



PAN AFRICA CHRISTIAN UNIVERSITY
CERTIFICATE
END TERM EXAMINATION-ROYSAMBU DAY

DEPARTMENT: BUSINESS

COURSE CODE:

COURSE TITLE: BUSINESS MATHEMATICS

Time: 3 HOURS

Instructions

- Read all questions carefully before attempting.*
- Answer FIVE questions out of the SIX Provided*
- Question ONE is Compulsory*

Write your student number on the answer sheet provided

QUESTION ONE: COMPULSORY (40 Marks)

- a. In a class, 15 of the students play cricket, 11 of them play tennis and 6 play both cricket and tennis. All the students play at least one of these games.

Required

Calculate the number of students that are in the class. **(5 marks)**

- b. Solve for x in the following equations:

i. $4x - 20 = -8$ **(2 marks)**

ii. $4 - 2x = 10$ **(2 marks)**

iii. $-5 - 3x = -5$ **(2 marks)**

iv. $-3 - \frac{x}{5} = 4$ **(3 marks)**

- c. Solve the following simultaneous equations

i. $3x + 2y = 12$ (1)
 $4x - 2y = 2$ (2) **(6 marks)**

ii. $2x + 4y = -12$ (1)
 $5x + 4y = 33$ (2) **(6 marks)**

- d. Illustrate each of the below inequalities on a number line

i. $x > 3$ **(1 mark)**

ii. $x \geq 3$ **(1 mark)**

iii. $x < -2$ **(1 mark)**

iv. $x \leq -2$ **(1 mark)**

- e. Solve for x in the following inequalities:

i. $3x - 4 \geq 5$ **(2 marks)**

ii. $\frac{1}{4}x + 5 \leq 14$ **(2 marks)**

f. Solve for x in the following equations:

i. $5^{2x+1} = 125$ (3 marks)

ii. $8^{3x} = 32$ (3 marks)

QUESTION TWO

a. Find the 127th term of the Arithmetic Progression given as;

5, 8, 11, (6 marks)

b. Calculate the number of terms in the Arithmetic Progression below;

8, 11, 14, 17, ..., 380. (9 marks)

QUESTION THREE

Solve for x in the equations below;

a. $(3x + 4)(2x - 1) = 0$ (3 marks)

b. $x^2 - 2x - 8 = 0$ (5 marks)

c. $4x^2 = 20x - 25$ (7 marks)

QUESTION FOUR

a. You are given a series as follows;

2, 4, 8, 16, ...

Required

Calculate the value of the 20th term of the sequence. (6 marks)

b. Insert four geometric terms between 2 and 486. (9 marks)

QUESTION FIVE

Solve for x in the equations below

a) $\left(\frac{1}{9}\right)^{2x} = 3^{7x-1}$ (5 marks)

b) $\text{Log}_2 64 = x$ (5 marks)

c) $\text{Log}_{125} 5 = x$ (5 marks)

QUESTION SIX

- a. The sum of two numbers is 14 and their difference is 2. Find the numbers.

(6

marks)

- b. Adam is 20 years younger than Brian. In two years, Brian will be twice as old as Adam. Calculate their present ages. (9 marks)