



ALLAMA IQBAL OPEN UNIVERSITY

Level:	Intermediate	Semester:	Spring, 2022
Course & Code	Statistics-I (394)	Maximum Marks:	100
Time Allowed:	03 Hours	Pass Marks:	40

Note: ATTEMPT FIVE QUESTIONS. ALL CARRY EQUAL MARKS.

Q. No.	Questions	Marks																								
Q.No.1	(a) What are the different methods of presentation of statistical data? (b) Define descriptive and inferential statistics and differentiate between them.	(10+10)																								
Q.No.2	(a) Differentiate between (i) Population and Sample (ii) Parameter and Statistic (b) Find the mean and G.M for the following data.	(10+10)																								
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Classes</th> <th>0-10</th> <th>10-14</th> <th>40-90</th> <th>90-100</th> <th>100-105</th> <th>105-120</th> <th>120-140</th> </tr> </thead> <tbody> <tr> <td>f</td> <td>40</td> <td>110</td> <td>150</td> <td>200</td> <td>120</td> <td>30</td> <td>20</td> </tr> </tbody> </table>	Classes	0-10	10-14	40-90	90-100	100-105	105-120	120-140	f	40	110	150	200	120	30	20									
Classes	0-10	10-14	40-90	90-100	100-105	105-120	120-140																			
f	40	110	150	200	120	30	20																			
Q.No.3	(a) Define arithmetic mean and give its merits and demerits. (b) Calculate Q_2 and P_{60} for the data given below:	(10+10)																								
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Groups</th> <th>25-50</th> <th>50-75</th> <th>75-100</th> <th>100-125</th> <th>125-150</th> <th>150-175</th> </tr> </thead> <tbody> <tr> <td>frequency</td> <td>10</td> <td>12</td> <td>16</td> <td>17</td> <td>20</td> <td>18</td> </tr> </tbody> </table>	Groups	25-50	50-75	75-100	100-125	125-150	150-175	frequency	10	12	16	17	20	18											
Groups	25-50	50-75	75-100	100-125	125-150	150-175																				
frequency	10	12	16	17	20	18																				
Q.No.4	(a) Explain the difference between absolute dispersion and relative dispersion. (b) Calculate variance and co-efficient of variation from the following data:	(10+10)																								
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>X</th> <th>525</th> <th>500</th> <th>475</th> <th>450</th> <th>425</th> <th>400</th> <th>375</th> </tr> </thead> <tbody> <tr> <td>f</td> <td>24</td> <td>35</td> <td>46</td> <td>37</td> <td>47</td> <td>34</td> <td>22</td> </tr> </tbody> </table>	X	525	500	475	450	425	400	375	f	24	35	46	37	47	34	22									
X	525	500	475	450	425	400	375																			
f	24	35	46	37	47	34	22																			
Q.No.5	(a) Define an index number and describe the different types of index number. (b) Compute Paasche's index-number for 1963 assuming 1953 as a base period	(10+10)																								
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Commodities</th> <th colspan="2">1953</th> <th colspan="2">1963</th> </tr> <tr> <th>Price</th> <th>Quantity</th> <th>Price</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>2</td> <td>50</td> <td>10</td> <td>40</td> </tr> <tr> <td>B</td> <td>3</td> <td>10</td> <td>8</td> <td>5</td> </tr> <tr> <td>C</td> <td>4</td> <td>5</td> <td>4</td> <td>5</td> </tr> </tbody> </table>	Commodities	1953		1963		Price	Quantity	Price	Quantity	A	2	50	10	40	B	3	10	8	5	C	4	5	4	5	
Commodities	1953		1963																							
	Price	Quantity	Price	Quantity																						
A	2	50	10	40																						
B	3	10	8	5																						
C	4	5	4	5																						
Q.No.6	(a) Discuss the definition of probability with different approaches. (b) A box contains 9 tickets numbered 1 to 9. If 3 tickets are drawn from the box one at a time, find the probability that they are alternately either odd even odd or even odd even?	(10+10)																								
Q.No.7	(a) Define random variable and give an example to explain it. (b) Compute mean, standard deviation and coefficient of variation from the data	(10+10)																								
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>X</th> <th>0</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>P(x)</td> <td>6/36</td> <td>10/36</td> <td>8/36</td> <td>6/36</td> <td>4/36</td> <td>2/36</td> </tr> </tbody> </table>	X	0	1	2	3	4	5	P(x)	6/36	10/36	8/36	6/36	4/36	2/36											
X	0	1	2	3	4	5																				
P(x)	6/36	10/36	8/36	6/36	4/36	2/36																				
Q.No.8	(a) What is a binomial experiment? Give its properties. (b) A committee of size 5 is to be selected at random from 3 women and 5 men. Find the expected number of women on the committee.	(10+10)																								



ALLAMA IQBAL OPEN UNIVERSITY

Level:	Intermediate	Semester:	Spring, 202
Course & Code	Statistics-I (394)	Maximum Marks:	100
Time Allowed:	03 Hours	Pass Marks:	40

Note: ATTEMPT FIVE QUESTIONS. ALL CARRY EQUAL MARKS.

