University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

KISUMU CITY CAMPUS

UNIVERSITY EXAMINATIONS 2016/2017 ACADEMIC YEAR

THIRD YEAR SECOND SEMESTER DEGREE EXAMINATIONS

FOR THE DEGREE IN BACHELOR OF COMMERCE

COURSE CODE: BCB 318

COURSE TITLE: MANAGERIAL STATISTICS

DATE: MARCH, 2018 **TIME:** 2 hours

INSTRUCTIONS TO CANDIDATES

Answer **QUESTION 1**and any other **TWO QUESTIONS.**

TIME: 2 Hours

1. (a) Define the following terms:
   (i) Sampling
   (ii) Sampling frame
   (iii) Sampling design
   (iv) Statistic
   (v) Parameter (10 marks)

   (b) From a random sample of 36 civil servants in Kisumu, their mean age and the sample standard deviation were found to be 40years and 4.5years respectively. Construct a 95%confidence interval for the mean age of the civil servants in Kisumu.
   (10 marks)

   (c) Kenya Bureau of Standards has made it mandatory for car tyre retreaders to report the number of tyres not meeting reporting standards. The quality controller in charge of KEBS selects a sample of 1000 retreads finds that 6 are below standards. Determine at 99% confidence interval, the proportion of bad tyres. (10 marks)

2. (a) Highlight the properties of a good estimator. (10 marks)

(b) Suppose we are interested in a population of 20 industrial units of the same size all of which are experiencing excessive labor turnover. Past records show that the mean of the distribution of annual turnover is 320 employees with a standard deviation of 75 employees. A sample of 5 of these industrial units is taken at random which gives a mean of annual turnover as 300 employees. Is the sample consistent with the population mean? Test at 5% level of significance. (10 marks)

3. Given the data on sales and promotional expenses below

Promotional expense (ksh1000)	7	10	9	4	11	5	3
Sales (ksh1000)	12	14	13	5	15	7	4

(a) Compute the coefficient of correlation and interpret your value (10 marks)
(b) Obtain the regression equation that will enable you estimate the level of sales at different levels of promotional expenses. (10 marks)

4. (a) Differentiate the following terms:

(i) Null hypothesis and alternative hypothesis (4 marks)

(i) Parametric and non-parametric tests (4 marks)

(b) To determine if a single die is balanced or fair, the die was rolled 600 times. The observed frequencies with which each of the six sides of the die turned up are recorded in the table below:

Face	1	2	3	4	5	6
Frequency	114	92	84	101	107	102

Is there sufficient evidence to conclude at 5% level of significance that the die is not fair? (12 marks)

5. (a) Define the following terms:

(i) Simple random sampling

(ii) Stratified sampling

(iii) Cluster sampling

(iv)Quota sampling

(v)Snowball sampling (10 marks)

(b) To assess the significance of possible variation in performance in a certain test among the grammar schools of a given city, a common test was given to a number of students picked randomly from the senior most classes of each of the four schools. The results are given below:

School A	School B	School C	School D
8	12	18	13
10	11	12	9
12	9	16	12
8	14	6	16
7	4	8	15

Are the performances of these schools similar? (10 marks)