



# **THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE**

## ***Faculty of Business & Social Studies***

DEPARTMENT OF LIBERAL STUDIES, COMMUNITY DEVELOPMENT &  
COUNSELING

DIPLOMA IN COMMUNITY DEVELOPMENT COUNSELLING

(DCDC J08)

## **STATISTICAL METHODS**

END OF SEMESTER EXAMS

**SERIES:** APRIL/MAY 2010.

**TIME:** 3 HOURS

### **INSTRUCTIONS TO CANDIDATES**

1. The paper consists of **TWO** Sections **A** and **B**.
2. Answer **ALL** questions in Section **A**
3. Answer **TWO** questions only from Section **B**
4. Use of Calculators is allowed. DO NOT USE MOBILE PHONES AT ALL.

## SECTION A

Answer **ALL** questions – 30 marks (Compulsory).

- Q.1 (a) Bring out clearly the important features of:-
- (i) Quota sampling. (4 marks)
  - (ii) Systematic sampling. (4 marks)
- (b) State what you understand by the term, sample frame. (2 marks)
- (c) The arithmetic mean of ten numbers is 4. An eleventh number **x** is added so that the overall mean is changed to 5. A twelfth number **y** is added and the overall mean changes back to 4. What are the values of **x** and **y**? (6 marks)
- (d) Compute the Geometric mean of the following numbers: 3, 4, 9 and 13. (Answer to 4 d.p) (4 marks)
- (e) A fast food company operated a chain of restaurants around the country. In one week, the following data were obtained:-

<b>No. of customers</b>	<b>No. of Restaurants</b>	<b>Total weekly turnover</b>
150 to under 200	7	1,620
200 to under 250	62	21,640
250 to under 300	34	35,690
300 to under 500	19	58,950
500 to under 1000	3	43,600

**Required:**

Draw a Lorenz Curve showing the relationship between proportion of total number of restaurants and total turnover. (10 marks)

### SECTION B

Answer any **TWO** questions ONLY from this Section.

Q.2 (a) The following are the commission earnings of seven assistants in a retail store for the week ended 6<sup>th</sup> February, 2010.

Assistant:	A	B	C	D	E	F	G
Commission							
Earnings (£):	72	36	48	69	35	96	36

Required:

- (i) The mean deviation (7 marks)
  - (ii) The standard deviation (5 marks)
- (b)
- (i) Highlight **TWO** advantages of mean deviation. (4 marks)
  - (ii) State **TWO** disadvantages of standard deviation. (4 marks)

Q.3 Data below show the distribution of ages of volunteers in a self-help project.

Age (years)	No. of volunteers
20 – 29	7
30 – 39	21
40 – 49	19
50 – 59	5
60 – 69	6
70 – 79	2
80 – 89	1

Required:

- (i) Compute the median age for the volunteers. (9 marks)
  - (ii) The first quartile (4 marks)
  - (iii) The third quartile (5 marks)
  - (iv) The quartile deviation (2 marks)
- Q.4 (a) Define spurious correlation? (2 marks)

(b) An official of a local race track would like to forecast the amount of money bet (in sh. Million) based on attendance. A random sample of 10 days is selected with the results given below:-

<b>Attendance (thousands)</b>	<b>Amount bet (sh.millions)</b>
14.5	0.70
21.2	0.83
11.6	0.62
31.7	1.10
46.8	1.27
31.4	1.02
40.0	1.15
21.0	0.80
16.3	0.71
32.1	1.04

Required:

- (i) With attendance as the independent variable, draw up a scatter diagram. (8 marks)

(ii) Assuming a linear relationship of the form  $y = a + bx$ , find the regression coefficients  $a$  and  $b$ . (8 marks)

(iii) Predict the amount of bet for a day on which attendance is 25,000. (2 marks)

Q.5 (a) Outline any **FIVE** features of a good questionnaire. (5 marks)

(b) Name any **FIVE** important features to be considered while constructing a table. (5 marks)

(c) The following table shows the value of export of agricultural commodities from a certain country during the year 2009 in million of shillings.

<b>Commodities</b>	<b>Value (sh.million)</b>
Coffee	96.5
Wheat	108.3
Cotton	61.2
Flowers	42.6
Tea	40.4
Timber	121.0
Others	20.0

Required:

A Pie chart showing the percentage export expenditure of the commodities. (10 marks)