STATISTICS PAPER-I (New Scheme)

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

Q.No. 2   **Attempt any eight parts.**   8 x 2 = 16

(i) What is sample?
(ii) What is qualitative data?
(iii) Write important types of Average.
(iv) Define Geometric Mean.
(v) What is Mode?
(vi) What are quartiles?
(vii) What are percentiles?
(viii) Write any two types of Index Numbers.
(ix) What is Laspeyre's Index Number?
(x) What is un-weighted Index Number?
(xi) What is chain base method?
(xii) What is base period and current period?

Q.No. 3   **Attempt any eight parts.**   8 x 2 = 16

(i) What is one-way and two-way classification?
(ii) Define relative frequency.
(iii) Define absolute measure of Dispersion.
(iv) Given that $n=8$, $\sum D = -10$, $\sum D^2 = 524$. Find variance, where $D = x - 15$.
(v) Write down any two properties of Standard Deviation.
(vi) First, second and third quartiles of a distribution are 142.36, 153.50, 167.73 respectively. Find coefficient of skewness.
(vii) First three moments about 16 are .35, 2.9 and 1.93 respectively, Find third moment about mean.
(viii) What is random experiment?
(ix) Define mutually exclusive events.
(x) What is classical or "A Prior" definition of probability?
(xi) State multiplication law of probability for two independent events.
(xii) For any two events A and B, it is known that $P(A) = \frac{2}{3}$, $P(A \cup B) = \frac{7}{12}$, $P(A \cap B) = \frac{5}{12}$. Find $P(B)$.

Q.No. 4   **Attempt any six parts.**   6 x 2 = 12

(i) Define Random Experiment.
(ii) Define probability distribution.
(iii) If $E(x) = 1.5$ and $E(x^2) = 3.5$, then find variance of $2x + 5$.
(iv) Write the properties of a probability density function (p.d.f).
(v) Make probability distribution of no. of heads when 1 coin is tossed.
(vi) Is it possible to have binomial distribution with mean = 12 and standard deviation = 4?
(vii) Define Hypergeometric probability distribution.
(viii) Find mean and variance of the given binomial distribution: $(1/3 + 2/3)^{12}$
(ix) If $N = 10$, $n = 5$ and $K = 4$, then find $P(x < 1)$.

SECTION-II

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

5.(a) The frequency distribution given below has been derived from the use of working origin. If $D = x - 18$ Find Geometric Mean of x.   4

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

(b) Reciprocals of x are given as 0.0267, 0.0235, 0.0211, 0.0191, 0.0174, 0.0148. Find Harmonic Mean and Arithmetic Mean of x.   4

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

y	375	400	425	450	475	500
f	22	34	47	37	46	14

(b) First four moments about x = 20 are given as −2, 15, −25 and 80 respectively. Find moments about Mean. Also find moment ratios b_1 and b_2.   4

7.(a) The percentage expenses on the different groups were: food 45, rent 15, clothing 12, fuel and light 8 and miscellaneous 20. The group index numbers for the current year as compared with fixed base period were respectively: 410, 150, 343, 248 and 285. Calculate the CPI number for the current year.   4

(b) Three balls are drawn from the bag contains 4 white and 6 black balls. Find the probabilities:
(i) Two white balls,   (ii) At most one black ball.   4

8.(a) Given the following probability distribution:

x	0	1	2	3	4
f(x)	$\frac{1}{126}$	$\frac{20}{126}$	$\frac{60}{126}$	$\frac{40}{126}$	$\frac{5}{126}$

Verify that $E(2x+3) = 2E(x) + 3$.

(b) A continuous r.v x has pdf as $f(x) = \frac{x+1}{8}$, $2 \leq x \leq 4$ Find (a) $P(2.4 < x < 3.5)$, (b) $P(x > 2.8)$

9.(a) Assuming that each baby has probability 0.3 of being male, find the probability that a family of 4 children will have (i) At most one male baby, (ii) At most one female baby.

