

**BINT 0226: BASIC MATHEMATICS**

**1. Answer Question ONE and any other TWO Questions.**

**QUESTION ONE (30 MARKS)**

- a). What is a prime number?
- b). Express 60 as a product of its prime factors.
- c). Round of 25.72037 to three decimal places
- d). List two types of decimals and give examples
- e). convert 0.165165165... into a fraction
- f). calculate  $3(2a+6)$
- g). factorize  $10p+15pq$
- h). solve  $2(3r+6) = 36$
- i). evaluate  $(p+10)(p-8)$
- j). find the value of x from
  - I.  $x^2+11x+24$
  - II. Apply quadratic formula on the above expression find the value of x
- k). solve for x and y given  $3x+y=19$ ,  $x+y=9$
- l). Plot a graph for  $y=2x-1$  on a Cartesian plane

**QUESTION TWO (20 MARKS)**

- a).
  - I. produce a table for the function  $y=2x$  where values of x are -3,-2.5,-2,-1.5,-1,-0.5,0,0.5,1,1.5,2,2.5,3
  - II. using the data above draw its graph

b). Find:

I.  $\log 84$

II.  $\log 76$

c). a culture of bacteria initially has a mass of 1 gram and triples in size every hour how long will it take to reach a mass of 20 grams

d). simplify  $\log_b x^2 + \log_b x^3 - \log_b x^4$

### **QUESTION THREE (20 MARKS)**

a). Use a graph to solve  $y = x^2 - 3x - 4$ .

b). Write the quadratic formula and use it to solve  $5x^2 - 8x + 12$ .

c). Applying other formula apart from quadratic formula solve for  $x^2 - 3x - 28$

d). what is a number?

e). Solve for

I.  $2c x^2 = 24c^2$

II.  $24c^2 + 16c$

### **QUESTION FOUR (20 MARKS)**

a). Write the following in standard form:

I. 473,000

II. 0.000621

b). Calculate the following:

I.  $(9 \times 10^7) / (3 \times 10^4)$

II.  $(3.2 \times 10^{-5}) \times (4 \times 10^{-9})$

III.  $(6.1 \times 10^6) \times (2 \times 10^{-5})$

c). the radius of earth is  $(6.4 \times 10^6)$  meters. Give your answer in standard form correct to 3 significant figures; calculate the circumference of earth in:

- I. Meters
- II. Centimeters
- III. Kilometers

**QUESTION FIVE (20 marks)**

a). Find the value of X:

- I.  $2x = 2x \times 2x \times 2x \times 2x \times 2x \times 2x \times 2x$
- II.  $1000 = 10x$

b). Determine  $25/23$

c). Is 102 bigger than 210?

d) Calculate

- I.  $103 + 25$
- II.  $(7 - 4)3$

e). Without using a calculator find the value of k and m

$$64 = 8^2 = 4^k = 2^m$$

f). with examples write down the laws of indices.

g). Calculate  $80 - 30$

h). Calculate the value of y in the following expressions

- I.  $(Z^3)^9 = Z^y$
- II.  $Q^{16}/Q^7 = Q^y$
- III.  $(P^y)^8 = 40$

