



PAN AFRICA CHRISTIAN UNIVERSITY

DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY

END TERM EXAMINATION – ONLINE

DEPARTMENT: COMPUTING & IT

COURSE CODE: DICT 0114

COURSE TITLE: FOUNDATION MATHEMATICS

Time: 3 HOURS

Instructions

- Read all questions carefully before attempting.*
- Question ONE is COMPULSORY.*
- Answer ANY THREE questions out of the remaining FIVE*

QUESTION ONE (Compulsory)

- a. Define any TWO types of numbers (2 marks)
b. Solve the following inequality (2 marks)

$$\frac{1}{4}x + 5 \leq 14$$

- c. Solve the equation below (3 marks)
 $3x + 34 - 8x = 11 - 9x - 13$
d. Solve for x (3 marks)
 $\log_2(3x + 5) = 4$

QUESTION TWO

- a. The sum of the ages of Nicole and Kristin is 32. In two years, Nicole will be three times as old as Kristin. Calculate their present ages. (5 marks)
b. Find the inverse of the matrix $A = \begin{pmatrix} 4 & 3 \\ 1 & -3 \end{pmatrix}$ (5 marks)

QUESTION THREE

- a. In a school of 140 pupils, 60 have beans for breakfast and 90 have bread. 10 pupils took neither beans nor bread. Calculate the number of students that have both beans and bread for breakfast. (5 marks)
b. Two years ago, a man was 7 times as old as his son. In 3 years' time he will be only 4 times as old as son. Calculate the current age of the man and his son. (5 marks)

QUESTION FOUR

- a. The sum of two books and a pencil is KES 6.00. The difference of cost between 3 books and 2 pencils is KES 2.00. Calculate the cost of a book and a pencil. (5 marks)
b. Calculate how many even numbers, greater than 2000, can be formed with the digits 1, 2, 4, 8, if each digit may be used only once in each number. (5 marks)

QUESTION FIVE

- a. Solve for the following surds (5 marks)
 $(\sqrt{10} + \sqrt{3})(\sqrt{10} - \sqrt{3})$
b. Solve for x in the equation below (5 marks)

$$27^{3x+5} = 81^{4x+1}$$

QUESTION SIX

- a. Solve the compound inequality below

(4 marks)

$$3x - 2 < 10 + x < 2 + 5x$$

- b. A group of young men decided to raise sh.480,000 to start a business. Before the actual payment was made, four of the members pulled out and each of those remaining had to pay an additional sh.20,000. Determine the original number of the members.

(6 marks)