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, 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:-

No. of customers	**No. of Restaurants**	**Total weekly turnover**
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 6th February, 2010.

Assistant:	A	B	C	D	E	F	G
Commission Earning s (£):	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:-

Attendance (thousands)	**Amount bet (sh.millions)**
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.

Commodities	**Value (sh.million)**
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)