



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

MAIN EXAMINATION

P.O. Box 62157
00200 Nairobi - KENYA
Telephone: 891601-6
Fax: 254-20-891084
E-mail: academics@cuea.edu

AUGUST - DECEMBER 2015 TRIMESTER

FACULTY OF EDUCATION

DEPARTMENT OF POSTGRADUATE STUDIES IN EDUCATION

HOLIDAY PROGRAMME

ED 501: FUNDAMENTALS OF EDUCATIONAL STATISTICS

Date: DECEMBER 2015

Duration: 3 Hours

INSTRUCTIONS: Answer Question ONE and ANY other THREE Questions

- Q1. a) Briefly explain the meaning of the following terms;
- i Variable
 - ii Assumption
 - iii Hypotheses
 - iv Type 1 error
 - v Decision rule. **(5 marks)**
- b) Under what conditions would you use the median rather than the mean as a measure of central tendency? **(3 marks)**
- c) For the following data set 31, 42, 35, 55, 54, 34, 25, 44, 35 compute the following
- i Range **(1 mark)**
 - ii Sample standard deviation. **(1 mark)**
 - ii Population standard deviation. **(1 mark)**
- d) Study the data set below
42, 41, 3, 1, 35, 36, 39, 5, 9, 30, 34, 32, 31, 30, 33, 32, 31, 10, 13, 14, 12,
15, 18, 19, 17, 16, 15, 16, 19, 25, 29, 26, 28, 27, 28, 25, 26, 27, 25, 20,
24, 21, 20, 23, 22, 21, 24, 23, 21, 48

- i Create a grouped frequency distribution with a class size of 5. **(2 marks)**
- ii Determine the median. **(2 marks)**
- lii Determine the mode. **(2 marks)**
- lv Determine the mean. **(1 mark)**

Q2. Use the data to answer questions that follow

Total number of problems correct	Attitude towards test taking
17	94
13	73
12	59
15	80
16	93
14	85
16	66
16	79
18	77
19	91

- a) Compute the pearsons product moment correlation coefficient. **(10 marks)**
- b) Construct a scatter plot. **(5 marks)**
- c) Based on the scatter plot would you predict the correlation to be direct or indirect? Support your answer. **(1 mark)**
- d) If the coefficient of determination between two variables is 0.64 what is the pearsons correlation coefficient? **(1 ½ mark)**

- Q3. a) What are the characteristics of the normal curve? **(3 marks)**
- b) What human behavior trait or characteristics can you think that is normally distributed? **(1 mark)**
- c) Why is z-score a standard score? **(3 marks)**
- d) The questions that follow are based on a distribution of scores with $\bar{x} = 75$ and the sd = 0.38
- i What is the probability of a score falling between a raw score of 70 and 80? Show all steps. **(3 marks)**

- ii What is the probability of a score falling between a raw score of 81 and 83? **(3 marks)**
- liii What is the probability of a score falling below a raw score of 63? **(2 marks)**
- iv Suppose the value of $n = 350$ what would be the percentage of scores falling above a raw score of 80? **(2 ½ marks)**

Q4. Study the data below

Boys	Girls
6	12
4	4
2	7
3	10
9	5
6	8
5	3

- i Using the data test the research hypothesis at 0.5 significance level that girls raise their hands in class more often than boys. What is your conclusion regarding the research hypothesis? Is this a one tailed or two tailed test and why? (remember to follow all the steps. **(12 marks)**)
- ii Using the same data test the research hypothesis at the 0.01 level of significance that there is a difference between girls and boys in the number of times they raise their hands in class. What is your conclusion regarding research hypothesis? **(5 ½ marks)**

Q5. Johnpaul recognizes that there are different techniques for attracting attention to advertisements and he wants to test three of these for the sample product: All colours black and white, a combination. Here are the data on attractiveness of each product on a scale from 1 to 10. Now he wants to know if there is a difference between the three formats is there? Use alpha 0.05. **(17.5 marks)**

Colour	Black and White	Combination
5	7	9
6	8	6
9	9	7
8	10	8
7	8	5

Q6. The data below examines the relationship between the quality of marriage and the quality of parent-child relationships.

Quality of marriage	Quality of parent-child relationship
76	43
81	33
78	23
76	34
76	31
78	51
76	56
78	43
98	44
88	45
76	32
66	33
44	28
67	39
65	31
59	38

- i What linear regression best predicts quality of parent-child relationship based on quality marriage. **(8 marks)**
- ii If a couple scored on 80 on quality of marriage what would be the level of parent-child relationship? **(4 marks)**
- iii How well does the regression equation fit the data? **(5 ½ marks)**

END