



PAN AFRICA CHRISTIAN UNIVERSITY

BACHELOR OF COMMERCE

END OF SEMESTER EXAMINATION – ONLINE

DEPARTMENT: BUSINESS

COURSE CODE: DBM 0111

COURSE TITLE: BUSINESS MATHEMATICS

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)

- a. Citing relevant examples, distinguish between the union of a set and the intersection of a set. (2 marks)
- b. Find the number which 28 less than five times the number is 232. (2 marks)
- c. Adam is 20 years younger than Brian. In two years, Brian will be twice as old as Adam. Calculate their present ages. (2 marks)

- d. The length of a rectangle is 3 more than the width. The area is 40 square inches. Find the dimensions of the rectangle. (4 marks)

QUESTION TWO

- a. Using examples, distinguish between linear equations and quadratic equations. (3 marks)
- b. A sink can be filled by a pipe in 5 minutes but it takes 7 minutes to drain a full sink. If both the pipe and the drain are open, calculate how long will it take to fill the sink. (7 marks)

QUESTION THREE

Greg went to a conference in a city 120 kilometres away. On the way back, due to road construction he had to drive 10 kph slower which resulted in the return trip taking 2 hours longer. Calculate how fast he drove on the way to the conference. (10 marks)

QUESTION FOUR

- a. Giving practical examples, explain any two fields in which the knowledge of exponents can be applied. (4 marks)
- b. If you take a car loan for KES 25,000 with an interest rate of 6.5% compounded quarterly, no payments required for the first five years, calculate what your balance will be at the end of those five years. (6 marks)

Compound Interest Formula: $A = P\left(1 + \frac{r}{n}\right)^{nt}$

A = Final Amount

P = Principle (starting balance)

r = Interest rate (as a decimal)

n = number of compounds per year

t = time (in years)

QUESTION FIVE

a. Using examples, highlight any three properties of inequalities (3 marks)

b. Solve for the value of x in the inequality below (7 marks)

$$2(3x+2) - 20 > 8(x-3)$$

QUESTION SIX

Mr. Johnson is an employee of engineering firm. His initial annual salary is KES20, 000. If his salary increases by KES 1, 500 annually, required:

a. Calculate his annual salary in ten years' time (2 marks)

b. Determine the number of years it will take for his salary to be KES 50, 000

(4

marks)

c. If he spends 30 years in service before retirement, calculate the cumulative salary he will receive for the period he serves the company. (4 marks)