ALLAMA IQBAL OPEN UNIVERSITY

Level: Intermediate
Paper: Statistics-II (395)
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)

i. In a normal distribution, the mean, median and mode are _____.
ii. The points of inflexion of a normal curve are _____ from mean.
iii. The number of all possible samples of size n taken with replacement from a population of size N is _____.
iv. _____ errors may arise due to faulty sampling frames, non-responses and processing of data.
v. The confidence coefficient is also called _____ of confidence.
vi. The width of a confidence interval _____ if the sample size is increased.
vii. The value of the test statistic which separate the rejection from acceptance region are called _____ values.
viii. The correlation coefficient is _____ of the change in origin and unit of measurement.
ix. _____ is a process of dividing the objects into two mutually exclusive classes of an attribute.
x. The secular trend is measured by _____ method when trend is linear.

Q. # 2: ***a)*** In a normal distribution 31% of item are under 45 and 8% are over 64. Find the mean and standard deviation of the distribution.

b) In a certain examination, the percentage of passes were 80 and 10 respectively. Estimate the average marks obtained by the candidates, the minimum pass and distinction marks being 40 and 75 respectively, assume the distribution of marks to be normal. (10+10)

Q. # 3: ***a)*** What is meant by standard error and what are its practical uses?

b) If the size of the simple random sample from an infinite population is 55, the variance of sample mean is 27, what must be the standard error of sample mean if n=165? (10+10)

Q. # 4: ***a)*** Define Student's t-statistic. What assumptions are made about the population where the t-distribution is used?

b) Find a 99% confidence interval for the mean of normal distribution with σ=2.5 and if a sample of size 7 gave the values 9, 16, 10, 14, 8, 13, 14. What would be the confidence interval if σ were unknown.

(10+10)

P.T.O.

ALLAMA IQBAL OPEN UNIVERSITY

Level: Intermediate
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Maximum Marks: 100
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Note: ATTEMPT **FIVE** QUESTIONS. QUESTION NO. 1 IS COMPULSORY.

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

1. The total area under a normal curve is at X = _____.
2. Another name of a probability sampling is _____ sampling
3. Statistical _____ is the conclusion made about the unknown value of population parameter by using the sample observations.
4. A sample consisting of 30 or less observations is known as a _____ sample.
5. A statistical _____ is an assertion about the distribution of one or more random variable.
6. The variable, that forms the basis of estimation, is called _____.
7. If the two variables move in _____ directions, the correlation is negative.
8. The coefficient of association, denoted by Q, is a measure of association between the two _____.
9. The straight line is fitted to a time series when the movements in the time series are _____.
10. Seasonal variations are _____ in nature.

Q. # 2: a) In a certain examination, the percentage of passes and distinctions were 80 and 10 respectively. Estimate the average marks obtained by the candidates, the minimum pass and distinction marks being 40 and 75 respectively, assume the distribution of marks to be normal.

b) In a normal distribution, the lower and upper quartiles are respectively 8 and 17. Find mean and standard deviation of the normal distribution.

(10+10)

Q. # 3: a) Explain the terms: Population; Sample; Sampling frame; Sampling unit.

b) A random sample of 100 is taken from a population with mean 30 and standard deviation 5. The probability distribution of the parent population is unknown, find the mean and standard error of the sampling distribution of $\bar{X}$.

(10+10)

Q. # 4: a) The masses in grams, of thirteen ball bearings taken at random from a batch are 21.4, 23.1, 25.9, 24.7, 23.4, 21.5, 25.0, 22.5, 26.9, 26.4, 25.8, 23.2, 21.9. Calculate a 95% confidence interval for the mean mass of the population, supposed normal, from which these masses were drawn.

P.T.O.

ALLAMA IQBAL OPEN UNIVERSITY

Level:	Intermediate	Semester:	Autumn, 2021
Course & Code	Statistics-II (395)	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 Normal distribution. Also write down its properties. b) In a normal distribution, the lower and upper quartiles are respectively 8 and 17. Find mean and s.d of the normal distribution.	(10+10)
Q.No.2	a) What are the advantages of sampling over complete enumeration? b) A Population consists of 2, 2, 4, 4, 6, 8 and 10. Calculate the sample means for all possible random samples of size n = 2 that can be drawn from this population, without replacement. Also Verify that $\mu_{\bar{x}} = \mu$ and $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}\sqrt{\frac{N-n}{N-1}}$	(10+10)
Q.No.3	a) Differentiate between point estimation and interval estimation. b) A random sample of 250 from the 5000 students in Govt.college Islamabad contained 30 left handed students. Give an approximate 95% confidence interval for the proportion of left handed students in the college.	(10+10)
Q.No.4	a) Explain how the null and the alternative hypothesis are formulated. b) A coin is tossed 400 times and it turns up heads 216 times. Discuss whether the coin may be an unbiased one.	(10+10)
Q.No.5	a) Write down the properties of the least square regression line. b) The following results were obtained for a bivariate frequency distribution after making the transformation u= x-1250/500 and v= y-500/200: n=66, $\sum fu$=-4, $\sum fu^2$=109, $\sum fv$=-53, $\sum fv^2$=115, $\sum fuv$ =91. Obtain the equations of the lines of regression in the simplest form.	(10+10)
Q.No.6	a) Write down the properties of coefficient of correlation. b) Find the coefficient of correlation from the given data;	(10+10)
Q.No.7	a) What is meant by the association of attributes? b) The following table gives the condition at home and condition of the children.	(10+10)
Q.No.8	a) What is meant by time series? What are different movements of time series? b) Compute 7 day moving averages from the following:	(10+10)

X	12	8	6	7	7	19	15	11	13	19
Y	17	12	16	8	4	14	17	9	13	10

Condition of children	Condition at home	
	Clean	Not clean
Clean	175	143
Fairly clean	136	116
Dirty	125	145

Test for the association between the conditions at home and conditions of children.

Week	Sun	Mon	Tue	Wed	Thurs	Fri	Sat
1	24	50	30	48	54	55	62
2	28	52	41	42	50	41	42