## JOMO KENYATTA UNIVERSITY

**OF AGRICULTURE AND TECHNOLOGY**

# University Examinations 2016/2017

**YEAR TWO SEMESTER ONE/ YEAR TWO SEMESTER TWO EXAMINATIONS FOR THE DIPLOMA IN BUSINESS ADMINISTRATION**

**SMA 1150/HBC 0212: BUSINESS MATHEMATICS**

**DATE: APRIL 2017 TIME: 1.5 HOURS**

**INSTRUCTIONS:**

**Attempt any three questions**

**Financial mathematical table may be used**

QUESTION ONE (20 MARKS)

a) Define the following terms;

i) Commutative property of addition

ii) Business mathematics

iii) Compound interest

iv) Simple interest

v) Annuity due

QUESTION TWO (20 MARKS)

a) A firm rents its premises and rental agreement provides for a regular annual increase of &2650, rent in the 1st year is &8500. What is the rent in the tenth year?

b) In n(A)=8, n(B)=6 and n(AnB)=5; find the following

i) n(A-B)

ii) n(B-A)

iii) n(AuB)1

iv) n(B1)

QUESTION THREE (20 MARKS)

a) If the supply curve for a commodity is given by p=q2+100 and the demand function is given by p=20q+2500 find the point of equilibrium. (Note Q(d)=Q(s))

b) A manufacturer sells a product for &10 per unit. The manufacturer’s fixed costs are &1200 per month and the variable cost are &2.50 per unit. How many units must the manufacturer produce each month to break even (Break-even at TC=TR)

QUESTION FOUR (20 MARKS)

A company invest in a particular project and it has estimated that after x months of running the company, the cumulative profit (&000) from the project is given by the function 31.5x-3x2-60, where x represents time in month. The project can run for nine months at the most (ie 009)

Required;

a) Draw graph representing the profit function

b) Calculate the break-even time points for the projects

c) What is initial cost of the project?

d) Use the graph to estimate the best time to end the project

e) Is profit function maximum or minimum ?

QUESTION FIVE (20 MARKS)

Cycle trends is introducing two new light weight bicycle frames, the Deluxe and the professional, to be made from aluminum and steel alloys. The anticipated units profits are &10 for the Deluxe and&15 for the professional. The number of Kgs of each alloy needed per frame is summarized on the next slide. A supplier delivers 100kg of the aluminum alloys and 80kg of the steel alloys weekly. How many Deluxe and professional frame should cycle trend produce each week?