THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

BACHELOR OF TECHNOLOGY IN INFORMATION TECHNOLOGY (BTIT MAY2011/S-EV)

AMA 4203: STATISTICS

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: MAY/JUNE 2012
TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer Booklet*

This paper consist of **FIVE** questions
Answer any **THREE** questions. Question **ONE** is Compulsory
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

SECTION A (Compulsory - 30 marks)

Question One (30 Marks)

a) The weights of a population of men are normally distributed with mean 60 kg and standard deviation 5kg. what is the probability that the weight of a man chosen at random is|:

i) Less than 61 kg
ii) Less than 65 kg
iii) Between 61 kg and 65 kg
iv) Greater than 70 kg
v) Less than 57kg (10 marks)

b) Show that the mean of a Poisson distribution is λ (10 marks)

c) Explain the following terms as used in probability
i) Trial and event
ii) Sample space
iii) Exhaustive events
iv) Equally likely events

v) Relative frequency (10 marks)

SECTION B (Answer any TWO questions – 40 Marks)

Question Two (20 marks)

A binomial distribution is defined as

$$P^{(r)} = \binom{n}{r} p^r q^{n-r}$$

Show that the mean and variable of the distribution is *np* and *npq* respectively (20 marks)

Question Three (20 marks)

The following are scores of students in a statistics class in the mid-term and final examinations

Student	Mid-Term	Final
1	98	90
2	66	74
3	100	98
4	96	88
5	88	80
6	45	62
7	76	78
8	60	74
9	74	86
10	82	80

Develop a regression equation which may be used to predict final examination scores from the mid-term score.

Predict the final score for a mid-term score of 70 (20 marks)

Question Four (20 marks)

a) Suppose we have a group of 30 students of whom 15 are blue eyed, 5 left handed and 2 both blue eyed and left handed. Find the probability of left handed given they are blue eyed. (4 marks)
b) Two teams A and B play a football match against each other. The probabilities of each team scoring 0, 1, 2,3 goals are shown below.

No. of goals	**Probability of scoring**	
	A	**B**
0	0.3	0.2
1	0.3	0.4
2	0.3	0.3
3	0.1	0.1

Calculate the probability of:

i) A winning
ii) A draw
iii) B winning (16 marks)

Question Five (20 marks)

a) Explain the case in which the t-statistic is appropriate is testing a hypothesis (4 marks)

b) A manufacture claims that his light bulbs have an average lifetime of 1500 hours. A purchaser decides to check this claim and finds that for six bulbs the lifetimes were 1472, 1486, 1401, 1350, 1610 and 1590 hours

Does this evidence support the manufacture's claim (16 marks)