



**MURANG'A UNIVERSITY COLLEGE**

*(A Constituent College of Jomo Kenyatta University of Agriculture and Technology)*

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**SCHOOL OF BUSINESS AND ECONOMICS**

**DEPARTMENT OF COMMERCE**

**MAIN CAMPUS**

**UNIVERSITY EXAMINATIONS**

**ORDINARY EXAMINATIONS**

**2014/2015 ACADEMIC YEAR**

**YEAR ONE SEMESTER ONE EXAMINATIONS**

**DIPLOMA IN BUSINESS MANAGEMENT (DBM)**

**COURSE CODE: DIB 1111**

**COURSE TITLE: QUANTITATIVES TECHNIQUES**

**DATE: 19<sup>TH</sup> AUGUST 2015**

**TIME: 2 HOURS**

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**INSTRUCTIONS TO THE CANDIDATES**

**THIS PAPER CONSIST OF FOUR QUESTIONS**

Question one (1) is Compulsory

Answer Any Other Two (2) Questions

MRUC observes ZERO tolerance to examination irregularities

This paper consists of 3 printed pages. Please turn over. ⇨

### QUESTION ONE

- a) Differentiate the following functions
- i)  $y=(2+x^2)(x^2)$  (3marks)
  - ii)  $y=x^3-x^{-4}$  (3marks)
- b) Find the values of x from the following quadratic equations  $4x^2-x-3=0$  (3marks)
- c) Explain the following terms as used in equation.
- i) Unknown
  - ii) Coefficient
  - iii) Constant
  - iv) Index (6marks)
- d) Define the following terms as used in probability
- i) Random experiment
  - ii) Sample point
  - iii) Event
  - iv) Compound event
  - v) Complement of event (5marks)

### QUESTION TWO

- a) In a survey of 100 members of a local consumer union. The number of members who attended the last three (3) month meetings is found to be as follows;

Month attended	Number of members
March only	10
March & May	20
March but not April	25
March	40
May	45
May & April	10
None of three month's meetings	25
All the three month's meetings	5

Required: calculate the proportion of members who attended;

- i) April meeting
  - ii) Two (2) consecutive meetings
  - iii) May but not April
  - iv) March and April but not May
  - v) April only (12marks)
- b) Evaluate the matrices below;

i)  $A=2\begin{Bmatrix} 2 & 3 & 4 \\ 5 & 6 & 7 \\ 8 & 9 & 10 \end{Bmatrix}$        $B=3\begin{Bmatrix} -2 & 4 & 3 \\ 5 & 6 & 7 \\ -1 & 5 & -4 \end{Bmatrix}$

(4marks)

- ii) Using the above matrices solve for ;  
 a)  $2A-3B$   
 b)  $2A+3B$  **(4marks)**

### QUESTION THREE

- a) A firm demand function is given by  $P(x)=100-2x$  and its cost function is  $C(x) =20x+3000$ . Determine the optimum level of output for profit maximization. **(6marks)**
- b) Find the sum of the first  $n$  terms of the arithmetic sequence.  
 i)  $8,20,32,44,\dots;n=10$   
 ii)  $-6,-2,2,6,\dots;n=50$  **(4marks)**
- c) Find the sum of the first  $n$  terms of the geometric progression.  
 i)  $8,16,32,64,\dots;n=10$   
 ii)  $1,2,4,8,\dots;n=50$  **(4marks)**
- d) Explain the following terms as used in matrix.  
 i) Equal matrix  
 ii) Column matrix  
 iii) Row matrix  
 iv) Square matrix  
 v) Diagonal matrix  
 vi) Transpose matrix **(6marks)**

### QUESTION FOUR

- a) Compute the present value of an annuity of £500 p.a received for 10years when the discount rate is 8%. **(4marks)**
- b) Calculate the present value of £6000 received in 10 years time with a discount rate of 12% **(4marks)**
- c) How much will £8000 amount to at 12% compound interest over 6 years? **(4marks)**
- d) Compute the value of the 10<sup>th</sup> term and the sum of first 12 terms of the A.P 2, 7, 12, 17... **(4marks)**
- e) Compute the value of 11<sup>th</sup> term and the sum of the first 20 terms of the G.P 1, 2, 4, 8... **(4marks)**