MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

KISUMU CAMPUS

UNIVERSITY EXAMINATIONS
2015/2016 ACADEMIC YEAR

FIRST YEAR FIRST SEMESTER EXAMINATIONS

FOR THE DIPLOMA
IN
BUSINESS MANAGEMENT

COURSE CODE: DIB 002

COURSE TITLE: QUANTITATIVE METHODS

DATE :   JUNE 2016   TIME: 2 HOURS

INSTRUCTIONS

- Answer **Questions ONE** and **ANY OTHER TWO.**

SECION A (30 Marks) :   COMPULSORY

Question 1

a. A Company makes electric motors. The Probability that an Electric motor is defective is 0.01 .what is the probability that a sample of 300 electric motors will contain exactly 5 defective motors?   (4 Marks)

b. Solves the following inequality and illustrate the solution on a number line

-2<$\frac{(6-2x)}{3}$<4   (4 Marks)

c. Solve the following pair of simultaneous equations using the substitution method
                                                                                                            (3Marks)

   x+y = 24

   2x −y = -6

d. A company has fixed cost of Kshs.7.000 For plant and equipment and variable costs Kshs.600 for each unit of output. What is the total cost at varying levels of output?
                                                                                                            (3 Marks)

e. In group of 60 people,27 like cold drinks and 42 like hot drinks and each person likes atleast   one of the two drinks. How many like both cold and hot drinks?

                                                                                                            (4 Marks)

f.   Intergrate the following.
   i. $5X^2 dx$ (From 0-2)   (4Marks)
   ii. $2x^5\ dx$ (From 3-4)   (4Marks)
   iii. $e5^x$ (e2x/7+3/e3x)dx   (4 Marks)

SECTION B 40 Marks

Question 2.

a. Define the following terms as used in the set theory giving an example in each case
  I.   Union   (2 Marks)
  II. Intersection   (2 Marks)
  III. Set difference   (2 Marks)
  IV. Symmetric difference   (2 Marks)
  V.   Power of a Set   (2 Marks)

b. Find the area under the curve $f(x) = x(x-2)(x+2)$

  For $1 \leq x \leq 3$ (10 Marks)

Question 3

a. A life insurance salesman sells on the average of 3 life insurance policies per week. Calculate the probability that in a given week he will sell:

i. Some Policies   (2 Marks)

ii. 2 or more policies but less than 5 Policies   (3 Marks)

iii. Assuming that there are 5 working days per week, what is the probability that in a given day he will sell one policy?

b) Twenty sheets of aluminum alloy were examined for surface flaws. The Frequency of the number of sheets with a given number of flaws per sheet was as follows.

Number of Flaws	Frequency
0	4
1	3
2	5
3	2
4	4
5	1
6	1

What is the probability of finding a sheet chosen at random which contains 3 or more surface flaws?

                                               (10 Marks)

Question 4

a. Given that A and B are two sets such that

A =(3,5,7,9) and B=(1,2,3,4,5),Find :

I.	AUB	(2Marks)
II.	AnB	(2Marks)
III.	A\B	(2Marks)
IV.	A $\triangle$ B	(2Marks)
V.	B\A	(2Marks)

b.State and prove Bayes' Theorem   (10Marks)

Question 5

Given the three matrices J,F and M such that

$$J = \begin{bmatrix} 600 & 250 & 350 \\ 550 & 180 & 400 \end{bmatrix} \qquad F = \begin{bmatrix} 650 & 330 & 250 \\ 600 & 270 & 400 \end{bmatrix}$$

$$M = \begin{bmatrix} 580 & 270 & 350 \\ 625 & 350 & 410 \end{bmatrix}$$

Evaluate

I.	J+2F	(3Marks)
II.	J- M	(3Marks)
III.	J-F+2M	(4Marks)

b) A and B are two matrices such that

$$A = \begin{bmatrix} 2 & 7 \\ 5 & 2 \end{bmatrix} \qquad \text{and} \qquad B = \begin{bmatrix} 4 & 1 \\ 3 & 6 \end{bmatrix}$$

Find

I.	AB	(2Marks)
II.	BA	(2 Marks)
III.	A^{-1}	(3 Marks)
IV.	B^{-1}	(3 Marks)