Q. No.	Questions	Mar																				
Q.No.1	Define the following terms: i) Population and sample ii) Parameter and statistic iii) Quantitative variable iv) Qualitative variable	(20)																				
Q.No.2	a) Write down the important points for drawing graphs? b) Define Histogram. Draw a Histogram for the following frequency distribution: <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr> <td>X</td> <td>32</td> <td>37</td> <td>42</td> <td>47</td> <td>52</td> <td>57</td> <td>62</td> <td>67</td> </tr> <tr> <td>f</td> <td>3</td> <td>17</td> <td>28</td> <td>47</td> <td>54</td> <td>31</td> <td>14</td> <td>4</td> </tr> </table>	X	32	37	42	47	52	57	62	67	f	3	17	28	47	54	31	14	4	(10+)		
X	32	37	42	47	52	57	62	67														
f	3	17	28	47	54	31	14	4														
Q.No.3	a) What do you understand by weighted mean? In what circumstances is it preferred to ordinary mean and why? b) A bus traveling 200 miles has ten stages at equal intervals. The speed of the bus in the various stages was observed to be 10, 15, 20, 75, 20, 30, 40, 50, 30, and 40 miles per hour. Find the average speed at which the bus has traveled.	(10+)																				
Q.No.4	a) Explain the difference between absolute dispersion and relative dispersion b) Compute median and mean deviation from the median for the data given below: <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr> <td>X</td> <td>6</td> <td>8</td> <td>10</td> <td>12</td> <td>14</td> <td>16</td> <td>18</td> <td>20</td> <td>22</td> </tr> <tr> <td>f</td> <td>5</td> <td>10</td> <td>18</td> <td>20</td> <td>22</td> <td>14</td> <td>7</td> <td>3</td> <td>1</td> </tr> </table>	X	6	8	10	12	14	16	18	20	22	f	5	10	18	20	22	14	7	3	1	(10+)
X	6	8	10	12	14	16	18	20	22													
f	5	10	18	20	22	14	7	3	1													
Q.No.5	a) Differentiate between the simple and composite index numbers. b) Find index number using (i) 1977 as base (ii) average of the price as base: <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr> <td>Years</td> <td>1977</td> <td>1978</td> <td>1979</td> <td>1980</td> <td>1981</td> <td>1982</td> <td>1983</td> <td>1984</td> <td>1985</td> </tr> <tr> <td>Prices</td> <td>22.5</td> <td>25</td> <td>27.5</td> <td>30</td> <td>35</td> <td>32.5</td> <td>37.5</td> <td>47.5</td> <td>45</td> </tr> </table>	Years	1977	1978	1979	1980	1981	1982	1983	1984	1985	Prices	22.5	25	27.5	30	35	32.5	37.5	47.5	45	(10+)
Years	1977	1978	1979	1980	1981	1982	1983	1984	1985													
Prices	22.5	25	27.5	30	35	32.5	37.5	47.5	45													
Q.No.6	a) Discuss the classical and posteriori definitions of probability in detail. b) In a poker hand consisting of 5 cards, what is the probability of holding? i) 2 aces and 2 kings ii) 5 spades	(10+)																				
Q.No.7	a) What do you mean by expected value? What are the properties of expectation? b) Calculate mean and variance of the following probability distribution: <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr> <td>X</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>P(x)</td> <td>1/126</td> <td>20/126</td> <td>60/126</td> <td>40/126</td> <td>5/126</td> </tr> </table> Verify that $E(2X+3) = 2E(X) + 3$	X	0	1	2	3	4	P(x)	1/126	20/126	60/126	40/126	5/126	(10+)								
X	0	1	2	3	4																	
P(x)	1/126	20/126	60/126	40/126	5/126																	
Q.No.8	a) Define the binomial probability distribution. b) Is it possible to have a binomial distribution with mean = 5 and S.d = 4? comment on this by finding the values of parameters.	(10+)																				



Level: Intermediate
 Paper: Statistics-I (2016)
 Time Allowed: 03 Hours

Semester: Spring 2019
 Maximum Marks: 100
 Pass Marks: 40

Note: ATTEMPT FIVE QUESTIONS. QUESTION # 1 IS COMPULSORY.

