KIBABII UNIVERSITY COLLEGE (KIBUCO)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS
2014 /2015 ACADEMIC YEAR

FIRST YEAR FIRST SEMESTER EXAMINATIONS

MAIN EXAMINATION

FOR THE DEGREE

OF

BACHELOR OF COMMERCE

COURSE CODE: ECO 105

COURSE TITLE: BUSINESS MATHEMATICS

DATE: 15TH January 2015 **TIME: 8.00-10.00 a.m**

INSTRUCTIONS TO CANDIDATES:

Answer Question ONE and any other Two Questions

TIME: 2 Hours

a) i) Find average change of the line that contains the points (3,2) and (9,6). (3 marks)

ii) Find determinants of the matrices below:

a) $\begin{pmatrix} 4 & 8 \\ 1 & 7 \end{pmatrix}$

(3 marks)

b) $\begin{pmatrix} 2 & -2 & 3 \\ 4 & 1 & -1 \\ 1 & 2 & -1 \end{pmatrix}$

b) Solve the system of simultaneous equations using Cramer's Rule.

$-2x - 0.3y = 21$

$-0.2x + 0.8y = 4.6$ (5 marks)

c) i) Graph the quadratic function given below and show its barabola. (3 marks)

$f(x)=3x^2-5x-2$

ii) The function $y= -16x^2+1600$ gives a jumper's height in feet after y seconds for a jump from 1600ft. how long is free fall if the parachute opens at 1000ft?

iii) Work out $(x+b/2)^2$ (2 marks)

iv) Solve $5x^2 =6x+8$ (2 marks)

Question two

a) Suppose that 80% of an airline's flights depart on schedule. Suppose also that 72% of its flights depart and arrive on schedule. Find the probability that a flight arrives on time, given that it departs on time. (3 marks)

b) Perform the matrix multiplication of the following matrices.

$\begin{pmatrix} 1 & 2 \\ 0 & 4 \end{pmatrix}$ $\begin{pmatrix} 5 & 9 & -7 \\ 1 & 8 & 2 \end{pmatrix}$ (3 marks)

c) Solve

$4 + x^{3/2} = 31$ (3 marks)

d) i) For the universal set

T={1,2,3,4,5} and its subsets A={2,3} B={5}

Find i) (A') ii (A')' iii(B')' (3 marks)

ii) Solve for y when x=5

$y=1.2^x$ (3 marks)

Question Three

a) i) The bacteria population is defined by $B(t) = 100x1.12^t$

Where: B is total population

t represents time in hours

How many bacteria remains in:

a) 8 hours

b) 2 hours

ii) Graph the above function $-4 \leq 0 \leq 4$. (12 marks)

(a) Plot the functions of the exponential functions

$f(x) = e^x$

Where e= Euler's number (12 marks)

(b) Work out

$5^{x-1} = 625$ (3 marks)

b) The following tableaux shows the World Championship Trials Results –US team for 3 athletes

Event	Mike	Scot	James
Shoot	1156	1036	1024
Fence	816	816	678
Swim	1188	1280	1296
Ride	889	826	1070
Run	1168	1210	1270

c) Solve the following system of equations by Gaussian elimination method.

$x - 3y + 3z = -4$

$2x + 3y - z = 15$ (4 marks)

$4x - 3y - z = 19$

Question 5

a) A loan of sh. 500,000 is executed on January 10 at a simple interest rate of 12% and is due on February 20. Calculate the interest. (5 marks)

b) Seremala Company makes chairs and desks. Each chair requires 5 hrs of woodworking and 4 hours of finishing. Each desk requires 10 hours of wood working and 3 hours of finishing. Each month the shop has 600 hours of labour available for wood working and 240 hours for finishing. The profit on each chair is shs. 40 and in each desk is sh. 75. How many of each product should be made each month in order to maximize profit?