(b) In a Hypergeometric distribution case If n=5, N=12 and K=3 then Find
(i) $P(x \leq 1)$,   (ii) $P(x > 1)$

INTERMEDIATE PART-I (11TH CLASS)

STATISTICS PAPER-I (New Scheme)

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 **bubble** in front of that question number. On bubble sheet, use marker or pen to fill the bubbles. Cutting or filling two or more bubbles 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 on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) A variable that assumes any value within a range is called:
    (A) Discrete variable   (B) Continuous variable   (C) Independent variable   (D) Dependant veriable

(2) The average of lower and upper class limits is:
    (A) Class boundary   (B) Class frequency   (C) Class marks   (D) Class limits

(3) A pie-diagram is represented by:
    (A) Rectangle   (B) Circle   (C) Triangle   (D) Square

(4) The middle value of an ordered series is called:
    (A) Median   (B) 5th decile   (C) 50th percentile   (D) All these

(5) If the values of Mean, Median and Mode coincide in a uni-Model distribution, then the distribution will b
    (A) Skeved to the left   (B) Skeved to the right   (C) Multi Model   (D) Symmetrical

(6) The Geometric-Mean for x_1 and x_2 is:
    (A) $\sqrt{x_1 + x_2}$ (B) $\sqrt{x_1 x_2}$ (C) $\sqrt{x_1} + \sqrt{x_2}$ (D) $\sqrt{2x_1 x_2}$

(7) _____ is expressed in the same units as the units of the observation.
    (A) Variance   (B) Standard deviation   (C) Co-efficient of variation   (D) Co-efficient of Range

(8) The first three moments of a distribution about the mean $\bar{x}$ are 0,4 and 0. The distribution is:
    (A) Symmetrical   (B) Skewed to the right   (C) Skewed to the left   (D) Lepto Kurtic

(9) In a Mesokurtic distribution:
    (A) $\beta_1 = 0$ and $\beta_2 = 3$ (B) $\beta_1 = 3$ and $\beta_2 = 0$ (C) $\beta_1 \neq 0$ and $\beta_2 > 3$ (D) $\beta_1 = 0$ and $\beta_2 < 3$

(10) In chain base Method, base period is:
    (A) Fixed   (B) Not fixed   (C) Constant   (D) Zero

(11) Index number for the base period is always taken as:
    (A) 100   (B) One   (C) 200   (D) Zero

(12) The probability of an event cannot be:
    (A) Equal to zero   (B) Between Zero and One   (C) Equal to one   (D) Less than zero

(13) An arrangement of the objects without regard to their order is called:
    (A) Permutation   (B) Combination   (C) Random experiment   (D) Sample point

(14) $E[x - E(x)]^2$ is :
    (A) $E(x)$ (B) $E(x^2)$ (C) Var (x) (D) S.D (x)

(15) A discrete probability function $f(x)$ is always non-negative and always lies between:
    (A) 0 and ∞ (infinity)   (B) 0 and 1   (C) -1 and $+1$ (D) $-\infty$ to $+\infty$ (infinity)

(16) The parameters of the binomial distribution are:
    (A) n and P   (B) P and q   (C) nP and nq   (D) nP and npq

(17) The mean of the Hypergeometric distribution is:
    (A) $\dfrac{nK}{N}$ (B) $\dfrac{NK}{n}$ (C) $\dfrac{Nn}{K}$ (D) $\dfrac{n+K}{N}$

STATISTICS PAPER-I (Old Scheme)

TIME ALLOWED: 3.10   **SUBJECTIVE**   MAXIMUM MARKS: 8:
_____

NOTE: Write same question number and its part number on answer book, as given in the question paper as given in the question paper.

SECTION-I

Q.No. 2   **Attempt any eight parts.**   8 x 2 = 16

(i)   Define inferential statistics.

(ii)   What is primary data.

(iii)   Define weighted mean.

(iv)   If $\Sigma(x-15)=5$, $\Sigma(x-21)=0$, $\Sigma(x-24)=-21$, What is the value of mean and why?

(v)   Define G.M.

(vi)   Find the mode of 3, 3, 7, 8, 10, 11, 10, 12.

(vii)   If n=10 and $\bar{x}=4$ then find Σx.