Q. # 1: Fill in the blanks:

(20)

- A variable is called _____ when its value cannot be exactly determined.
- In Histogram, with unequal class intervals, the area of each rectangle is _____ to class frequency.
- In qualitative data, the most suitable average is _____.
- A measure of dispersion expressed as a coefficient is called _____ measures of dispersion.
- In _____ both quantities and prices are used.
- Two events are _____ if they have no common point.
- The probability function is _____ function.
- The mean of probability distribution is called _____.
- Binomial distribution has _____ parameters.
- Binomial distribution is asymmetrical when _____.

Q. # 2: a) Distinguish between primary and secondary data and give different sources from which these are obtained.

b) What are different methods of representation of statistical data?

(10+10)

Q. # 3: a) Define arithmetic mean, geometric mean and harmonic mean. Explain the situations when each of them is used perfectly?

b) Calculate geometric mean for the following ungrouped data of the percentage changes in the weight of eight animals.

45, 30, 35, 40, 44, 32, 42, 37

(10+10)

Q. # 4: a) Explain the difference between absolute dispersion and relative dispersion. Describe the properties of the standard deviation.

b) Calculate first four moments about mean for the following set of examination marks.

45, 32, 37, 46, 39, 36, 41, 48 and 36.

(10+10)

Q. # 5: a) What is an index number? Give the uses of an index number.

b) Compute Fisher's index number for the following data:

Commodities	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	7	70	8	49
B	5	27	6	28
C	10	35	9	29
D	9	50	10	42
E	3	16	4	25

(10+10)

Q. # 6: a) Define mutually exclusive, independent and dependent events.

b) A set of eight cards contains one joker. A and B are two players. A chooses 5 cards at random. B takes the remaining 3 cards, what is the probability that A has a joker?

(10+10)

Q. # 7: a) Define random variable and give an example to explain it.

b) There are three children in a family. Let the random variable denote the number of boys in a family. Write down the possible outcomes and the values assigned by the random variable assuming equal chances for boys and girls.

(10+10)

Q. # 8: a) Find the binomial distribution whose mean is 12 and standard deviation is 3.

b) The incidence of an occupational disease in an industry is such that the workers have 20% chance of suffering from it. What is the probability that out of 6 workmen:

i) not more than 2 will catch the disease

ii) 4 or more will catch the disease

(10+10)



ALLAMA IQBAL OPEN UNIVERSITY

Level: Intermediate
Paper: Statistics-I (394)
Time Allowed: 03 Hours

Semester: Spring 2016
Maximum Marks: 100
Pass Marks: 40

Note: ATTEMPT FIVE QUESTIONS. QUESTION NO. 1 IS COMPULSORY.

Q. 1: Fill in the blanks.

20

- i) A sample is a of the population.
- ii) A quantity which is fixed is called a
- iii) The arrangement of data in rows and columns is called
- iv) Mean of a is a constant itself.
- v) Sum of deviation from is zero.
- vi) Variance of a is zero.
- vii) Index number of single variable is index number.
- viii) A list of all possible outcomes of a random experiment is called
- ix) A discrete probability distribution may be represented by
- x) Mean and variance of a binomial distribution are and

Q.2: a) Define the following terms:

Parameter, Primary data, Tabulation, Population, Descriptive Statistics 10.

b) Write down the main characteristics of Statistics. 10

Q.3: a) What are the qualities of good average? 10

b) The deviations from 25.5 of 15 values are: -15.4, -1.9, 6.2, 13.7, 24.6, 25.5, 3.8, -7.9, -13.6, 21.1, 16.4, 18.7, -14.3, -9.8 and 4.9. Calculate the arithmetic mean. 10

P.T.O



ALLAMA IQBAL OPEN UNIVERSITY

Level: Intermediate
Paper: Statistics-I (394)
Time Allowed: 03 Hours

Semester: Spring 2017
Maximum Marks: 100
Pass Marks: 40

Note: ATTEMPT FIVE QUESTIONS. QUESTION NO. 1 IS COMPULSORY.

Q. # 1: Fill in the blanks.

(20)

- Sum of the random errors equal to _____.
- The area of each bar is _____ to the frequency it represents.
- A distribution having two modes is called _____ distribution.
- A good average should not be effected by _____ values.
- The value of standard deviation does not _____ if a constant is added or subtracted from all observations.
- The change in vehicle sales or retail prices are studied in _____.
- If $n(A) = n(B)$, then A and B are _____ events.
- The mean of probability distribution is called _____.
- A random variable is also named as a _____ variable.
- Binomial distribution is symmetrical when _____.

