15 Lahore 11

14 Warning:- Please write your Roll No. in the space provided and sign. Roll No- SR 4 14

(Inter Part – I) (Session 2012-14 to 2013-15) Sig. of Student ----------

tistics (Objective) (New Scheme) Paper (I)

ne Allowed:- 20 minutes **PAPER CODE 6181** Maximum Marks:- 17

e:- You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will lt in zero mark in that question. Write PAPER CODE, which is printed on this question paper, on the both sides of the wer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or e correcting fluid is not allowed.

Q. 1

1) Statistics must be
(A) Comparable (B) Not comparable (C) Qualitative only (D) None of these

2) The average of lower and upper class limits is called
(A) Class boundary (B) Class frequency (C) Class mark (D) None of these

3) If $\bar{X} = 10$ and $y = 2x + 5$, then $\bar{y}$ =
(A) 20 (B) 25 (C) 30 (D) None of these

4) Mean of a constant is
(A) Zero (B) One (C) Constant itself (D) Five

5) Geometric Mean of the number 0,1,2,5,9 is
(A) 2 (B) 5 (C) 0 (D) Not possible

6) Departure from symmetry is called
(A) Kurtosis (B) Skewness (C) Dispersion (D) None of these

7) Coefficient of variation is a measure of
(A) Relative dispersion (B) Absolute dispersion (C) Skewness (D) None of these

8) Range can be calculated in open – ended classes
(A) Never (B) Always (C) Often (D) Seldom

9) Composite index number involves commodities
(A) One (B) Two (C) Three (D) More than one

10) Which index number has a wide scope
(A) Special (B) General (C) Price (D) None of these

11) Two events A and B are said to be mutually exclusive if
(A) $A \cap B = \phi$ (B) $A \cap B \neq \phi$ (C) $A \cap B$= zero (D) None of these

12) The range of probability is between
(A) 0 to 2 (B) 0 to infinity (C) 0 to 1 (D) -1 to +1

13) When a pair of dice is rolled, the sum of upper most dots vary from
(A) 0 to 10 (B) 1 to 11 (C) 2 to 19 (D) 2 to 12

14) If "C" is any constant then
(A) E(C)=1 (B) E(C)=C (C) E(C)=5 (D) None of these

15) Binomial distribution is a probability distribution of
(A) Discrete type (B) Continuous type (C) Of both types (D) None of these

16) Hyper geometric distribution has parameters
(A) One (B) Two (C) Three (D) None of these

17) The binomial distribution is positively skewed when
(A) $p>q$ (B) $p<q$ (C) $p=q$ (D) None of these

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1114 Warning:- Please, do not write anything on this question paper except your Roll No.

Statistics (Subjective) (New Scheme) (Session 2012-14 to 2013-15) Paper (I)

Time Allowed: 3.10 hours (Inter Part - I) Maximum Marks: 83

Section ---------- I

Answer briefly any Eight parts from the followings:- 8 × 2 = 16

(i) Differentiate between continuous and discrete variable.
ii) Write down the names of sources of primary data.
iii) Define average. Why averages are called measures of central tendency?
iv) Write down two mathematical properties of arithmetic mean.
v) The sum of 10 numbers is 8. If an eleventh number is added, the mean becomes 9. What is the 11^{th} number?
vi) What is the median letter of the word "FREQUENCY"?
vii) If L=100, f_m=25, f_1 = 20, f_2 = 10 and h=5, find Mode.
iii) Define link relative.
x) Write down two uses of index numbers
x) Given the following information $\sum p_n q_o$=4220, $\sum p_o q_o$=3520, $\sum p_n q_n$=4810, $\sum p_o q_n$=4020, Calculate the current year weighted price index number
xi) Given W =10,15,20,25 and $I=\frac{P_n}{P_o}\times 100$ =100, 105, 108,110. Find the consumer price index number
ii) Differentiate between Laspeyre's Index number and Paasche's index number

Answer briefly any Eight parts from the followings:- 8 × 2 = 16

i) Define grouped data.
i) What is diagram.
ii) Define absolute dispersion.
v) Give names of any four methods for calculation dispersion.
.) Compute range of the data -1,-3,-4 and -20
i) If lower quartile is 20 and Quartile deviation is 30. Find upper quartile
ii) If co-efficient of Skewness is zero, then what will you say about mean, median and mode?
ii) If S.D of the values of variable X is 10, then what is the S.D of values of 5X
x) What is Venn Diagram.
:) State the multiplicative law of probability for independent events.
i) If A and B are independent events with P(A) =0.2 and P(B)=0.6 find P(A∪B)
ii) Give two examples of mutually exclusive events.

