**GATITU MIXED SECONDARY SCHOOL**

**MATHEMATICS FORM 3**

**PAPER 2 MIDTERM EXAM 2015**

**SECTION 1 (40MKS)**

**ANSWER ALL THE QUESTIONS IN THIS SECTION**

1. Given that p=4 +√2 and Q = 2 +√2 and that p/Q = a +b√c where a, b and c are constants, find the values of a, b, and c. 3mks
2. Solve for Y given that

Log2 (2y+ 3) – 2 = log2 (y-2) 3mks

1. Solve the equation 3mks

2 - 1 = 1

x -1 x+2 x

1. Solve the following simultaneous equations 3mks

Y= 4x + 7

5y + 6x =17

1. By using the substitution y =2x, solve the equation 3mks

5×22x -1 - 3×2x – 34 =0

1. Find the equation of a line perpendicular to 2x +4y =8 which crosses the line at its y-intercept. 3mks
2. Given that a=3, b=-1 and c=2, evaluate; 3mks

a - b2

4 -2b +c

1. A number n,is such that when its divided by 3,7,11 or 13, the remainder is always one. Find the number n. 3mks
2. Under an enlargement, centre (2,1)the image of p (1,-1) is p1(4,5). Determine the scale factor of the enlargement. 3mks
3. A small cone of height 9 cm is cut off from a bigger cone of height 18cm. if the volume of the small cone is 160cm3, find the volume of the frustum. 4mks
4. Given the column vectors a= 1 b= 6 c= -3

-2 -3 2

and that p= 2a -1/3b +c , express p as a column vector and hence calculate its magnitude to 3 significant figures. 3mks

1. The scale of a map is given as 1: 20000. Find the actual area of a region represented by a triangle of 5cm, 6cmand 7cm. 3mks
2. If tan o=8/15. Find the value of

SIN O - COS O

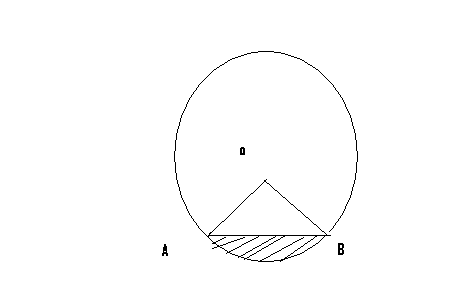
Cos o + sin o

Without using a calculator or tables. 3mks

**SECTION II (40MKS)**

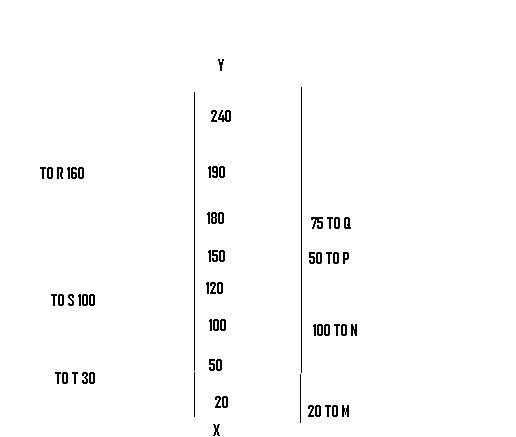
**ANSWER ANY FOUR QUESTIONS IN THIS SECTION**

1. Joy is a sales executive earning a salary of ksh. 20,000 and a commission of 8% for sales in excess of sh. 100,000.
2. Determine the amount of sales she made in that month. 4mks
3. If the total sales in the month of may and June increased by 18% and then dropped by 30% respectively. Calculate
4. Joy’s commission in May 3mks
5. Her total earnings in June 3mks
6. Musembi bought three cows and twenty five goats spending a total of sh. 75,000. If he had bought two cows and thirty three goats, he would have saved sh, 5400. Musembi later sold all his animals at a profit of 40% per cow and 50% per goat .determine
7. The cost at which he bought each animal. 5mks
8. The total amount of money Musembi received after selling all the animals. 5mks
9. In the figure below, o is the centre of the circle of radius 3cm and AB is a chord such that its shortest distance from o is 1 cm.



Calculate,

1. The length of the chord AB 3mks
2. Angle AOB 2mks
3. Area of the minor sector OAB 2mks
4. Area of the shaded segment 3mks
5. The cost of manufacturing a radio can be divided into the cost of materials, labour, other expences and advertising in the ratio 4:3:2:1. This year, the cost of materials increased by 25%, the cost of labour increased by 20% other expences decreased by 10% while advertising remained the same. Determine the percentage increase in the cost of manufacturing the radio. 10mks
6. Measurements of a maize field using a baseline xy were recorded as shown below in metres.



1. Draw the map of the maize field. 3mks
2. Find the area of the field in hectares. 5mks
3. If the cost of one hectare is ksh. 65,000. Find the cost of the maize field. 2mks