Q. # 2: a) Define Descriptive and Inferential Statistics and differentiate between them.

b) The Arithmetic Mean and Geometric Mean of three numbers are 34 and 18 respectively. Find all the three numbers, when the Geometric Mean of the first two numbers is 9. (10+10)

Q. # 3: a) Compute calculated mean and standard deviation from 20 observations as 43 and 5 respectively. It was later discovered at the time of checking that it had copied down two values as 45 and 38 whereas the correct values were 55 and 38 respectively. Find the correct value of coefficient of variation.

b) What is meant by skewness and kurtosis. What aspects of the frequency curve are measured by them? (10+10)

Q. # 4: a) Compare the following concepts:

- Simple and Composite Index
- Fixed and chain base method

b) Compute Fisher's Index number for the following data:

Commodities	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	7	73	5	49
B	8	52	7	38
C	10	33	9	29
D	9	30	4	42
E	3	16	10	25

(10+10)

Q. # 5: a) A box contains 9 tickets numbered 1 to 9. If 3 tickets are drawn from the box one at a time, find the probability that they are alternatively odd even odd or even odd even.

b) The probability that a student will get a grade of A, B or C in statistics course are 0.09, 0.15 and 0.53 respectively. What is the probability that the student will get a grade lower than C. (10+10)

Q. # 6: a) What are random numbers and how these are generated? Also, give an example to explain their application.

b) Four balls are drawn from a bag containing 5 white and 3 black balls. If X denotes the number of white balls drawn, then write down the possible values of the random variable X. (10+10)

Q. # 7: a) Find the probability distribution of the number of boys in families with three children, assuming equal probabilities for boys and girls.

b) A continuous random variable X has a density function $f(x) = \frac{x+1}{9}$ for $x=2$ to $x=4$. Find a) $P(X < 3.5)$ b) $P(2.4 < X < 3.5)$ c) $P(X = 1.5)$. (10+10)

Q. # 8: a) What is a Binomial experiment? Give its properties?

b) Four dice are thrown and the number of ones in each throw is recorded. This is repeated 180 times. Write down the theoretical frequencies 0, 1, 2, 3 and 4 ones. Calculate the mean number of ones in a single throw. (10+10)



ALLAMA IQBAL OPEN UNIVERSITY

Level: Intermediate
 Paper: Statistics-I (394)
 Time Allowed: 03 Hours

Semester: Spring 2018
 Maximum Marks: 100
 Pass Marks: 40

Note: ATTEMPT FIVE QUESTIONS. QUESTION NO. 1 IS COMPULSORY.

Q. No	Questions	Marks																								
Q.No.1	Fill in the blanks. i. A variable is called ----- when its value cannot be exactly determined. ii. A variable that takes numerical values is called ----- variable. iii. The area of each bar is ----- to the frequency it represents. iv. In symmetrical distribution, the three averages mean, median and mode are -----. v. Sum of absolute deviations are minimum if computed from -----. vi. Geometric mean is a suitable average in ----- method. vii. A set of subsets of set is called ----- of the set. viii. A set containing only one element is called ----- set. ix. Random variable is also called ----- variable. x. Binomial distribution has ----- parameters.	20																								
Q.No.2	a) Distinguish between qualitative and quantitative variables by giving examples.	10																								
	b) Calculate the geometric mean for the following ungrouped data of the percentage changes in the weight of eight animals. 45, 30, 35, 40, 44, 32, 42, 37	10																								
Q.No.3	a) The relation between arithmetic mean (A. M), geometric mean (G. M) and harmonic mean (H. M) is $A.M \geq G.M \geq H.M$ under what situation these are equal.	10 10																								
	b) Arithmetic mean of 15 values is 20 and by adding 3 more values, the mean remains 20. Find the new three values if ratio is $a : b : c = 3 : 2 : 1$																									
Q.No.4	a) What is meant by skewness and kurtosis? What aspects of the frequency curve are measured by them?	10																								
	b) Calculate first four moments about mean for the following set of examination marks. 45, 32, 37, 46, 39, 36, 41, 48 and 36.	10																								
Q.No.5	a) Compare the following concepts: i. Simple and composite index ii. Fixed and chain base method	10 10																								
	b) An inquiry into the budgets of the middle class families in a city of England gave the following information. What change in cost of living the figures of 1929 show as compared in 1928?																									
	<table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Food</th> <th>Rent</th> <th>Clothing</th> <th>Fuel</th> <th>Misc</th> </tr> </thead> <tbody> <tr> <td>Expenses</td> <td>35%</td> <td>15%</td> <td>20%</td> <td>10%</td> <td>20%</td> </tr> <tr> <td>Price (1928)</td> <td>150</td> <td>30</td> <td>75</td> <td>25</td> <td>40</td> </tr> <tr> <td>Price (1929)</td> <td>145</td> <td>30</td> <td>65</td> <td>23</td> <td>45</td> </tr> </tbody> </table>		Food	Rent	Clothing	Fuel	Misc	Expenses	35%	15%	20%	10%	20%	Price (1928)	150	30	75	25	40	Price (1929)	145	30	65	23	45	
	Food	Rent	Clothing	Fuel	Misc																					
Expenses	35%	15%	20%	10%	20%																					
Price (1928)	150	30	75	25	40																					
Price (1929)	145	30	65	23	45																					
Q.No.6	a) Explain with examples the terms; random experiment, sample space and an event.	10																								
	b) A purse contains 4 silver and 3 copper coins. If a coin is selected at random from one of the purses. What is the probability that it is a (i) Silver coin (ii) Copper coin	10																								
Q.No.7	a) What properties a mathematical function should possess to be a probability function and probability density function?	10																								
	b) A and B throw a die for a prize of Rs. 11. Which is to be won by the player who first throws a 6? If A has the first throw, what are their respective expectations?	10																								
Q.No.8	a) The mean and variance by the binomial distribution are 6 and 2.4 respectively. Find p and n, the two parameters of the binomial distribution.	10																								
	b) Five dice are tossed 96 times. Find the expected frequencies when throwing of a 4, 5 or 6 is regarded as success.	10																								