Answer briefly any Six parts from the followings:- 6 × 2 = 12

) Define continuous random variable
i) Give any two examples of discrete random variable.
i) Two coins are tossed if X = number of heads then make a probability distribution of X
) What are the expectation and standard deviation of a constant.
) A die is rolled if X= face value. Find E(X)
i) For continuous variable X $\int_{-\infty}^{\infty} f(x)dx = ?$
i) Write down the mean and variance of binomial distribution.
ii) If X is a hyper geometric random variable with N=40, n=5, K=4 find the value of variance.
) Write down any two properties of hyper geometric probability distribution.

Section ---------- II

Note: Attempt any three questions. (8 x 3 = 24

5. (a) Calculate the geometric mean for the following data

Marks	10-19	20-29	30-39	40-49	50-59
No of students	5	25	40	20	10

(b) Find Q_1 and Q_3 from the following data

Marks	10-14	15-19	20-24	25-29	30-34
Frequency	2	4	8	6	3

6. (a) If $n_1=10$, $\bar{X}_1$ 25.2 and $S_1 = 3.72$, $n_2 = 15$, $\bar{X}_2$ 25.2 and $S_2 = 4.05$
Find combined Coefficient of variation of 25 values

(b) What can you say about Skewness in each of the following cases
(i) Median = 26.01 , Q_1=13.73 , Q_3=28.29
(ii) Ist three moments about 16 are 0.35, 2.9 and 1.93

7. (a) Given the following information
$\sum p_1q_0$=4220, $\sum p_2q_0$=5460, $\sum p_0q_1$=4020, $\sum p_0q_2$=4462, $\sum p_0q_0$=3520, $\sum p_1q_1$=4810, $\sum p_2q_2$=6896 Compute Paasche's Index numbers

(b) If A and B are two mutually exclusive events from a sample space, the is it possible that P(A) = 0.7 and P(B) = 0.6?

8. (a) Find Coefficient of variation from the following probability distribution

X	- 5	- 1	0	1	5
P(X)	0.20	0.30	0.05	0.15	0.30

(b) A continuous random variable x has a density function $f(x)=\frac{x+1}{8}$ for x=2 to x=4
Find (i) $P(x < 3.5)$ (ii) $P(2.4 \le x \le 3.5)$

9. (a) If "X" is binomial random variable with n=10 and P=0.6, then find its Mean, Standard Deviation E(2X+3) (2+3X)

(b) An urn contain 5 balls, two of them are red and 3 blue. Three balls are drawn without replacement. Find the Mean and Variance of the distribution of Red Balls.

Section ---------- III (PRACTICAL)

Note: Attempt any three Parts. (5 x 3 = 15)

(a) Find arithmatic mean from the given data

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

(b) Calculate the quartile deviation from the following data

Marks	0-20	21-40	41-60	61-80	81-100
f	8	9	12	9	2

(c) Given the following data

Commodity	Price		Quantity	
	1980	1981	1980	1981
A	10	20	12	22
B	8	16	8	18
C	5	10	6	11

Compute Paasche's price Index number taking 1980 as base year

(d) The probability distribution of random variable x is

x	0	1	2	3	4
P(x)	$\frac{1}{10}$	$\frac{2}{10}$	$\frac{4}{10}$	$\frac{2}{10}$	$\frac{1}{10}$

Find V(x)

(e) A bag contains 8 green and 4 red balls three balls are selected at random with out replacement, compute the probability distribution of Green balls.

15 Lahore II

Roll No. _____ Annual 2014

Statistics **(INTERMEDIATE PART- I)** **Paper : I**

(New Scheme) **(Academic Sessions 2012 – 2014 & 2013 - 15)**

Time : 3 : 10 Hours **(Subjective)** **Marks : 83**

Note : Section I is compulsory. Attempt any three (3) questions from Section II and any three (3) Parts from Section III (Practical Part).

