



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

AUGUST - DECEMBER 2016 TRIMESTER

FACULTY OF ARTS AND SOCIAL SCIENCES

DEPARTMENT OF DEVELOPMENT STUDIES

EVENING PROGRAMME

MPM 513 / MDS 516: STATISTICAL TECHNIQUES

Date: DECEMBER 2016

Duration: 3 Hours

INSTRUCTIONS: Answer ANY FOUR Questions

- Q1. a) Differentiate between Null and Alternative hypotheses. Give relevant examples. **(4 marks)**
- b) In a bid to establish the age which is highly affected by type 2 diabetes, the Director of Medical services conducted a survey and interviewed 200 patients.

Age (yrs)	Number of patients
10-15	100
15-20	111
20-25	110
25-30	59
30-35	220
35-40	320
40-50	600
50-60	330
Above 60	150
	$\Sigma 2000$

Calculate

- i) Mode **(4 marks)**
ii) Arithmetic Mean **(5 marks)**

- c) Establish the relationship between coefficient of skewness and the coefficient of Kurtosis. **(2 marks)**
- Q2. a) Group the following discrete frequency distribution and name it as 'Length in cm'.
41, 55, 42, 49, 69, 66, 70, 78, 71, 70, 56, 57, 82, 80, 73, 74, 81, 47, 64, 92, 90.
Then calculate
- i) P_{70} **(3 marks)**
 - ii) Harmonic Mean **(3 marks)**
 - iii) D_5 **(3 marks)**
- b) Establish the difference between Absolute and Relative measures of dispersion. **(2 marks)**
- c) A student intends to analyze data for his research project. What are the necessary conditions for him so as to select Parametric or the Non-Parametric tests? **(4 marks)**
- Q3. a) An international organization has 25 employees in Nairobi and has to transfer two of them to Kampala. Among the employees, 12 are men. What is the probability that:
- i) Both are women **(3 marks)**
 - ii) They will be a man and a woman **(4 marks)**
- b) If a distribution has arithmetic mean of 52 and a standard deviation of 5, what is the coefficient of variation (CV)? **(2 marks)**
- c) Use relevant illustrations to explain the following:
- i) Pearson's Coefficient of Skewness of 0.27 **(2 marks)**
 - ii) Perfect Linear Correlation **(2 marks)**
 - iii) Coefficient of Kurtosis of 0.31 **(2 marks)**
- Q4. a) Differentiate between Inferential and Descriptive Statistics. Show relevant examples. **(4 marks)**
- b) The starting salary of fresh graduates is as shown below:

Salary (Ksh000)	Number of graduates
20-30	11
30-40	15
40-50	9
50-60	9
60-70	5
70-80	8
80-100	1
	$\Sigma 58$

Calculate,

- i) The Standard Deviation **(3 marks)**
- ii) The Coefficient of Kurtosis and comment on the results **(8 marks)**

Q5. a) In Nyeri, a coffee Farmers Society paid the farmers inadequate amounts per kg of coffee and claimed to have paid Sh65/kg. Due to farmers complaint the Ministry of Cooperatives took a sample of 100 farmers' records and found a mean of Sh64 and a standard deviation of sh2.5. At significance level of 5%, test,

- i) Formulate the Null and the Alternative hypothesis **(2 marks)**
- ii) Test the Society's claim and comment of your answer **(5 marks)**

Q6. a) Kenya Bureau of Statistics wanted to establish if there is any relationship between lifespan of newly introduced energy saving bulbs and their cost. A random sample of 6 such bulbs' users was interviewed and the record kept as shown.

Cost (shs)	550	240	180	600	300	285
Lifespan (months)	26	10	26	25	13	14

- i) Calculate the Coefficient of correlation and interpret your answer **(7 marks)**
- ii) If a bulb costs sh590, what is the expected lifespan? **(8 marks)**

END