ALLAMA IQBAL OPEN UNIVERSITY

Level: Intermediate
 Paper: Statistics-I (394)
 Time Allowed: 03 Hours

Semester: Spring, 2015
 Maximum Marks: 100
 Pass Marks: 40

Note: ATTEMPT FIVE QUESTIONS. QUESTION NO. 1 IS COMPULSORY.

Q. 1.	i. Fill in the blanks. First hand collected data are called _____ ii. A frequency table can be represented graphically by a _____ iii. A good average should not be affected by _____ values. iv. A measure of dispersion is _____ v. Geometric mean is a suitable average in _____ method. vi. A set containing only one element is called _____ set. vii. Random variable is also called _____ variable. viii. If X and Y are independent random variables then $E(XY) =$ _____ ix. $Var(kY) =$ _____ x. In binomial experiment successive trials are _____	70																		
Q.2.	a) Define the following terms: Variable, Constant, Quantitative variable, Qualitative variable, Discrete variable, Continuous variable	10																		
	b) What are different methods of presentation of statistical data?	10																		
Q.3.	a) What do you mean by Quartiles, Deciles and Percentiles? Also write down their formulae.	10																		
	b) The log of 3 values is given below: 0.0310, 0.6020, 0.9030 Show that $AM \geq GM$	10																		
Q.4.	a) Define Mean Deviation and its coefficient. Discuss its advantages and disadvantages	10																		
	b) Calculate first four moments about mean for the following set of examination marks: 45, 32, 37, 46, 39, 36, 41, 48 and 36.	10																		
Q.5.	a) Define an index number and describe the different types of index number.	10																		
	b) Find the index number of price from the following data taking average price of all years as the base.	10																		
	<table border="1"> <tr> <td>Years</td> <td>1970</td> <td>1971</td> <td>1972</td> <td>1973</td> <td>1974</td> <td>1975</td> <td>1976</td> <td>1977</td> </tr> <tr> <td>Prices</td> <td>15</td> <td>19</td> <td>21</td> <td>30</td> <td>37</td> <td>38</td> <td>40</td> <td>48</td> </tr> </table>	Years	1970	1971	1972	1973	1974	1975	1976	1977	Prices	15	19	21	30	37	38	40	48	
Years	1970	1971	1972	1973	1974	1975	1976	1977												
Prices	15	19	21	30	37	38	40	48												
Q.6.	a) State and prove additional law for mutually exclusive events.	10																		
	b) Two urns contain respectively 3 white, 7 red and 15 black & 10 white balls, 6 red and 9 black balls. One ball is taken from each urn. What is the probability that both will be of the same colour?	10																		
Q.7.	a) What are random numbers? How can they be generated? Explain the applications of random numbers.	10																		
	b) Let X be a random variable with probability distribution as follows.	10																		
	<table border="1"> <tr> <td>x</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>f(x)</td> <td>0.125</td> <td>0.45</td> <td>0.25</td> <td>0.05</td> <td>0.125</td> </tr> </table> Find mean and variance.	x	1	2	3	4	5	f(x)	0.125	0.45	0.25	0.05	0.125							
x	1	2	3	4	5															
f(x)	0.125	0.45	0.25	0.05	0.125															
Q.8.	a) Define the following terms: Experiment, Trial, Outcome, Random Experiment.	10																		
	b) In a binomial distribution, mean and standard deviation were found to be 38 and 5.6 respectively. Find p and n.	10																		



ALLAMA IQBAL OPEN UNIVERSITY

Level:	Intermediate	Semester:	Autumn 2021
Course & Code	Statistics-I (394)	Maximum Marks:	100
Time Allowed:	03 Hours	Pass Marks:	40

Note: ATTEMPT FIVE QUESTIONS. ALL CARRY EQUAL MARKS.