(Section I)

2. Write short answers to any Eight Parts . **(8 x 2 = 16)**

i. Define inferential statistics.
ii. Differentiate between quantitative and qualitative data.
iii. What are the characteristics of a good measure of central tendency? (any tow)
iv. Define median.
v. Write down merits of mode. (any two)
vi. If $x_1 = 2$ & $x_2 = 8$, show that A.M > G.M > H.M
vii. The arithmetic mean of 100 items is 5 and the arithmetic mean of 150 items is 4.8. Find combined mean.
viii. Define index number.
ix. Distinguish between weighted and unweighted index numbers.
x. What is meant by consumer price index numbers?
xi. Given $\sum W = \sum p_o q_o = 8500$, $\sum WI = 892500$ construct consumer price index number by family budget method.
xii. Given $\sum p_o q_n = 1000$ *and* $\sum p_n q_n = 1360$, find current year weighted index.

3. Write short answers to any Eight parts . **(8 x 2 = 16)**

i. What is histogram?
ii. What is frequency distribution?
iii. Define mean Deviation.
iv. If $Q_1 = 136.62$, $Q_3 = 153.13$, find co-efficient of quartile deviation.
v. If S.D (x) = 10 then find S.D (3x+10) = ?
vi. What is relative measure of dispersion?
vii. If $\beta_1 = 0$ *and* $\beta_2 = 3$. Discuss the shape of curve.
viii. Define moments.
ix. Define equally likely events.
x. If P(A) = 0.7, P(B) = 0.5 and P(B/A) = 0.5 find $P(A \cap B)$?
xi. Find probability of sure and impossible events.
xii. Define sample space.

4. Write short answers to any Six parts . **(6 x 2 = 12)**

i. What is the difference between discrete and continuous random variables?
ii. What is distribution function?
iii. If $E(x^2) = 400$, $S.D(x) = 12$, *find* $E(x)$?
iv. If $E(x) = 0.63$, $\text{var}(x) = 0.2331$. Find $E(x^2)$?
v. If $E(5x+10) = 18$, $E(5x+10)^2 = 530$, find $\text{var}(5x+10)$.
vi. What are the properties of binomial experiment?
vii. If a fair coin is tossed 5 times, find the probability of getting at the most 2 heads?
viii. Define hypergeometric experiment.
ix. What are the mean and variance of hypergeometric distribution?

(Turn Over)

(Section -II) , Each question carries (4 + 4 = 8) marks

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

Groups	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34
F	1	4	10	5	2

(b) The logrithms of 6 values are: 1.8129 , 1.9031 , 1.9777 , 1.9294 , 1.6990 and 1.7782. Find the arithmetic mean of variable x.

6. (a) **Given the following information.** $n_1 = 150$, $\sum(x_1 - 100) = 180$ $\sum(x_1 - 100)^2 = 245320$

$n_2 = 200$, $\sum(x_2 - 100) = 250$ $\sum(x_2 - 100)^2 = 43850$

Calculate co-efficient of variation for each series and interpret the result that which series is more consistent.

(b) The lower and upper quartiles of a distribution are 242.36 and 267.74 respectively. While median is 253.60. Find co-efficient of Skewness and interpret the result.

7. (a) The annual prices of four commodities are given below. Construct index numbers for the years 2009 , 2010 and 2011 using 2008 as base,

Year	Prices of the commodities		
	A	B	C
2008	256	20	81
2009	236	23	96
2010	366	27	102
2011	500	30	110

(b) A and B can solve 60 % and 80 % of the problems in a book respectively. What is the probability that either A or B can solve a problem chosen at random?

8. (a) A continuous random variable x has the probability density function $f(x) = \frac{1}{5}$, when $0 \le x \le 3$ and Zero otherwise find (i) $P(x \le 3)$ (ii) $P(x = 0)$

(b) Find variance of the probability distribution.

X :	1	2	3	4
P(x) :	0.2	0.3	0.3	0.2

9. (a) If x is a binomial random variable with n = 10, p = 0.35 find the probability of
(i) Exactly 6 successes (ii) At most 2 successes

(b) A machine produced 7 good and 2 defective items. Two items are selected randomly without replacement.If x denotes the number of defective items then find expected number of defective items.

Section – III (Practical Part)

Note: Attempt any three parts: **(3 x 5 = 15)**

10(a) Calculate median from the following data.

Groups	15 - 24	25 – 34	35 - 44	45 - 54	55 - 64
f	2	5	10	8	5

(b) Calculate mean deviation from median from the data given in Q10 (a) above.

(c) Given the following data, calculate Laspeyre's price index taking 2010 as base.

Commodities	2010		2011	
	Price	Quantity	Price	Quantity
A	10	12	15	20
B	8	8	10	15
C	5	6	7	10

(d) Given $f(x) = \frac{x}{10}$, $x = 1, 2, 3, 4$ show that $f(x)$ is a probability function. Also find $P(x \ge 2)$.

