

MAASAI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS**

**2016/2017 ACADEMIC YEAR**

**SECOND YEAR FIRST SEMESTER**

**SCHOOL OF BUSINESS AND ECONOMICS**

**BACHELOR OF ARTS IN ECONOMICS**

**COURSE CODE: ECO 210**

**COURSE TITLE: BASIC MATHEMATICS**

**DATE: 13TH July 2017 TIME: 08:30 – 10:30AM**

**INSTRUCTIONS TO CANDIDATES**

Answer Question **ONE** and any other **THREE** questions

*This paper consists of* ***THREE*** *printed pages. Please turn over.*

**QUESTION ONE**

(a) Explain the importance of mathematics in economics **(8marks)**

(b) Prove that the following demand function has a unitary elasticity

 P = $\frac{1}{KQ}$, where K is a constant **(5marks)**

(c) Find the derivative of Z with respect to U

1. Z = x2y2 – x5y, x = u3, y = u5 **(4marks)**
2. ∫(w) = (13 – w3)(w5 – 5) **(4marks)**

#### (d) Evaluate the following (4marks)

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**QUESTION TWO**

1. Explain the meaning of the following as used in set theory: **(6 marks)**
2. Finite and infinite set
3. Universal set
4. Null set
5. Consider the following universal set T and its subsets C, D and E:



Find  **(4marks)**

1. Find the derivatives of the following functions
2. $F\left(x\right)= 3x^{2}(4x^{3}+x^{2})$ **(2mks)**
3. $F\left(x\right)=(x^{2}+3)(2x^{3}+x^{2}-3)$ **(2mks)**

**QUESTION THREE**

1. Given

TR = aQ – bQ2

TC = F + dQ

1. Determine the profit equation corresponding to the following TR and TC functions **(4marks)**
2. If a = 9, b = 2, d = 2 and F = 3; find the level of Q for which profits are zero. Use the quadratic formula to solve. **(4marks)**
3. Solve by graphical method

2x - 8 = -y

2y - 10 = - x **(7marks)**

**QUESTION FOUR**

(a) Explain the significance of the concept derivative in business applications. **(8marks)**

(b) Simplify the following:

 Y9 ÷ Y-5

 Y13 **(3marks)**

(c) Given the following Cobb-Douglas production function:

 Q = CKβL1-β

 Determine MPL **(4marks)**

**QUESTION FIVE**

#### (a) Find the critical values of following function and determine whether or not the values give rise to a local maximum or minimum (5marks)

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#### (b) Evaluate the following:

 Log Y (1/Y3) **(4marks)**

(c) The base and the height of a triangle are M + 3 and M + 4 units respectively. Determine the value of M if the area of the triangle is 28 sq. units. **(6marks)**

**//END**