



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

AUGUST - DECEMBER 2015 TRIMESTER

FACULTY OF ARTS AND SOCIAL SCIENCES

DEPARTMENT OF DEVELOPMENT STUDIES

EVENING PROGRAMME

MPM 513 / MDS 516: STATISTICAL TECHNIQUES

Date: DECEMBER 2015

Duration: 3 Hours

INSTRUCTIONS: Answer ANY FOUR Questions

- Q1. a) Define inferential and descriptive statistics. What is the difference between the two? **(4 marks)**
- b) Use specific examples to explain THREE probability laws. **(3 marks)**
- c) To establish efficiency of customs department at the Dar – es – salaam port, the government of Republic of Tanzania selected 100 customers for a survey. The number of days it took to clear their goods were recorded as indicated below;

Clearance (days)	No. of customers
Less than 9	4
9 to 14	10
14 to 18	17
18 to 22	20
22 to 26	22
26 to 30	16
30 to 34	8
34 to 38	3

- a) Present the distribution in a
- i Histogram
 - ii More than cumulative frequency curve. **(2 marks)**
- b) Calculate
- i Arithmetic mean. **(3 marks)**
 - ii Standard deviation. **(3 marks)**

Q2. a) Differentiate between Trial and Events in probability. **(2 marks)**

- b) A coin and a die were tossed simultaneously.
- i What is the probability of getting a head and a four
 - ii What is the probability of getting a tail and a four? **(7 marks)**

c) In Masaka University, the Dean of Social Sciences insisted that their students always score a mean of 72 marks in end of trimester examinations. An officer from the Ministry of Education took a sample of 32 students and their mean score was 71.05 marks with a standard deviation of 6 marks

- i State the Null and Alternative Hypothesis. **(2 marks)**
- ii At 95% level of confidence, test the hypothesis and comment on your answer. **(4 marks)**

Q3. In Nairobi County, a sample of 15 affluent households was taken and interviewed. A record of their income and the cost of their vehicles is shown as follows

Cost of vehicle (Sh 00,000)	2	1	9	12	10	30	8	10	15	30	10	12	18	15	20
Household income (Sh 000)	20	27	38	42	50	69	80	52	55	70	22	34	52	74	87

- a) Draw a scatter diagram and comment about it. **(3 marks)**
- b) Calculate Rank Correlation Coefficient. **(3 marks)**
- c) Calculate the correlation coefficient and interpret your result. **(5 marks)**
- d) Use suitable illustrations to explain the following
 - i Leptokurtic distribution. **(2 marks)**

ii Perfect positive correlation. **(2 marks)**

Q4. a) Contrast Mean Deviation and the Standard Deviation as measures of variation. **(4 marks)**

b) In Munich a perfume manufacturer wanted to establish the age groups which buy their newly introduced body spray. In September 2015, they did a survey in their two main supermarkets and recorded their data in the following manner

Customer age (yrs)	No. of customers
Less than 30	18
30 - 40	29
40 - 50	23
50 - 60	12
More than 60	18

a) Calculate the coefficient of Kurtosis. Interpret your answer. **(11 marks)**

Q5. a) Demonstrate how statistics could be important in

- i Agriculture.
- ii Business and economics.
- iii Marketing.

(6 marks)

b) Give an analysis of Null and Alternative hypotheses. Show an example for each of them. **(4 marks)**

c) During an outbreak of cholera in central Kenya, one of the country's referral hospitals kept its records as follows

Age of patients	5 – 10	10 - 15	15 - 20	20 - 25	25 - 35	35 - 40	40+
No of patients treated	6	8	19	2	24	11	20

Calculate the mode of the distribution. **(5 marks)**

Q6. a) Explain the following

- i Probability.
- ii Discrete frequency distribution.

(2 marks)

(2 marks)

- iii Regression. (2 marks)
- b) Calculate the Geometric mean for the following data set
992, 1014, 999, 1000 (3 marks)
- c) Comment on the importance of correlation analysis in our time.
(6 marks)

END