(e) A bag contains 6 red and 4 black balls. 3 balls are drawn without replacement. Let X be the number of black balls drawn. Find the probability distribution of X. Also find $E(x)$

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Statistics | C | L.K.No. 823 | 11 | Paper Code No. 6185

Paper I (Objective Type) | Inter - A - 2014 | New Marks Scheme

Time Allowed : 20 Minutes | Inter (Part - I) | Pen

Maximum Marks : 17 | Session (2012 - 14)(2013 - 15)

Note : Four possible choices A, B, C, D to each question are given. Which choice 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.

Q.No.1 Harmonic Mean can not be computed if any value in the data is :

(1) (A) > 0 (B) < 0 (C) = 0 (D) = 1

(2) Total of Relative Frequency is called : (A) One (B) Two (C) Half (D) Quarter

(3) A characteristic which varies from one object to another object is called :

(A) Variable (B) Constant (C) Coefficient (D) Exponent

(4) The most popular value of the data is called :

(A) Mean (B) Median (C) Mode (D) G.M.

(5) For Symmetrical Distribution : (A) $\beta_1 > 0$ (B) $\beta_1 < 0$ (C) $\beta_1 = 0$ (D) $\beta_1 = 3$

(6) The variance of 12, 14, 16, 18, 20 is 8 then the Variance of 10, 12, 14, 16, 18 is :

(A) 6 (B) 8 (C) 10 (D) 0

(7) $Q_2 = Q_5 = P_{50} = ?$: (A) Mean (B) Median (C) Mode (D) H.M.

(8) The Mean Deviation is least when Deviation are taken from :

(A) Mean (B) Median (C) Mode (D) Origin

(9) The Probability of an event always lies between

(A) - 1 and 0 (B) - 1 and 1 (C) 0 and 1 (D) 1 and 2

(10) Consumer Price Index Number may be obtained by :

(A) Laspeyre's Formula (B) Paasche's Formula (C) Fisher's Formula (D) Link Relative

(11) In a fixed base method which period is always taken as 100 :

(A) Preceding (B) Following (C) Base (D) Current

(12) The Probability of drawing a king from 52 playing cards is

(A) $\frac{4}{52}$ (B) $\frac{3}{52}$ (C) $\frac{2}{52}$ (D) $\frac{13}{52}$

(13) A Binomial Distribution has variance : (A) nq (B) np (C) npq (D) $\sqrt{npq}$

(14) Hypergeometric Distribution has parameters :

(A) n, p (B) n, p, q (C) N, n, k (D) n, k

(15) If x and y are two independent variable then E(xy) = :

(A) E(x) E(y) (B) E(x) + E(y) (C) E(x) - E(y) (D) Zero

(16) In Binomial Distribution $P = \frac{1}{2}$ then m_3 is : (A) = 0 (B) < 0 (C) > 0 (D) Mean

(17) $E(x - \mu)^2 =$: (A) Zero (B) S.D. (C) Variance (D) M.D

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Roll No.	823- 7000	New Marks Scheme
Statistics (Subjective)	Inter-A-2014	Inter (Part - I)
Time = 3 : 10 Hours	Total Marks : 83	Session (2012-14(2013-15)

Pen

Note : It is compulsory to attempt (8 - 8) parts each from Q.No.2 and 3 while attempt any 6 parts from Q. No.4 and attempt any (03) questions from Part II. While from Section - III (Practical Part) (03) parts should be attempted.Write same questions no. and its part no. as given in the question paper.