Q. No.	Questions	Marks																													
Q.No.1	a) Define the word statistics and explain its different meanings. b) Define primary and secondary data with examples.	(10+10)																													
Q.No.2	a) What are the different methods of representation of statistical data? b) What are measures of location? What are the properties of a good average?	(10+10)																													
Q.No.3	a) Define arithmetic mean. Give its merits and demerits. b) Compute the Mean and mode for the following data.	(10+10)																													
<table border="1" style="width: 100%; border-collapse: collapse; margin-left: 20px;"> <thead> <tr> <th>Classes</th> <th>86-90</th> <th>91-95</th> <th>96-100</th> <th>101-105</th> <th>106-110</th> <th>111-115</th> </tr> </thead> <tbody> <tr> <td>f</td> <td>6</td> <td>4</td> <td>10</td> <td>6</td> <td>3</td> <td>1</td> </tr> </tbody> </table>		Classes	86-90	91-95	96-100	101-105	106-110	111-115	f	6	4	10	6	3	1																
Classes	86-90	91-95	96-100	101-105	106-110	111-115																									
f	6	4	10	6	3	1																									
Q.No.4	a) Discuss the different measures of dispersion. Describe the method of computation of any two of them with suitable examples. b) Calculate the standard deviation for the following distribution:	(10+10)																													
<table border="1" style="width: 100%; border-collapse: collapse; margin-left: 20px;"> <thead> <tr> <th>X</th> <th>30</th> <th>31</th> <th>32</th> <th>33</th> <th>34</th> <th>35</th> <th>36</th> <th>37</th> <th>38</th> <th>39</th> </tr> </thead> <tbody> <tr> <td>f</td> <td>4</td> <td>8</td> <td>23</td> <td>35</td> <td>62</td> <td>44</td> <td>18</td> <td>4</td> <td>1</td> <td>1</td> </tr> </tbody> </table>		X	30	31	32	33	34	35	36	37	38	39	f	4	8	23	35	62	44	18	4	1	1								
X	30	31	32	33	34	35	36	37	38	39																					
f	4	8	23	35	62	44	18	4	1	1																					
Q.No.5	a) Write down the uses and limitations of index numbers. b) Construct chain indices for the following years, taking 1940 as base.	(10+10)																													
<table border="1" style="width: 100%; border-collapse: collapse; margin-left: 20px;"> <thead> <tr> <th rowspan="2">Item</th> <th colspan="5">Year</th> </tr> <tr> <th>1940</th> <th>1941</th> <th>1942</th> <th>1943</th> <th>1944</th> </tr> </thead> <tbody> <tr> <td>Wheat</td> <td>2.80</td> <td>3.40</td> <td>3.60</td> <td>4.00</td> <td>4.20</td> </tr> <tr> <td>Rice</td> <td>2.95</td> <td>3.60</td> <td>2.90</td> <td>2.75</td> <td>2.75</td> </tr> <tr> <td>Maize</td> <td>3.10</td> <td>3.50</td> <td>3.40</td> <td>4.50</td> <td>3.70</td> </tr> </tbody> </table>		Item	Year					1940	1941	1942	1943	1944	Wheat	2.80	3.40	3.60	4.00	4.20	Rice	2.95	3.60	2.90	2.75	2.75	Maize	3.10	3.50	3.40	4.50	3.70	
Item	Year																														
	1940	1941	1942	1943	1944																										
Wheat	2.80	3.40	3.60	4.00	4.20																										
Rice	2.95	3.60	2.90	2.75	2.75																										
Maize	3.10	3.50	3.40	4.50	3.70																										
Q.No.6	a) What do you understand by sample space, event and compound event? b) A bag contains 9 white and 12 black balls. Find the probability of drawing 5 black balls out of the bag containing 21 balls.	(10+10)																													
Q.No.7	a) Differentiate between discrete and continuous random variable and give an example of each. b) A committee of size 5 is selected from 5 men and 3 women. Find the expected number of female members on the committee.	(10+10)																													
Q.No.8	a) Define the binomial probability distribution. b) An event has the probability $p = \frac{3}{8}$. Find the complete binomial distribution for $n = 5$ trials.	(10+10)																													



Level: Intermediate
Paper: Statistics-I (334)
Time Allowed: 03 Hours

Semester: Spring 2019
Maximum Marks: 100
Pass Marks: 40

Note: ATTEMPT FIVE QUESTIONS. QUESTION # 1 IS COMPULSORY.

