

**W1-2-60-1-6**

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY**

# **UNIVERSITY EXAMINATIONS 2014/2015**

**EXAMINATION FOR THE DEGREE OF BACHELOR OF ……………………………………………….**

**HBC 2103 : MATHEMATICS FOR BUSINESS**

**DATE: AUGUST 2014 TIME: 3 HOURS**

**INSTRUCTIONS: ANSWER QUESTION ONE [COMPULSORY] AND ANY OTHER TWO QUESTIONS**

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**QUESTION ONE[COMPULSORY] [30 MARKS]**

1. If  find the matrix B such that 3A + 2B =0. [6 marks]
2. A trust fund has kshs. 30 000 that must be invested in two different types of bonds. The first bond pay 5 percent interest per year and the second bond pays 7 % interest per year. Using matrix multiplication determine how to divide kshs. 30 000 among tow types of bonds if the fund obtained an annual total interest of kshs. 1 800. [6 marks]
3. Differentiate  [6 marks]
4. Cost of producing x units in a firm is  Find out total cost when output is 5 units and determine average cost and marginal cost if the units of production is 10. [12 marks]

**QUESTION TWO [20 MARKS][Optional ]**

1. Integrate the following functions;
2.  [3 marks]
3.  [3 marks]
4. A manufacturer’s marginal cost function is  where x is the number of units of a product. if x increases from 100 to 200 units, find the total increase in cost. [6 marks]
5. Solve the following equations by Cramer’s method





 [8 marks]

**QUESTION THREE [20 MARKS][Optional]**

1. (i) State three different types of series. [3 marks]

(ii) Find the 15th term and 20th term of A.P 31, 35, 39, 43, 47 [5 marks]

1. (i) Determine  and  if u is universal set

U=(1, 2, 3, 4, 5, 6, 7, 8, 9)

A= (4, 5, 6)

B=(2, 4, 6, 8)

C= (1, 4, 7, 8) [3 marks]

1. If A =(3, 4, 5, 6, 7) and B=(5, 6, 7, 8, 9) find out A-B and B-A and also present the set operation through venn diagram. [6 marks]
2. Find the adjoint of A where  [3 marks]

**QUESTION FOUR [20 MARKS][Optional]**

1. Evaluate the definite integral  [4 marks]
2. The demand function of x products P=500-5x. find
3. Marginal revenue function [2 marks]
4. Average revenue function [2 marks]
5. At what price is MR zero? [5 marks]
6. Mr. Sumba borrowed from a bank a personal loan of kshs. 21 000 and agreed to repay with an interest of kshs. 2000/= and service charges of kshs. 1000 /= in 12 installments. Each instalment is less than the immediately preceding one by kshs. 50. What would be his first installment? [4 marks]
7. Form a quadratic equation whose roots are 5 and -6. [3 marks]