



PAN AFRICA CHRISTIAN UNIVERSITY

BACHELORS OF COMMERCE

END OF TERM EXAMINATION

DEPARTMENT: BUSINESS

COURSE CODE: BCM105

COURSE TITLE: QUANTITATIVE TECHNIQUES

ROYSAMBU CAMPUS - DAY

EXAM DATE: THURSDAY

TIME: 8.00AM – 11.00AM

INSTRUCTIONS

- This examination script consists of **six (6)** questions.
- Answer question ONE and ANY other three Questions.
- Show all your workings
- Read all questions carefully before attempting.

Write your **student number** on the answer booklet provided.

QUESTION ONE

- a) Using relevant examples explain the importance of quantitative techniques in each of the following:
- i) Learning institution (3 marks)
 - ii) Hospital (3marks)
- b) Find the union of set $A = \{\text{Orange, Mango, Banana}\}$ and set $B = \{\text{Tea, Coffee, Chocolate}\}$ (2marks)
- c) Solve for y in $(4y - 12)/3 = 5(y - 2)$ (2marks)

QUESTION TWO

- a) Using relevant examples explain any two applications of differentiation in business (5marks)
- b) Find the derivative of $(5x^3 + 57x^2 - 3) / 2x^2$ (5 Marks)

QUESTION THREE

- a) Solve for x in: $(2x + 1)^2 + (x + 1)^2 = 6x + 47$ (5marks)
- b) A group of 100 students visited a cafeteria and ordered beverages as follows:
- 67 students ordered tea, 46 students ordered coffee
24 students ordered both tea and coffee
- i) How many students ordered tea only? (1marks)
 - ii) How many students ordered either tea or coffee? (2marks)
 - iii) How many students did not order anything? (2marks)

QUESTION FOUR

- a) Solve for x in: $2x^2 + 4x \geq x^2 - x - 6$ (5marks)
- b) Integrate $\int 6x^3 \sqrt{16 + x^4} + 2 \, dx$ where x limits are 2 and 3 (5marks)

QUESTION FIVE

- a) Find the derivative of: $(2x^3 + 7x - 3)(2 + 5x)$ (5marks)
- b) Evaluate the following integral:

$$\int 3x^{1/4} + 7/x^5 + 1/6 \sqrt{x} \, dx \quad \text{where } x \text{ limits are } -1 \text{ and } 2 \quad (5\text{marks})$$

QUESTION SIX

- a) Michael requires at least sh7000 to start a small business. He has already saved sh1500 and 7 months are left to this date. What is the minimum amount he must save monthly from now? (5marks)
- b) Find the derivative of:

$$\sqrt{x} + 9x^{7/3} - 2x^{-2/5}$$

(5marks)