Q. # 1: Fill in the blanks:

(20)

- i. A variable is called _____ when its value cannot be exactly determined.
- ii. In Histogram, with unequal class intervals, the area of each rectangle is _____ to class frequency.
- iii. In qualitative data, the most suitable average is _____.
- iv. A measure of dispersion expressed as a coefficient is called _____ measures of dispersion.
- v. In _____ both quantities and prices are used.
- vi. Two events are _____ if they have no common point.
- vii. The probability function is _____ function.
- viii. The mean of probability distribution is called _____.
- ix. Binomial distribution has _____ parameters.
- x. Binomial distribution is symmetrical when _____.

Q. # 2: a) Distinguish between primary and secondary data and give different sources from which these are obtained.

b) What are different methods of representation of statistical data?

(10+10)

Q. # 3: a) Define arithmetic mean, geometric mean and harmonic mean. Explain the situations when each of them is used perfectly?

b) Calculate geometric mean for the following ungrouped data of the percentage changes in the weight of eight animals.

45, 30, 35, 40, 44, 32, 42, 37

(10+10)

Q. # 4: a) Explain the difference between absolute dispersion and relative dispersion. Describe the properties of the standard deviation.

b) Calculate first four moments about mean for the following set of examination marks.

45, 32, 37, 46, 39, 36, 41, 48 and 36.

(10+10)

Q. # 5: a) What is an index number? Give the uses of an index number.

b) Compute Fisher's index number for the following data:

Commodities	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	7	70	5	49
B	5	27	7	28
C	10	35	9	29
D	9	50	4	42
E	3	16	10	25

(10+10)

Q. # 6: a) Define mutually exclusive, independent and dependent events.

b) A set of eight cards contains one joker. A and B, are two players, A choose 5 cards at random, B takes the remaining 3 cards, what is the probability that A has a joker?

(10+10)

Q. # 7: a) Define random variable and give an example to explain it.

b) There are three children in a family. Let the random variable denote the number of boys in a family. Write down the possible outcomes and the values assigned by the random variable assuming equal chances for boys and girls.

(10+10)

Q. # 8: a) Find the binomial distribution whose mean is 12 and standard deviation is 3.

b) The incidence of an occupational disease in an industry is such that the workers have 20% chance of suffering from it. What is the probability that out of 6 workmen:

i) not more than 2 will catch the disease

ii) 4 or more will catch the disease

(10+10)



ALLAMA IQBAL OPEN UNIVERSITY

Level:	Intermediate	Semester:	Autumn 2021
Course & Code	Statistics-I (394)	Maximum Marks:	100
Time Allowed:	03 Hours	Pass Marks:	40

Note: ATTEMPT FIVE QUESTIONS. ALL CARRY EQUAL MARKS.

Q. No.	Questions	Marks																													
Q.No.1	a) Define the word statistics and explain its different meanings. b) Define primary and secondary data with examples.	(10+10)																													
Q.No.2	a) What are the different methods of representation of statistical data? b) What are measures of location? What are the properties of a good average?	(10+10)																													
Q.No.3	a) Define arithmetic mean. Give its merits and demerits. b) Compute the Mean and mode for the following data; <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr> <td>Classes</td> <td>86-90</td> <td>91-95</td> <td>96-100</td> <td>101-105</td> <td>106-110</td> <td>111-115</td> </tr> <tr> <td>f</td> <td>6</td> <td>4</td> <td>10</td> <td>6</td> <td>3</td> <td>1</td> </tr> </table>	Classes	86-90	91-95	96-100	101-105	106-110	111-115	f	6	4	10	6	3	1	(10+10)															
Classes	86-90	91-95	96-100	101-105	106-110	111-115																									
f	6	4	10	6	3	1																									
Q.No.4	a) Discuss the different measures of dispersion. Describe the method of computation of any two of them with suitable examples. b) Calculate the standard deviation for the following distribution: <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr> <td>X</td> <td>30</td> <td>31</td> <td>32</td> <td>33</td> <td>34</td> <td>35</td> <td>36</td> <td>37</td> <td>38</td> <td>39</td> </tr> <tr> <td>f</td> <td>4</td> <td>8</td> <td>23</td> <td>35</td> <td>62</td> <td>44</td> <td>18</td> <td>4</td> <td>1</td> <td>1</td> </tr> </table>	X	30	31	32	33	34	35	36	37	38	39	f	4	8	23	35	62	44	18	4	1	1	(10+10)							
X	30	31	32	33	34	35	36	37	38	39																					
f	4	8	23	35	62	44	18	4	1	1																					
Q.No.5	a) Write down the uses and limitations of index numbers. b) Construct chain indices for the following years, taking 1940 as base. <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr> <th rowspan="2">Item</th> <th colspan="5">Year</th> </tr> <tr> <th>1940</th> <th>1941</th> <th>1942</th> <th>1943</th> <th>1944</th> </tr> <tr> <td>Wheat</td> <td>2.80</td> <td>3.40</td> <td>3.60</td> <td>4.00</td> <td>4.20</td> </tr> <tr> <td>Rice</td> <td>2.95</td> <td>3.60</td> <td>2.90</td> <td>2.75</td> <td>2.75</td> </tr> <tr> <td>Maize</td> <td>3.10</td> <td>3.50</td> <td>3.40</td> <td>4.50</td> <td>3.70</td> </tr> </table>	Item	Year					1940	1941	1942	1943	1944	Wheat	2.80	3.40	3.60	4.00	4.20	Rice	2.95	3.60	2.90	2.75	2.75	Maize	3.10	3.50	3.40	4.50	3.70	(10+10)
Item	Year																														
	1940	1941	1942	1943	1944																										
Wheat	2.80	3.40	3.60	4.00	4.20																										
Rice	2.95	3.60	2.90	2.75	2.75																										
Maize	3.10	3.50	3.40	4.50	3.70																										
Q.No.6	a) What do you understand by sample space, event and compound event? b) A bag contains 9 white and 12 black balls. Find the probability of drawing 5 black balls out of the bag containing 21 balls.	(10+10)																													
Q.No.7	a) Differentiate between discrete and continuous random variable and give an example of each. b) A committee of size 5 is selected from 5 men and 3 women. Find the expected number of female members on the committee.	(10+10)																													
Q.No.8	a) Define the binomial probability distribution. b) An event has the probability $p = \frac{3}{8}$. Find the complete binomial distribution for $n = 5$ trials.	(10+10)																													



