

(*University of Choice*)

**MASINDE MULIRO UNIVERSITY OF**

**SCIENCE AND TECHNOLOGY**

**(MMUST)**

**MAIN EXAMINATION**

**UNIVERSITY EXAMINATIONS**

**2018/2019 ACADEMIC YEAR**

**FIRST YEAR FIRST SEMESTER EXAMINATIONS**

**FOR THE DEGREE**

**OF**

**BACHELOR OF SCIENCE IN ECONOMICS**

**COURSE CODE: ECO 103**

**COURSE TITLE: MATHEMATICS FOR ECONOMISTS 1**

**DATE: TIME:**

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

**INSTRUCTIONS TO CANDIDATES**

**ANSWER ALL QUESTIONS IN SECTION A (COMPULSORY)**

**AND ANY OTHER TWO FROM SECTION B**

**QUESTION ONE (30 Marks)**

1. Evaluate
2. 1mks
3. 1mks
4. 1mks
5. Simplify

 1mks

1. Explain various signs of Set theory 4mks
2. Find the equilibrium price and quantity demanded

 4mks

1. Solve using the following using formula:

 3mks

1. For the following function

What is the value of the:

1. Marginal propensity to invest (MPI)? 1mks
2. Induced investment? 1mks
3. Autonomous investments? 1mks
4. The total revenue and total cost function for a firm are given by:

Determine the corresponding profit function 5mks

1. Consider the following bivariate cost function:

Find:

1. The fixed cost (FC) 1mk
2. The average variable cost with respect to 2mks
3. The average total cost with respect to 2mks
4. The average fixed cost with respect to 2mks

**QUESTION TWO**

1. Find the extreme values of the following function and determine whether they are maxima or minima.

 7mks

1. You are given the following pairs of matrices:

Evaluate the product of

1. AB 2mks
2. CD 3mks
3. Calculate the determinant

 8mks

**QUESTION THREE**

Evaluate by Cramer’s rule

 6mks

Find 6mks

b) A production function is given by:

Where **Q** is output and **L** is labour input:

1. Determine the average product of labour. 2mks
2. What is the corresponding marginal product of labour? 3mks
3. Solve

 3mks

**QUESTION FOUR**

1. Find the total derivatives of
2. 3mks
3. 3mks
4. The sales manager of some firm wishes to study the characteristics of the revenue received by the firm. He notices from his study that when price is at 3, the level of output sold is 10, however, when prices goes up to 5 then Q=2. If you assume a linear relationship between these data, determine:
5. Demand function 5mks
6. TR function 2mks
7. AR function 2mks
8. MR function 2mks
9. Comment on your results in (i) and (iii) above 3mks

**QUESTION FIVE**

1. Find the following derivatives
2. 4mks
3. 4mks
4. 4mks
5. Find the integration of the following functions
6. 4mks
7. 4mks