Section-I

22 x 2 = 44

Q.No.2(i)	Define Parameter and Statistic.	(ii)	Define Discriptive and Inferential Statistics.
(iii)	Define Harmonic Mean.	(iv)	Write two properties of Arithmetic Mean.
(v)	For a certain distribution $\Sigma(x-15)^2 = 868$, $\Sigma(x-16)^2 = 720$, $\Sigma(x-20)^2 = 982$ What is the value of Mean and Why?	(vi)	Distinguish between an Un-weighted Index Number and a Weighted Index Number.
(vii)	Calculate G.M. for 0, 2, 4, 6, 10.	(viii)	Find the Mode and Median of the letter Statistics.
(ix)	Define Link Relative.	(x)	Write the formula for Fisher's Index Number.
(xi)	Given $\Sigma p_0q_0 = 1500$ and $\Sigma p_nq_0 = 2040$ find Base Year Weighted Index.	(xii)	Write down two formulae of Consumer Price Index Number.
Q.No.3(i)	Explain the term Classification.	(ii)	Define Absolute Measure of Dispersion.
(iii)	If Range = 48 Interval (h) = 5 find no. of classes (m) = ?	(iv)	If Mean = 8 , Mean Deviation = 4·8 find Coefficient of Mean Deviation.
(v)	What is the difference between Positive and Negative Skewness?	(vi)	If P(A) = 0.7 and P(B) = 0.5 find $P(A \cap B)$ where A and B are Independent Event.
(vii)	If S.D.(x) = 3 , find S.D. (5x + 2).	(viii)	Ist three Moments about mean are : $\mu_1 = 0$, $\mu_2 = 8$, $\mu_3 = 0$ find B_1.
(ix)	Define Moments.	(x)	Define Mutually Exclusive Events.
(xi)	Define Random Experiments.	(xii)	Define an Event.
Q.No.4(i)	Define a continuous Random Variable.	(ii)	Define Expectation of a Random Variable.
(iii)	Write down any two laws of Expectations.	(iv)	What is the Sample Space of a Random Variable?
(v)	Define Hypergeometric Experiment.	(vi)	Given N = 10, n = 2 and K = 3 find P (x = 0)
(vii)	What are Parameters, Mean , Variance and Standard Deviation of Binomial Distribution?	(viii)	State the formula used to find out the probabilities of a Hypergeometric Distribution.
(ix)	What are the properties associated with a discrete random variable?		

Section- II

Q.No5 (a) The Frequency Distribution given below has been obtained from use of working origin. (4)

If D = x - 18 , find Mean and H.M.

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

(b) Compute Median , Mode , Quartiles for Number of Children. (4)

No. of Children	0	1	2	3	4	5
No. of Families	3	10	5	2	1	2

Q.No6 (a) Calculate Mean Deviation and Coefficient of Mean Deviation about Mean from the following data. (4)

Groups	5 -- 10	10 -- 15	15 --- 20	20 -- 25
f	6	8	16	5

(b) The Mean of 200 items is 48 and their Standard Deviation is 3 .Find the Sum of Squares of all these items. (4)

Q.No7 (a) Given $\Sigma p_0q_0 = 352$; $\Sigma p_1q_1 = 481$, $\Sigma p_1q_0 = 422$; $\Sigma p_0q_1 = 402$ find (4)

(i) Base Year Weighted Index Number (ii) Current Year Weighted Index Nubmer.

(b) 52 Cards are equally distributed among 4 players. What is the probability that a player has 5 Club Cards? (4)

Q.No8 (a) In a Summer Season, a dealer of Desert Room Cooler can earn Rs. 800 per day if the day is very hot and can earn Rs. 200 per day if it is fair. And loses Rs. 50 per day if it is cloudy. Find his mathematical expectation if the probability of the day being very hot is 0·40 and for being cloudy is 0·35? (4)

(b) A continuous random variable " x " having values between 0 and 4 has a density function given by $f(x) = \frac{1}{2} - a.x$; where " a " is any constant. Find (i) a (ii) $P(1 \leq x \leq 2)$ (4)

Q.No9 (a) A fair coin is tossed 5 times. What is the probability of getting : (4)

(i) at least two heads (ii) at the most two heads.

(b) A committee of siz 3 is selected at random from 4 men and 2 women. Find the Probability Distribution for the number of men on the committee. (4)

P.T.O.

Attempt any three Parts | Section-III (Practical Part)

Q.No.10 (a) Calculate Geometric Mean from the Data given below. (5)

x	0	1	2	3	4	5
f	2	5	11	15	8	1

(b) Find Coefficient of Variation from the Data given below. (5)

Classes	50 -- 60	60 -- 70	70 -- 80	80 -- 90	90 -- 100
f	1	5	12	8	4

(c) Calculate Price Index Number by Paasche's Method from the following data. (5)

Commodity	2000		2010	
	P_o	q_o	P_1	q_1
A	8	10	12	15
B	15	20	25	40
C	50	25	55	50

(d) Find the complete Binomial Distribution for $(\frac{1}{2} + \frac{1}{2})^5$. Also find Mean and Standard Deviation. (5)

(e) A committee of size 5 is selected from 5 men and 6 women. Find the Complete Probability Distribution for number of men in the committee. (5)

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13-5-2014