Level: Intermediate
Paper: Statistics-I (394)
Time Allowed: 03 Hours

Semester: Autumn 2018
Maximum Marks: 100
Pass Marks: 40

Note: ATTEMPT FIVE QUESTIONS. QUESTION # 1 IS COMPULSORY.

Q. # 1: Fill in the blanks: (20)

- The quantity which does not vary from individual to individual is called _____.
- A Histogram is a _____ bar chart with no space between its bars.
- If extreme large or small values are changed, values of _____ are not effected.
- A measure of dispersion is _____.
- Shepherd correction is applicable when the frequency distribution tends to _____ in both directions.
- Geometric mean is a suitable average in _____ method.
- The number of subsets of a set containing n points are _____.
- Random numbers are obtained in such a way that each digit has _____ probability.
- A random variable is also named as a _____ variable.
- Mean of the binomial distribution is np and its variance is _____.

Q. # 2: a) Distinguish between primary and secondary data and give different sources from which these are obtained.

b) Reciprocals of x are given below:

0.0267, 0.0235, 0.0211, 0.0191, 0.0174, 0.0160, 0.0148

Calculate Harmonic Mean of the data.

(10+10)

Q. # 3: a) What do you understand by classification and tabulation? Discuss their importance in a statistical analysis.

b) Arithmetic Mean of 15 values is 20 and by adding 3 more values, the mean remains 20. Find the new three values if ratio is $a:b:c :: 3:2:1$.

(10+10)

Q. # 4: a) What are moments about mean and about an arbitrary value. Give the relation between them.

b) For a group of 50 boys, the mean score and the standard deviation of scores on a test are 59.5 and 8.38 respectively, for a group of 40 girls, the mean and standard deviation are 54.0 and 8.23 respectively on the same test. Find the mean and standard deviation for the combined group of 90 children.

(10+10)

Q. # 5: a) Define weighted and un-weighted index numbers and explain why weighted index numbers are preferred over un-weighted index numbers.

b) Calculate Laspeyre's, Paasche's and Fisher's ideal index for the following data with 1992 as base:

Item	Average Price (Rs)		Quantity (Units)	
	1992	1993	1992	1993
Wheat Flour	4.38	4.57	20Kg	16Kg
Rice	14.15	15.58	10Kg	12Kg
Moong Pulse	18.67	17.28	1Kg	1Kg
Gram Pulse	10.41	16.36	1Kg	1Kg

(10+10)

Q. # 6: a) Define permutation and combination and discriminate between these two.

b) Suppose that it is 9 to 7 against a person A who is now 35 years of age living till he is 65 and 3 to 2 against a person B now 45 years of age living till he is 75. Find the probability that one of these persons will be alive 30 years hence.

(10+10)

Q. # 7: a) What is meant by probability distribution? Distinguish between discrete and continuous random variables by giving examples.

b) There are three children in a family. Let the random variable denote the number of boys in a family. Write down the possible outcomes and the values assigned by the random variable assuming equal chances for boys and girls.

(10+10)

Q. # 8: a) Find the mean and standard deviation of the Binomial Distribution $(q + p)^n$

b) A committee of size 3 is selected from 4 men and 2 women. Find the probability distribution by hypergeometric experiment for the number of men on the committee.

(10+10)