



KABARAK

UNIVERSITY

UNIVERSITY EXAMINATIONS

2010/2011 ACADEMIC YEAR

**FOR THE DEGREE OF BACHELOR OF COMPUTER
SCIENCE**

COURSE CODE: COMP 328

COURSE TITLE: RESEARCH METHODS IN COMPUTER

STREAM: Y3S2

DAY: TUESDAY

TIME: 9.00 – 11.00 P.M

DATE: 07/12/2010

INSTRUCTIONS:

1. Answer question **ONE** and any other two questions
2. Show all your working and be neat

PLEASE TURNOVER

QUESTION ONE (30 marks)

- a) Outline research procedure cycle one has to follow for a credible study as taught to you in this course **[5 marks]**
- b) Assume you have conducted a research for your academic dissertation/project, briefly outline what should appear in each chapter of the university research booklet **[5 marks]**
- c) Mention four types of sample survey designs normally used for collecting data. State the advantages and disadvantages of the design methods you have mentioned. **[6 marks]**
- d) Distinguish between Karl Pearson’s correlation coefficient and Spearman’s rank correlation coefficient, showing clearly when one selected over the other **[4 marks]**
- e) Differentiate correlation and regression as taught to you in this course **[6 marks]**
- f) Which hypotheses does chi-squares test **[4 marks]**

QUESTION TWO (20 MARKS)

- a) A study conducted during 1993 and 1994 at a Kakamega Research Centre attempted to assess the effects of language barriers on extension messages to farmers. One aspect of the study involved interviews with 463 farmers. Some of them spoke English and others were fluent only in Kiswahili. Later after the extension messages, farmers were questioned about interpreter use and about their own understanding of the messages given. The table below is a two-way classification of responses.

Table 1: Farmers understanding of messages and use of interpreter

		Interpreter Use		
		No need for interpreter	Interpreter Used	Interpreter not used
Farmers’ understanding of messages	Good-Excellent	160	69	39
	Fair-Poor	80	52	63

At the 10% level of significance, do farmers’ understanding of messages and interpreter use

appear to be related? Tabulated $\chi^2_{0.10(2)}=4.61$ **[10 marks]**

- b) Two random samples, one of 95 coffee farmers and a second of 50 tea farmers, were taken from a county in a certain country in East Africa. The farmers were asked about their views on a new act of parliament on cash crop farming. The following table gives the results of the survey.

Table 2: cash crop farmers' opinion on a new act of parliament

Farmers	Opinion		
	Favour	Oppose	Uncertain
Coffee	47	39	9
Tea	21	26	3

Using the 2.5% significance level, test the null hypothesis that the distributions of opinion are homogeneous for the two groups of farmers ignoring the condition of expected frequency being at least 5. Tabulated $\chi^2_{0.025(2)}=7.38$ **[10 marks]**

QUESTION THREE (20 MARKS)

- a) Calculate Karl Pearson correlation coefficient of the following data and test the appropriate hypothesis at $\alpha=0.05$ **[8 marks]**
- b) Estimate parameters of the linear regression line from the data and test appropriate hypothesis for intercept and slope at $\alpha=0.10$ **[12marks]**

Table 3. Income(y) and input (X) data

X	1	2	3	4	5	6	7	8	9
y	9	8	10	12	11	14	13	16	15

QUESTION FOUR (20 MARKS)

- a) Consider a sample of size 20 with mean=8 and standard deviation=3.2, test the hypothesis of the following using level of significance of 5% **[8 marks]**
 $H_0:\mu=7.5$
 $H_1:\mu\neq 7.5$
- b) The following are life span in months of two type of computer model

Type I		Type II	
65	82	64	56
81	67	71	69
57	59	83	74
66	75	59	82
82	70	65	79

- i) test the hypothesis that the two variances are equal. Use $\alpha=0.05$ **[12 marks]**
 ii) Using the result of (i), test the hypothesis that the mean life span of the two type of computers are equal.