



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 2016 TRIMESTER

FACULTY OF ARTS AND SOCIAL SCIENCES

DEPARTMENT OF DEVELOPMENT STUDIES

ODEL PROGRAMME

MDS 516: STATISTICAL TECHNIQUES

Date: DECEMBER 2016

Duration: 3 Hours

INSTRUCTIONS: Answer ANY FOUR Questions

- Q1. a) Establish the relationships and the differences between the following. Show relevant examples.
- i) Correlation and regression **(4 marks)**
 - ii) Coefficient of Kurtosis and Coefficient of Skewness. **(4 marks)**
- b) A researcher wanted to establish whether there is any relationship between ability in Mathematics and in Geography in Secondary schools. A sample of 8 students' records was randomly picked in high school X and recorded as follows:

Geography (%)	60	62	58	90	87	82	70	72
Mathematics (%)	58	70	58	87	68	80	70	78

Calculate the coefficient of correlation and comment on your answer. **(7marks)**

- Q2. a) Why is Standard Deviation the best measure of dispersion? **(4marks)**
- b) Calculate the Harmonic mean for this distribution. **(3 marks)**
20, 22, 30, 31, 27
- c) Analyze any three probability laws **(6 marks)**
- d) Analyze the Null and the Alternative hypotheses. **(2marks)**

- Q3. a) In Kisumu County, the Kenya Bureau of Statistics did a survey to establish the relationships between income and amount of rent paid by each respondent.

Rent (Kshs000)	2	1	9	12	10	30	20	15	18	8
Income (Kshs 000)	20	27	38	42	50	69	87	74	52	80

- i) Calculate the coefficient of correlation and interpret your result. **(7 marks)**
- ii) If a person earns Ksh 60,000 how much rent would he/she be expected to pay? **(8marks)**
- Q4. a) Comment on the importance of correlation in our lives. **(6 marks)**
- b) Due to an increase in road accidents, the NTSA randomly picked a sample of 100 speed governors from vehicles and recorded number of times drivers had oversped above 80 Km/h.

Overspeed above 80Km/h	Number of drivers
Less than 9	4
9-14	10
14-18	17
18-22	20
22-26	22
26-30	16
30-34	8
34-38	3
	100

Calculate

- i) Arithmetic mean **(3 marks)**
- ii) Standard Deviation **(3 marks)**
- iii) the mode **(3 marks)**
- Q5. a) What is the Geometric mean for the following data set. **(3 marks)**
100, 108, 111, 115, 119
- b) A group of students wanted to establish how highly the graduates from a certain university are rated by employers. In a private sector seminar the University had claimed that they are rated at 75% by employers. The group of students took a random sample of 48 employers and found the rating to be 74% with a Standard Deviation of 0.5%

- (i) What are the hypotheses for this claim? **(2 marks)**
(ii) At 95% level of confidence test the claim & comment on the results. **(5 marks)**
- c) Why is Range not a suitable measure of dispersion. **(2 marks)**
- d) Calculate the Median for the following data distribution about javelin throws. **(3marks)**

Length (m)	Number of throws
50	6
52	5
54	7
55	8
56	4
58	3
59	2
60	1

- Q6. a) Youth in a certain county feel that their next governor should not be too old. They thus took a random sample of 2000 respondents and interviewed them.

Age (years)	Number of respondents
30-35	300
35-40	360
40-45	509
45-50	450
50-55	400
55-60	312
60-65	300
65-70	300
70-75	17
Above 75	2

Calculate Coefficient of Kurtosis and interpret your answer. **(7 marks)**

- b) There is common belief that the more the time taken in private studies is the better the exams scores. The table below shows a record of 10 students showing scores in chemistry & the time taken in extra studies.

Time taken (hrs)	Scores (%)
1	60
3	65
2	70
8	81
10	69
15	80
18	75
20	85
30	84
32	72

If a student took 28 hrs in extra studies, what is the expected score?

(8 marks)

END