



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION TECHNOLOGY (DIT 11M/ DIT 2K 11M)

AMA 2220: PROBABILITY & STATISTICS

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: OCTOBER 2012

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions

Answer question **ONE** and any other **TWO** questions
 Maximum marks for each part of a question are as shown
 This paper consists of **THREE** printed pages

SECTION A (COMPULSORY)

Question One (30 marks)

- a) Define the following terms:
 i) Event
 ii) Independent events
 iii) Equally likely events
 iv) Sample space
 v) Exhaustive events **(10 marks)**
- b) A bag contains four red, five white and six black balls. If three balls are drawn at random, what is the probability that they are all of the same colour. **(8 marks)**
- c) Suppose there is a school with 60% boys and 40% girls as its students. The female students wear trousers or skirts in equal numbers; the boys all wear trousers. An observer sees a student from a distance and sees that this student is wearing trousers. What is the probability this student is a girl. **(8 marks)**
- d) 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 probability of left-handed given they are blue eyed. **(4 marks)**

SECTION B (Answer Any Two Questions)

Question Two (15 marks)

- a) A man has been keeping a record of all expenses incurred in running his car for the last ten years as shown below:

Age of Car (yrs)	1	2	3	4	5	6	7	8	9	10
Expenses ('000)	2	3	5	8	6	9	10	13	12	13

- i) Calculate the product moment coefficient of correlation and interpret the results.
 ii) Calculate the coefficient of determination and interpret the result. **(15 marks)**

Question Three (15 marks)

The following data shows the number of vehicles produced per year by a certain company.

553	526	521	528	538
523	538	546	524	544
532	554	517	549	512
528	523	510	555	545
524	519	525	543	532
533	512	521	536	534
541	535	531	551	535
519	530	549	518	531

- i) Group the data into five classes

ii) Find the mean and the standard deviation.

(15 marks)

Question Four (15 marks)

a) The following data shows the cost of maintenance of a vehicle with respect to its age:

Age												
(X)	1	4	3	4	5	2	2	1	3	5	4	2
	3	6	5	6	7	4	4	3	5	7	6	4
Cost	0	6	0	0	5	2	5	4	2	0	4	8
(Y)	0	0	0	0	0	0	0	0	0	0	0	0

Find the regression of Y or X.

(15 marks)

Question Five (15 marks)

A binomial distribution is defined as:

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

Find the mean and variance of the distribution.

(15 marks)