**MT KENYA UNIVERSITY**

**BMA 1106-FOUNDATION MATHEMATICS**

**VIRTUAL AND DISTANCE LEARNING MAY/AUGUST 2018**

**CAT ONE (30MKS)**

(a) Differentiate between rational numbers irrational numbers. (1mks)

(ii) Show that is an irrational number. (1mks)

1. Use completing square method to solve the equation below

ax2+bx+c=0 (2mks)

1. Given that F(x) =2x+3 and G(x)=(x-3) .show that the two functions are inverses of one another. (2mks)
2. Use matrix method to solve 3x+4y=-5

2y-x= (2mks)

1. Given that f(x)=2x2+3x-4 use the first principle to evaluate f’(x) (2mks)
2. Simplify (1mks)
3. In the 1992 summer Olympics 37 countries won gold ,44 countries won silver medal ,54 countries won bronze,30 won both gold and silver,33 won gold and silver ,36 won silver and bronze and 28 countries won all the three medals

i) Represent the above information on a venn diagram (2mks)

ii) How many countries won silver medals only (1mks)

1. A closed cylindrical metal tin is to have a capacity of 250ml.If the area of the metal used is to be minimum what should be the radius of the tin (3mks)
2. Members of a club decided to contribute shs 480000 towards a certain project. However, four members withdrew and the rest had to contribute shs 20000 more to meet the target. Calculate the original amount each member was supposed to contribute. (3mks)
3. Given that log 3=0.4771, log5=0.6990 and log2=0.3010 find without using a calculator (i) log50 (1mks)

(ii) log 30 (1mks)

1. A two digit number is such that the sum of its digits is 15 and when the digits are interchanged the value of the number increase by 9,Find the number itself (4mks)
2. The perimeter of a rectangle is 100M.Calculate the bounds of the length that will give a minimum area of 500M2 (5mks)