THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

MAY – JULY 2015 TRIMESTER

FACULTY OF EDUCATION

DEPARTMENT OF POSTGRADUATE STUDIES IN EDUCATION

HOLIDAY PROGRAMME

ED 501: FUNDAMENTALS OF EDUCATIONAL STATISTICS

Date: JULY 2015	**Duration: 3 Hours**
INSTRUCTIONS: Answer Question ONE and ANY OTHER THREE Questions	

Q1. a) Briefly explain the following terms

i Characteristic. **(1 mark)**
ii Variable. **(1 mark)**
iii Constant. **(1 mark)**
iv Distribution. **(1 mark)**
v Observation. **(1 mark)**
vi Hypothesis. **(1 mark)**

b) Study the hypothetical data below and answer questions that follow

i Create a grouped frequency distribution with a class width/size of 2. **(2 marks)**

ii Determine the mean. **(2 marks)**

iii Determine the mode. **(2 marks)**

iv Determine the median. **(2 marks)**

c) Study the statement that follows "A form one teacher was interested in testing the popular belief that boys are better than girls in mathematics"

i Identify the independent variable. **(1 mark)**

ii Identify the dependent variable. **(1 mark)**

iii Formulate an appropriate null hypothesis that the teacher would test. **($1^1/_2$ marks)**

Q2. a) Why do we say that hypothesis testing involves a double negative logic? **(2 marks)**

b) What can you conclude when:

i A result is so extreme that you reject the null hypothesis? **(2 marks)**

ii A result is not very extreme so that you cannot reject the null hypothesis. **(2 marks)**

c) A training program to increase positive attitude towards the study of statistics is tried on one individual randomly selected from the general public. The mean on the attitude measure is 30 with a standard deviation of 4. The researchers want to test their hypothesis at the 5% significance level. After going through the training program, this individual takes the attitude test and gets a score of 40. What should the researchers conclude? **(6 marks)**

d) What is a non-directional hypothesis test? **(1 mark)**

e) Study the questions that follow “Do pupils who experience traumatic events in childhood have more or less self esteem than the general population?”

i Say which two populations are being compared. **(1 mark)**
ii State the research hypothesis. **(1 mark)**
iii State the null hypothesis. **(1 mark)**
iv Say whether you should use one tailed or two-tailed test and why. **(1 ½ marks)**

Q3. An educational researcher tested the level of self confidence among students three months before and three months after undergoing a self confidence training course. The scores for the 19 students are listed in the ‘before’ and ‘after’ columns in the table below.

Test the hypothesis that there is no change in the level of self confidence using 0.05 significance level(use the steps of hypothesis testing and sketch the distributions involved). **(17 ½ marks)**

Q4. Twenty one students at CUEA Langata campus Nairobi were selected for an informal study about students study skills; 7 first year, 7 second year and 7 third year undergraduates were randomly selected. The students were given a study skill assessment having a maximum score of 100. Find out whether or not there is a difference between the three different year levels. Use alpha 0.05. **(17.5 marks)**

Q5. The office of the registrar at CUEA was interested in finding out whether or not there is an association between gender and preference for mode of teaching namely regular mode, evening mode and online mode. The data below was recorded.

Is there a gender difference? Use alpha 0.01. **(17 ½ marks)**

Q6. a) What is the usual null hypothesis in hypothesis testing with a correlation coefficient? **(1 mark)**

b) Write the formular for testing the significance of a correlation coefficient and define each of the symbols. **(4 marks)**

c) Use the five steps of hypothesis testing to determine whether a correlations coefficient of r = -0.31 from a study with a sample of 60 people is significant at the 0.05 level, two tailed. **(8 marks)**

d) What are the assumptions for the significance test of a correlation coefficient. **(3 marks)**

e) Why do we change the scores for each variable into deviation scores in the first step of figuring the correlation coefficient? **(1 ½ marks)**

END