



PAN AFRICA CHRISTIAN UNIVERSITY

BACHELOR OF COMMERCE

END TERM EXAMINATION – ONLINE

DEPARTMENT: BUSINESS

COURSE CODE: BCM 105

COURSE TITLE: QUANTITATIVE TECHNIQUES

Time: 3 HOURS

Instructions

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

QUESTION ONE: COMPULSORY (10 Marks)

- a) Adam is 20 years younger than Brian. In two years, Brian will be twice as old as Adam. Calculate how old they both are now. (5 marks)

- b) Solve for x

$$3x^2 = 2x - 7 \quad (5 \text{ marks})$$

QUESTION TWO

- a) Given that $\begin{bmatrix} 4 & -3 \\ 2 & 16 \end{bmatrix} = \begin{bmatrix} 4 & -3 \\ 2 & 2^t \end{bmatrix}$. Find the value of t (2 marks)

- b) Calculate whether $A = \begin{bmatrix} 4 & 6 \\ 2 & 3 \end{bmatrix}$ is a singular matrix (3 marks)

- c) Given the equation $\begin{bmatrix} x & 0 \\ 0 & y \end{bmatrix} + \begin{bmatrix} -y & 4 \\ 7 & x \end{bmatrix} = \begin{bmatrix} 4 & 4 \\ 7 & 6 \end{bmatrix}$ find the values of:

i. x (3 marks)

ii. y (2 marks)

QUESTION THREE

Solve for x in the following:

i. $2(3x + 2) - 20 > 8(x - 3)$ (2 marks)

ii. $2(3x - 7) + 4(3x + 2) = 6(5x + 9) + 3$ (3 marks)

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

QUESTION FOUR

- a) Solve for the value of x in the below equations.

i. $6^{3x} = 2^{2x-3}$ (3 marks)

ii. $\frac{3x+5}{6x+5} = x-1$ (7 marks)

QUESTION FIVE

- a) $\log_2(3x+5) = 4$ (2 marks)

- b) Using an example, define the following terms used in equations:

i. Unknown (2 marks)

ii. Constant (2 marks)

iii. Coefficient

(2 marks)

iv. Index

(2 marks)

QUESTION SIX

a) Giving an example, define a set

(2 marks)

b) A two-digit number is such that its value equals 4 times the sum of its digits. If 27 is added to the number, the result is equal to the value of the number obtained when the digits are interchanged what is the number.

(8

Marks)