(viii) Define link relative.

(ix)   If Fisher's ideal Index is 117.84, Laspeyre's Index is 117.9, then what will be Paache's Index?

(x)   What is fixed base method?

(xi)   What is current period?

(xii)   If $\Sigma P_o q_n = 1000$ and $\Sigma P_n q_n = 1360$ and $\Sigma P_o q_o = 1250$, find current year weighted Index.

Q.No. 3   **Attempt any eight parts.**   8 x 2 = 16

(i)   Write down the main parts of statistical table.

(ii)   Define pie-chart.

(iii)   Define coefficient of Range with formula.

(iv)   If $Q_1 = 30$ and Q.D. = 35, find Q_3.

(v)   Write down four properties of variance.

(vi)   Define standard deviation.

(vii)   If $S^2 = 5$ and $m_3 = -12.8$, find b_1 and discuss the distribution.

(viii) If Var(x) = 9, find $Var(\frac{14x+10}{50})$

(ix)   Define mutually and not mutually exclusive events.

(x)   State the classical or Priori definition of probability.

(xi)   If A and B are independent events with P(A) = 0.2 and P(B) =0.6, find $P(A \cup B)$

(xii)   If A and B are two independent events such that P(A) = 0.2 and P(B) = 0.15.
        Find (i) $P(A \cap B)$, (ii) $P(A/B)$

Q.No. 4   **Attempt any six parts.**   6 x 2 = 12

(i)   Explain the term continuous random variable.

(ii)   What do you understand by random number?

(iii)   Define discrete probability distribution.

(iv)   Express the term distribution function.

(v)   Given E(x) = 0.63, Var(x)= 0.2331, find E (x^2).

(vi)   Describe the binomial frequency distribution.

(vii)   What are mean and variance of hypergeometric probability distribution?

(viii) What are parameters of hypergeometric probability distribution?

(ix)   If x is a binomial random variable with n=4, $P=\frac{1}{2}$ then compute $P(x=2)$

SECTION-II

5.(a) Compute median from the following data: (4)

Classes	0-7	7-14	14-21	21-28	28-35
f	5	11	15	9	4

(b) Find geometric Mean for the given data: (4)

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

6.(a) For a group of 10 values $\Sigma x = 452$, $\Sigma x^2 = 24270$ and Mode $= 43.7$,   (4)
Calculate coefficient of Skewness and also discuss the nature of Skewness.

(b) Calculate coefficient of Mean Deviation using median, for the following data: (4)
30, 35, 36, 31, 32, 38, 40, 35.

7.(a) Calculate Index number when 1989 as base year: (4)

Years	1989	1990	1991	1992	1993	1994	1995
Price	20	24	26	29	32	32	40

(b) A class contain 10 men and 20 women of which half the men and half the women have brown eyes.
Find the probability that a person chosen at random is a man or has brown eyes.   (4)

8.(a) A continuous random variable 'x' has density Function $f(x) = \dfrac{x+1}{8}$ $2 \leq x \leq 4$ (4)

Find (i) $P(x > 3.5)$ (ii) $P(2.5 < x < 3.5)$

(b) A random variable 'x' has the probability distribution   (4)

x	0	1	2	3
P(x)	0.1	0.2	0.3	0.4

(i) Find $E(x)$ and variance (x),   (ii) Show that $E(5x) = 5E(x)$.

9.(a) In a binomial distribution $n = 20$ and $P = 3/5$ (4)

find the mean and standard deviation of the binomial distribution.

(b) Ten vegetable canes, all of the same size has lost their label. It is known that 5 contain tomatoes and
5 contain corns. If 5 Cans selected at random what is the probability that: (4)
(i)   All contain tomatoes.
(ii)   3 or more contains tomatoes.

