



PAN AFRICA CHRISTIAN UNIVERSITY

**CERTIFICATE IN ENTREPRENEURSHIP DEVELOPMENT/
CERTIFICATE IN SUPPLY CHAIN MANAGEMENT**

END TERM SPECIAL EXAMINATION – ONLINE

DEPARTMENT: BUSINESS

COURSE CODE: CENT 0112

COURSE TITLE: BUSINESS MATHEMATICS

Time: 2 HOURS

Instructions

- Read all questions carefully before attempting.*
- Answer ANY FOUR questions out of the SIX Provided*

QUESTION ONE

- a) A _____ is an ordered collection of objects. **(2 marks)**
A. Relation
B. Function
C. Set
D. Proposition
- b) For x , y and z , if $x > y$ and $y > z$ and $z > x$, the property is said to be **(2 marks)**
A. distributive property of inequality
B. multiplicative property of inequality
C. additive property of inequality
D. transitive property of inequality
- c) The general form of a quadratic equation is ($a \neq 0$) **(2 marks)**
A. $ax^2 + bx + c$ B. $ax^2 + bx + c = 0$
C. $ax + b$ D. $ax + b = 0$
- d) The logarithms having base '10' are called: **(2 marks)**
A. Pure logarithms B. Common logarithms
C. Natural logarithms D. Infinite logarithms

QUESTION TWO

- a) Which of the following two sets are equal? **(2 marks)**
A. $A = \{1, 2\}$ and $B = \{1\}$
B. $A = \{1, 2\}$ and $B = \{1, 2, 3\}$
C. $A = \{1, 2, 3\}$ and $B = \{2, 1, 3\}$
D. $A = \{1, 2, 4\}$ and $B = \{1, 2, 3\}$
- b) 8. Subset of the set $A = \{ \}$ is? **(2 marks)**
A. A
B. $\{ \}$
C. $\emptyset$
D. All of the mentioned
- c) $ax + b = 0$, where x is an unknown variable is known as: **(2 marks)**
A. Linear equation B. Quadratic equation

C. Fraction

D. Sentence

- d) Carmen is 12 years older than David. Five years ago, the sum of their ages was 28.

Required

- i. Calculate how old Carmen is today. (2 marks)
- ii. Compute how old David is today (2 marks)

QUESTION THREE

- a) If an algebraic expression is exactly divisible by two or more expressions, then the expression is said to be (2 marks)
- A. rational expression
- B. irrational expression
- C. common multiple
- D. second expression
- b) The solution of $4x - 2 > 6$ is (2 marks)
- A. $x > 2$
- B. $x < 6$
- C. $x = 4$
- D. $x > 4$
- c) The term x^{-1} equals: (2 marks)
- A. $-x$ B. $\frac{1}{x}$ C. x^2 D. $x - 1$
- d) The expression $(y^2)^3$ equals: (2 marks)
- A. $\sqrt[3]{y}$ B. y^6 C. y^5 D. $y^{2/3}$
- e) In a class of 60 students, 30 speak English language fluently while 25 speak French language fluently. Five students speak both languages.

Required

Calculate the number of students who speak either of the languages. (2 marks)

QUESTION FOUR

- a) Two sets are called disjoint if there _____ is the empty set. (2 marks)
- A. Union

- B. Difference
- C. Intersection
- D. Complement

b) In expressions $ax + by$ and $8x - 4y$, a , b , 8 and 4 are (2 marks)

- A. variables
- B. coefficients
- C. exponents
- D. powers

c) The expression $\left(\frac{2}{x}\right)^{-1}$ can be expressed as: (2 marks)

- A. $\frac{x}{2}$ B. $\frac{x^{-1}}{2^{-1}}$ C. $\frac{-x}{2}$ D. $\frac{-2}{x}$

d) The expression $\frac{x^3}{x^{-4}}$ can be expressed as: (2 marks)

- A. -1 B. x^{-1} C. x D. $x^{\frac{3}{4}}$

e) The sum of two numbers is 10 and their difference is 6 .

Required

Find the numbers (4 marks)

QUESTION FIVE

a) To add or subtract a positive number from both sides of any inequality without any change in the inequality sign is called (2 marks)

- A. distributive property of inequality
- B. multiplicative property of inequality
- C. additive property of inequality
- D. transitive property of inequality

b) Solve for x

$$\log_{125} 5 = x \quad \text{span style="float: right;">(2 marks)}$$

c) If $3(x-2)+5=2x$, then: (2 marks)

- A. $x=1$ B. $x=3$ C. $x=-1$ D. $x=-3$

d) Find the value of x in the equations below:

i. $2x - 3 \leq 7 + x$

(2 marks)

A. $x \leq 10$

B. $x < 10$

C. $x \leq -10$

D. $x \leftarrow 10$

ii. $4x + 12 > 10x$

(2 marks)

A. $x > 2$

B. $x > -2$

C. $x < 2$

D. $x \leftarrow 2$

QUESTION SIX

a) $\log_a(mn)$ equals to

(2 marks)

A. $\log_a m + \log_a n$

B. $\log_a m - \log_a n$

C. $n \log_a m$

D. $\log_b n \times \log_a b$

b) To apply the quadratic formula to $2x^2 - x = 3$,

(2 marks)

A. $a=2, b=-1, c=3$

B. $a=2, b=1, c=3$

C. $a=2, b=-1, c=-3$

D. $a=2, b=-1, c=0$

c) If $x^2 - 3x + 2 = 0$, then:

(3 marks)

A. $x=4, -1$

B. $x=-4, 1$

C. $x=4, 1$

D. $x=-4, -1$

d) Solve for x

$$27^{3x+5} = 81^{4x+1}$$

(3 marks)