PAN AFRICA CHRISTIAN UNIVERSITY

END OF SEMESTER EXAMINATION FOR THE DEGREE OF

JANUARY- APRIL 2025

CAMPUS: ROYSAMBU

DEPARTMENT: BUSINESS

COURSE CODE: BCM 105

COURSE TITLE: QUANTITATIVE TECHNIQUE

EXAM DATE:

TIME:

INSTRUCTIONS

- This examination script consists of **SIX (6)** questions.
- Answer question **ONE** and ANY other **THREE** Questions.
- Read all questions carefully before attempting.
- Write your **student number** on the answer booklet provided.

Question One (compulsory) **(30 marks)**

a. The distances travelled to work (in km) by 30 employees of a company are as follows:

9	2	15	5	8	10
10	20	5	15	9	8
10	15	5	10	8	1
10	10	9	12	7	10
11	10	20	25	10	7

Required:

i. Find:

a. the arithmetic mean (2marks)

b. median and (2 marks)

c. mode. (2 marks)

ii. Calculate the standard deviation. (4 marks)

Question Two (10 marks)

a. A squash club has 27 members. 19 have black hair, 14 have brown eyes and 11 have both black hair and brown eyes.

(i) Place this information on a Venn diagram. (3 marks)

(ii) Hence, find the number of members with:

- Black or brown eyes (3 marks)
- Black hair but not brown eyes (4 marks)

Question Three (10 marks)

a. Wanga travels to his father's home, 30km away from his place. He cycles for two third of the journey before the bicycle develops mechanical problems and he has to push it for the rest of the journey. His cycling speed is 10km/hr faster than his walking speed and he completes the journey in 3 hours and 20 minutes. Determine his cycling speed.

(5 marks)

b. Solve the following inequality $\frac{x+1}{x+3} \leq 2$ (5 marks)

Question Four (10 marks)

Find a, b and c in the following matrices:

(i)

$$\begin{bmatrix} -4 & a+5 \\ 3 & 2 \end{bmatrix} = \begin{bmatrix} b+4 & 2 \\ 3 & c-1 \end{bmatrix}$$

(5 Marks)

(ii)

$$\begin{bmatrix} a & a-b \\ b+c & 0 \end{bmatrix} = \begin{bmatrix} 3 & -1 \\ 2 & 0 \end{bmatrix}$$

(5 marks)

Question Five **(10 marks)**

i. Find the derivative of the function $f(x) = 3x^2 + 4x - 2$. (3 marks)

ii. Find the absolute maximum and minimum values of the function $f(x) = x^3 - 3x^2 + 2x + 4$ on the closed interval $[-2, 3]$. (7 marks)

Question Six **(10 marks)**

a. Solve the following simultaneous equation using the elimination method:

i. $6x + 4y = 24$
$7x - 4y = 2$ (2 marks)

ii. $\frac{a-1}{2} - \frac{b+1}{5} = \frac{1}{5}$

$\frac{a+b}{3} = b - 1$ (3 marks)

b. A group of ladies 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 amount contributed by each member.
(5 marks)