The Co-operative University College of Kenya
(A Constituent College of Jomo Kenyatta University of Agriculture & Technology)

END OF SEMESTER EXAMINATIONS APRIL - 2015

EXAMINATIONS FOR DIPLOMA IN CO-OPERATIVE MANAGEMENT

UNIT CODE: CMCU 1103

UNIT TITLE: FOUNDATIONS OF MATHEMATICS

DATE: TIME:

INSTRUCTIONS:
Answer question **ONE (compulsory)** and any other **TWO** questions
Show **ALL** your workings

QUESTION ONE
a) Differentiate between
  i. Polynomial inequality and irrational number   (3 Marks)
  ii. Surds and indices   (2 Marks)
b) Define the following
  i. Universal set   (1 Mark)
  ii. Subset   (1 Mark)
c) Solve the following equations through elimination method   (4 marks)
$$2x + 3y = 7$$
$$4x + y = 3$$
d) Solve the following quadratic equation   (3 Marks)
$$3x^2 - 5x - 2 = 0$$
e) Solve the following
  i. Antilog of 2.7482   (3 Marks)
  ii. $3^{x+2} = 243$ (1 ½ Marks)
  iii. $x^{5/6} \times x^{2/3} \div x^{1/6}$ (1 ½ Marks)

QUESTION TWO
a) Differentiate between permutation and combination   (2 Marks)
b) In how many ways can a committee of 4 Men and 3 Women be chosen from 8 Men and 6 Women?   (4 Marks)
c) Simplify the following
  i. $\sqrt[3]{2} + \sqrt[4]{3} + \sqrt[7]{2} - \sqrt{3}$ (3 Marks)
  ii. $\sqrt{5} + \sqrt{20}$ (3 Marks)
d) Sketch the graph of $y = 2x^2 + x + 2$ (4 Marks)
e) Rationalize
  i. $\frac{1}{\sqrt{3}+5}$ (2 Marks)

ii. $\frac{1}{1-\sqrt{9}}$ (2 Marks)

QUESTION THREE

a) Sketch the following internal notation
   i. $-3 \leq x \leq 1$ (3 Marks)
   ii. $x > -3$ (2 Marks)
b) Solve the equation
   $x^2 - 4x + 4 \leq 0$ (4 Marks)
c) Mari deposited Shs 50,000 in a bank. The interest rate was 2% per annum. Determine the amount of money he had after 5 years (4 Marks)
d) Expand the following using Binomial Theorem
   i. $(x + y)^3$ (3 Marks)
   ii. $(2x + y)^3$ (4 Marks)

QUESTION FOUR

a) Define the term 'geometry' (2 Marks)
b) The sum of interior angles of a polygon adds up to 1440° (degrees). Determine number of sides of the polygon (4 Marks)
c) Determine the radius of a circle that circumscribes a triangle whose sides are 9, 40, 41. (4 Marks)
d) Find the area of a triangle whose diameter is 14cms (3 Marks)
e) Explain the FOUR (4) steps of solving a polynomial equation (8 Marks)

QUESTION FIVE

a) Solve the following $-3\log 5 + \log x^2 = \log \frac{1}{125}$ (3 Marks)
b) Divide $2x^2 - 5x - 1 \ by \ x - 3$ (6 Marks)
c) Simplify $\log_2 \left(\frac{8}{7}\right) + \log_2 \left(\frac{3}{2}\right) - \log \ \left(\frac{3}{14}\right)$ (3 Marks)
d) Explain any FOUR (4) importances of mathematics foundation to business
   (8 Marks)