MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

THIRD YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF ECONOMICS AND STATISTICS

BACHELOR OF ECONOMICS

EES 301: STATISTICS FOR ECONOMISTS II

DATE: 19/01/2021   **TIME: 8.30-10.30 AM**

INSTRUCTIONS:

   (i)   **Answer question one (Compulsory) and any other two questions**

   (ii)   **Do not write on the question paper**

   (iii)   **Show your working clearly**

   (iv)   **Where α has not been given, use α=0.05**

QUESTION ONE (30 MARKS) (COMPULSORY)

a)   Explain the reason why standard deviation is considered to be a better measure of variability compared to other measures of dispersion   (2 marks)

b)   Explain the difference between permutation and combination. Give examples   (4 marks)

c)   Explain two types of decision errors in statistics   (4 marks)

d)   Discuss four desirable properties of estimators following Gauss Markov theorem (8 marks)

e)   Differentiate between a point estimate and an interval estimate. Use examples   (4 marks)

f)   Explain four main characteristics of a normal distribution   (4 marks)

g)   Explain any four classical assumptions of Ordinary Least Square (OLS) Method   (4 marks)

QUESTION TWO (20 MARKS)

a) Explain three circumstances when standard normal distribution can be applied. Demonstrate standardization (4 marks)

b) The length of time needed to service a car at a petrol status is normally distributed with mean of 15 minutes and a standard deviation of 4 minutes. Using a significance level of 5%, what is the probability that the time needed to service a car will be:

    i. Between 15 and 20 minutes (2 marks)

    ii. Between 9 and 12 minutes (2 marks)

    iii. Less than 5 minutes (2 marks)

    iv. How long per car will it take to service 95% of the cars? (4 marks)

c) Describe three characteristics of chi square distribution and highlight three circumstances when it can be applied (6 marks)

QUESTION THREE (20 MARKS)

a) Explain is the main difference between correlation and regression analysis on the following basis:

    i. Meaning (2 marks)

    ii. Usage (2 marks)

    iii. Dependent and independent variables (2 marks)

    iv. Indicates (2 marks)

    v. Objective (2 marks)

b) Discuss three Measures of Central Tendency (6 marks)

c) Suppose the following game chance were proposed to you. A fair coin is tossed, if it lands on the head, you win Kshs 20, and if it lands on the tail, you lose Kshs 10. What average amount that you will win per toss of a coin. (4 marks)

QUESTION FOUR (20 MARKS)

a) Discuss while giving examples the essential steps of testing hypothesis (10 marks)

b) Ten students from Kisii University are given statistics tuition using type A teaching method and 12 students from Machakos University uses type B method. The mean increase of Kisii University student's performance is 6 marks with a standard deviation of 0.03 marks. The mean increase performance of the students from Machakos University is 5.95 marks with a

standard deviation of 0.04 marks. Is there a difference in the effect of the two teaching methods? Proof. Use α=1% (10 marks)

QUESTION FIVE (20 MARKS)

a)   Explain any two characteristics of probabilities (2 marks)

b)   A test of break taking strength of 6 ropes manufactured by a company showed a mean breaking strength of 7750N and a standard deviation of 145N whereas the manufacturer claimed a mean breaking strength of 8000N. Can you support the manufacturer claim? Use α= 5% and 10%? (8 marks)

c)   Explain any two methods mostly used in Estimation (2 marks)

d)   A random sample of 8 men and 8 women from Machakos town are selected and their age at marriage are found to be as follows;

Number	Age of men at marriage	Age of women at marriage
1	21	21
2	23	22
3	24	24
4	26	24
5	28	25
6	29	27
7	31	28
8	34	29

You are required to calculate and interpret the product moment correlation coefficient

(8 marks)