THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

Faculty of Business & Social Studies

DEPARTMENT OF BUSINESS STUDIES

BACHELOR OF BUSINESS ADMINISTRATION

HBC 2240: ADVANCED STATISTICS

END OF SEMESTER EXAMS

SERIES: APRIL/MAY 2010.

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

1. The paper consists of **TWO** sections **A** and **B**.

2. Answer question **ONE** (compulsory) and any other **TWO** questions from Section **B**.

SECTION A
(Compulsory)

Q.1 (a) What do the following terms/concepts mean as used in statistics:

   (i) Delphi Method   (1 mark)
   (ii) Type II Error   (1 mark)
   (iii) Hypothesis   (1 mark)

   (b) A pharmaceutical firm would like to establish whether there is a relationship between sales classification of a drug and existence of sickness. The following data was collected on sales of different classes of the day and the following table prepared.

	Small	Medium	Large	Total
No sickness	52	15	29	96
Some sickness	38	21	55	114
Total	**90**	**36**	**84**	**210**

Test at 5% confidence level whether there is a relationship between the sales classification and existence of sickness. (14 marks)

(c)   State **THREE** reasons for sampling. (3 marks)

SECTION B
(Answer any TWO questions.)

Q.2   (a)   Compute the expected values of the daily sales of coconut by a farmer from the data below:

Sales	Probability
1000	20%
2000	30%
3000	40%
4000	10%

(5 marks)

(b)   The following data relates to expenses claims and distance travelled by Truck drivers of Bayusuf Brothers Ltd.

Truck Driver	Distance (Kms)	Expenses (Ksh.'000')
1	20	82
2	16	70
3	24	90
4	22	85
5	18	73

Required:

(i)   Calculate an equation to determine the expected expenses for any given distance travelled. (5 marks)

(ii)   Determine the expected expenses for 22,000 Kms travelled. (5 marks)

(iii)   Compute the co-efficient of correlation and comment on the results. (5 marks)

Q.3   A construction company has $1 million construct to complete a building by September 2010, but it is experiencing delays due to the complex design. The manager have to make a decision now whether to continue at present or hire engineering consultants at a cost of $200000.

If the company continues present there is only 30% chance of completing the building on time, and the delay could be one, two or three months, with equal probability. If the building is late, there are penalties of $100000 for each month's delay (or part of a month).

The Manager believe that if they employ specialist engineering consultants, their chances of completing the contract on time will be trebled. However, if the building is still late, it would only be one or two months late with equal probability.

Required:

(a) Draw a tree diagram to represent this decision problem using squares for decision points and circles for random outcomes. Also include the probabilities, revenues and penalties. (10 marks)

(b) Analyze the tree diagram using excepted value techniques. (7 marks)

(c) Write a report for the managers with reasons and comments, recommending which decisions to make. (3 marks)

Q.4 (a) The following data relates to Sony Television Sales in 2009.

Month	Actual TV Units sold
January	10
February	12
March	13
April	16
May	19
June	23
July	26
August	30
September	28
October	18
November	16
December	14

Required:

Compute the **THREE** Monthly Weighted Moving Averages and also the Mean Square Errors. (16 marks)

(b) Outline any **TWO** problems associated with Moving Averages (4 marks)

Q.5 (a) Outline **FOUR** probability Sampling Methods and any **FOUR** Non-Probability Sampling Methods. (8 marks)

(b) Ten competitors in a beauty pageant are ranked by Three Judges as follows:

1st Judge	1	6	5	10	3	2	4	9	7	8
2nd Judge	3	5	8	4	7	10	2	1	6	9
3rd Judge	6	4	9	8	1	2	3	10	5	7

Required:

Using Rank Correlation Co-efficient, which pair of judges has the nearest approach to common tastes in beauty. (12 marks)