CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF COMMERCE (MARKETING OPTION)

BCOM 365: BUSINESS STATISTICS II

STREAMS: BCOM Y3S1   **TIME: 2 HOURS**

DAY/DATE: THURSDAY 08/07/2021   **2.30 P.M – 4.30 P.M**

INSTRUCTIONS:
Answer question one and any other two questions

QUESTION ONE (30 MARKS)

(a) Using a suitable example, distinguish between the following:

    (i)   Simple hypothesis and composite hypothesis.   [4 marks]

    (ii)   Null hypothesis and alternative hypothesis   [4 marks]

(b) Munene's restaurant at Ndagani centre has been having average sales of 500 tea cups per day. Due to establishment of a fuel save petrol station nearby, it expects to increase its sales. During the first 12 days after the start of fuel save operations, the daily sales in Munene's restaurant were as under: 550,570,490,615,505,580,570,460,600,580,530 and 526. On the basis of this sample information, can one conclude that Munene's restaurant sales have increased? Use 5 per cent level of significance.   [8 marks]

(c) The information given below shows statistics on treatment mode and response to treatment of 200 patients suffering from COVID -19 disease.

Treatment mode	No. of patients	
	Favorable response	No.response
Home based	60	20
Hospital	70	50

Required:

(i)   Using chi-square state whether there is association between treatment mode and response by patients at 15% level of significance.   [6 marks]

(ii)   Will your conclusion in (i) above be different if the level of significance is 1% instead?   [4 marks]

(iii) Highlight four important characteristics of chi-square test.   [4 marks]

QUESTION TWO (20 MARKS)

(a) What characteristics it must posses in order to be a good research hypothesis? [6 marks]

(b) The annual parking fee collection by 6 counties was recorded before and after automation of the revenue collection system. The following data (in ksh 000,000) was obtained.

County	A	B	C	D	E	F
Before automation	53	28	31	48	50	42
After automation	58	29	30	55	56	43

Can the automation be judge as a success? Use paired t-test.   [14 marks]

QUESTION THREE (20 MARKS)

(a) The procedure of testing hypothesis requires a researcher to adopt several steps. Describe in brief all such steps.   [8 marks]

(b) A sample of 400 fluorescent tubes is found to have an average life of 6,747 hours. Can it be reasonably regarded as a sample from a large population with an average life of 6,739 hours and standard deviation 130 hours? Test at 1% level of significance.   [6 marks]

(c) The null hypothesis is that 20 per cent of the passengers go in first class, but transport manager recognizes the possibility that percentage could be more or less. A random sample of 400 passengers includes 70 passengers holding first class tickets. Can the null hypothesis be rejected at 10 percent level of significance?   [6 marks]

QUESTION FOUR (20 MARKS)

(a) Outline the significance of regression analysis in firm operations.   [4 marks]

(b) The table below reports data on queue length (Y) and service rate (X) for 12 banks in a city.

Bank no.	X	Y
1	0.9	38
2	1.3	29
3	1.6	42
4	4.5	57
5	4.8	96
6	5.4	47
7	5.5	67
8	5.6	72
9	6.4	93
10	7.8	58
11	8.4	95
12	8.8	67

Measurement; X = average number of customers served per hour

Y = Average number of customers in a queue per hour

(i) Fit the regression equation equations on the data using least squares method.

[6 marks]

(ii) Hence project the queue length if, on average, 102 customers are served in an eight hour session. [2 marks]

(iii) Use the table to compute the correlation coefficient for the data. [4 marks]

(iv) Test the significance of service rate as a predictor of queue length at 5% level.

[4 marks]