: 20 Minutes

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) 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 $P(A \cap B) = P(A).P(B/A)$; *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

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STATISTICS   PAPER-I   TIME ALLOWED: 20 Minutes
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Section I

Q2 Attempt any eight parts

2 mark to each part: $8 \times 2 = 16$

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

vii) Mode $= 3$ Median $- 2$ mean

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

$\Rightarrow$ median $= \dfrac{36}{3} = 12$

ix) $P_{on} = \dfrac{505}{425} \times 100 = 118.8$

x) $P_{on} = \dfrac{\sum \bar{I}w}{\sum w} = \dfrac{100(20) + 105(30) + 110(40) + 120(50)}{20 + 30 + 40 + 50} = \dfrac{15550}{140} = 111.07$

Q3 Attempt any eight parts.

2 marks to each part: $8 \times 2 = 16$

viii) $\bar{X} = 36,\quad S = 6$ $C \cdot V = \dfrac{S}{\bar{X}} \times 100 = \dfrac{6}{36} \times 100 = 16.67\%$

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

Q4 Attempt any six parts.

Each part of 2 marks: $6 \times 2 = 12$

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

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

vii) $n = 10,\ P = 0.5$

$Var = npq = 10 \times 0.5 \times 0.5 = 2.5$

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

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.				

سرٹیفیکیٹ بابت تصحیح سوالیہ پرچہ/ مارکنگ **Key**

ہم زیرِ دستخطان مضمون __شماریات__ پرچہ __I__ گروپ __اول/دوم__ سکیم __اول/دوم__ انٹر سالانہ/ضمنی امتحان 2016ء کا سوالیہ پرچہ نظرِ ثانی و درستی
(Subjective & Objevtive) کو بنظرِ عمیق چیک کرلیا ہے یہ پرچہ سلیبس کے مین 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 کرلیا 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 کرلیا 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	
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