JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

UNIVERSITY EXAMINATION 2013/14

2ND YEAR 1ST SEMESTER EXAMINATION FOR THE DEGREE OF BUSINESS ADMINISTRATION

BUSIA LEARNING CENTRE

COURSE CODE ABA 205

TITLE: MANAGEMENT MATHEMATICS II

TIME 2 HRS

INSTRUCTION

1. This paper contains FIVE (5) questions

2. Answer question 1 (compulsory) and ANY other 2 questions

3. 3) Write all answers in the booklet provided

Question 1.

Explain the following using relevant examples

   i) Determinant   (2mks)
   ii) Transpose   (2mks)
   iii) Identity Matrix   (2mks)

   a) Given $A = \begin{pmatrix} 3 & 2 \\ 6 & 3 \end{pmatrix}$ $B = \begin{pmatrix} -1 & 0 & 4 \\ 3 & -2 & 1 \end{pmatrix}$

   b) Explain the following in input output analysis:
   i) Final Demand (2mks)
   ii) Primary Input (2mks)
   iii) Technological Matrix (2mks)

   c) Distinguish between differential and integral calculus (3 mks)

   d) Use matrices to solve simultaneous equation below (10mks)

$$x_1 + x_2 + x_3 = 2$$
$$2x_1 + 2x_2 + 3x_3 = 6$$
$$3x_1 + 2x_2 + 2x_3 = 3$$

Question 2.

Explain input output analysis (4mks)

   a) A simple economy of 2 industries manufacturing and services is as below;-

PRODUCER	USER		FINAL DEMAND	TOTAL OUTPUT
	Manufacturing	Services		
Manufacturing	500	350	170	1200
Services	320	360	150	900

b) Determine technical coefficient matrix   (3mks)

c) Determine total output required for each sector when demand changes to 200 for M and 100 for S (7 mks)

d) Distribute output among users (6mks)

Question 3.

Explain the importance of differential and integral calculus in Business (5mks)

b) Assume that the demand function of an organization is given as $P = 10e^{-0.02q}$. Determine:-

i) The marginal revenue function (10mks)

ii) The level of output at which the function total revenue will be maximized (5mks)

Question 4.

a) Mention 3 applications of matrices (6mks)

b) In a certain tourist hotel there are 2 major dishes beef and fish. The marketing manager is interested in the eating habits of the customers in this hotel. He discovered that of those who ate beef on a particular day 50% do so the following day while the rest change to fish. Of those who eat fish 45% change to beef. If the eating level as at yesterday was 25% for beef and 75% for fish. Assuming that these conditions satisfy Markov conditions, Determine:-

i) Transition Matrix   (3mks)

ii) Eating levels tomorrow   (6mks)

iii) Eating levels at the equilibrium point (5mks)

Question 5.

a) Explain the following with regards to functions:-

i) A constant   (1mk)

ii) Independent variable (1mk)

iii) Dependent variable   (1mk)

iv) Range   (1mk)

The relationship between cost (x) and sales (y) of a certain commodity as below is a quadratic function:-

COSTS (x)	SALES (y)
5	1600
10	900
20	100

b) Determine the function in the form $y = a + b_1x + b_2x^2$ (7 mks)

c) Determine sales when the cost is 35 units (4 mks)