SECTION-III (PRACTICAL)

10.   **Attempt any three parts.**   3 × 5 = 15
(A) Find median from the following data: (5)

Marks	30-39	40-49	50-59	60-69	70-79
f	3	10	20	13	4

(B) Compute standard deviation from the following data: (5)

Classes	10-19	20-29	30-39	40-49	50-59
f	5	25	40	20	10

(C) Compute Fisher's index number for following data: (5)

Commodity	p_o	q_o	p_n	q_n
A	45	90	93	100
B	37	10	64	11
C	27	03	51	05

(D) A random variable x has the following probability distribution: (5)

x	-2	-1	0	1	2	3
P(x)	0.1	K	0.2	2K	0.3	3K

Find (i) K   (ii) $P(x < 2)$ (iii) $P(x > 2)$ (iv) $P(-2 < x < 2)$

(E) In binomial distribution with $n = 5$, what is the value of other parameter of the binomial.
If $P(x = 0) = P(x=1)$ find mean and variance of the distribution.   (5)

PAPER CODE
NUMBER: 6181

2018 (A)

Roll No. _____

INTERMEDIATE PART-I (11TH CLASS)

STATISTICS PAPER-I (Old Scheme)

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 **bubble** in front of that question number. On bubble sheet, use marker or pen to fill the bubbles. Cutting or filling two or more bubbles 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 on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) Parameter is numerical quantity calculated from:
(A) Sample Data   (B) Population Data   (C) Both a, b   (D) None

(2) The process of dividing the data into different classes is called:
(A) Tabulation   (B) Classification   (C) Population   (D) None

(3) Mid point of class 10-20 is:
(A) 15   (B) 10   (C) 20   (D) 18

(4) Mode of data 1, 3, 3, 3, 5 is:
(A) 3   (B) 1   (C) 5   (D) 4

(5) Arithmetic mean of 3, 3, 3, 3 is:
(A) 12   (B) 9   (C) 3   (D) 10

(6) The difference between the largest and smallest value in the data is called:
(A) Mean deviation   (B) Quarlite deviation   (C) Range   (D) None

(7) The variance of 5, 5, 5, 5, 5 is:
(A) 5   (B) 10   (C) Zero   (D) None

(8) Index number for base period is:
(A) 200   (B) 100   (C) 300   (D) 400

(9) Index number computed for single variable is called:
(A) Composite Index Number   (B) Simple Index Number
(C) Weighted Index Number   (D) None

(10) Probability of an event "P(A)" is:
(A) $\frac{n(S)}{n(A)}$ (B) $\frac{n(S)}{n(S)}$ (C) $\frac{n(A)}{n(S)}$ (D) 1

(11) Probability of head in tossing of single coin is:
(A) 0.3   (B) 0.4   (C) 0.5   (D) 1

(12) The E(X) is also known as:
(A) Mean   (B) S.D   (C) Var   (D) None

(13) If E(X) = 10 then E(3x +10) =
(A) 50   (B) 60   (C) 70   (D) 40

(14) Mean of binomial distribution is:
(A) npq   (B) np   (C) 1   (D) N

(15) In binomial experiment, trials are:
(A) Dependent   (B) Independent   (C) Fix   (D) None

(16) There are two parameters of a binomial distribution, say:
(A) n, q   (B) n, p   (C) N, n   (D) n, K

(17) Hypergeometric distribution has:
(A) One parameter   (B) Three parameters   (C) Two parameters   (D) None

BOARD OF INTERMEDIATE AND SECONDARY EDUCATION, MULTAN
OBJECTIVE KEY FOR INTERMEDIATE ANNUAL/SUPPLY EXAMINATION, 2018

Name of Subject: _Statistics (New Scheme)_ Session: _Statistics (Old Scheme_

Group: 1st   Group: ~~2nd~~ _Paper I_

Q. Nos	Paper Code 2181	Paper Code 2183	Paper Code 2185	Paper Code 2187
1	B	D	B	A
2	C	D	B	A
3	B	B	A	B
4	D	B	A	A
5	D	A	B	D
6	B	A	A	B
7	B	B	D	C
8	A	A	B	B
9	A	D	C	A
10	B	B	B	A
11	A	C	A	B
12	D	B	A	C
13	B	A	B	B
14	C	A	C	D
15	B	B	B	D
16	A	C	D	B
17	A	B	D	B
18				
19				
20				

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

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