**GATITU MIXED SECONDARY SCHOOL**

**FORM 3 MATHEMATICS MID TERM EXAM**

**PAPER 1 2015**

**SECTION I (40MKS)**

ANSWER ALL QUESTIONS IN THIS SECTION

1. use logarithms to evaluate 4mks

4 (0.8932)2 × (582.3)1/3

(69. 35)1/2

1. factorise completely the expression 45a2 - 20 b2 and hence or otherwise find its value when a =5 and b=3 3mks
2. A man is now three times as old as his daughter. In twelve years time, he will be twice as old as his daughter. Find their present ages. 3mks
3. Given the ratio x:y= 2:3’ find the ratio 3mks

(5x – 2y): (x +y)

1. Given that p=3, q= -2 and r= -1 evaluate, 4mks

2 (p + r) 2 - (p - q) (q -r) - 2r

3 (p + q) - 2 (q – r)

1. Given that log 3 = 0.4771 and log 5= 0.6690, evaluate the following without using logarithms tables or a calculator.
2. Log 135 2mks
3. Log 1125 2mks
4. Solve the equation 3mks

X - 2 - 3 - x = x – 2

3 4 2

1. Simplify the expression

3 (2a +b- 2c) - 2( a + 2b -3c) 2mks

1. A rectangle which measures 18cm by 8 cm has the same area as a square. Find which figure has the greater perimeter and by how much. 3mks
2. Given the column vectors a = -3 b= 4 c= 5

2 -6 -10

and that p=2a – ½ b + 2/5c express p as a column vector and hence calculate its magnitude /p/ correct to 2 decimal places. 4mks

1. Evaluate

(8/27)-2/3  × 161/2 ÷ 811/4  3MKS

1. A motorist travelled the first 90km at an average speed of 60 km/hr and for the next 3 ½ hrs he travelled at an average speed of 80km/hr. find the average speed for the whole journey. 4mks

**SECTION II (40MKS)**

**ANSWER ANY FOUR QUESTIONS FROM THIS SECTION**.

1. A newly built classroom measuring 6.3m long, 4.5 m wide and 3.2 m high is to be cemented on the floor and all inside walls. The classroom has one door measuring 1.85m by 80 cm and four windows measuring 1.5 m by 70 cm each. Cementing materials cost sh. 500 per m2 while labour costs 20% of the cementing materials. Calculate:
2. To one decimal place, the total surface area to be cemented. 5mks
3. The cost of cementing materials. 2mks
4. The total cost of cementing the class room. 3mks
5. A rectangular metal sheet measuring 80 cm by 50 cm is 2mm thick and is made of metal whose density is 2.5 g/cm3. A square of side 5 cm is removed from each corner of the rectangle and the remaining part folded to form an open cuboid.
6. Calculate ;
7. The area of metal which forms the cuboid. 2mks
8. The mass of the empty cuboid in kilograms. 4mks
9. The cuboid is filled with water whose density is 1g/cm3. Calculate the mass of the cuboid when full of water. 4mks
10. Four matatu operators Adhiambo, Babu, chirchir and Desai decided to buy a minibus. They agreed to pay for the cost of the minibus in the ratio 3: 4: 5:6 basing their calculation s on the marked price of the minibus, they found that chirchir would pay sh 240 000 more than Adhiambo. The sales agent however allowed them a 10% discount on cash payment.
11. Calculate;
12. The marked price of the minibus. 2mks
13. How much more Adhiambo and Babu paid than Desai . 5mks
14. The four partners agreed to share monthly profits from the minibus in the ratio of their contributions after setting aside 25% of the profits for emergencies. If the minibus realized sh. 64,000 in profits during one month calculate Desai’s share of the profits for that month. 3mks
15. A man walks towards a building 80m high with a flag hoisted on a flagpost. The angle of elevation of the top of the flagpost is 320.he walks towards the building for some distance and the angles of elevation of the bottom and top of the flagpost are 620 and 650 respectively.

Calculate;

1. The height of the flagpost 4mks
2. The total height of the building and the flag post. 2mks
3. The distance he covers to reach the building. 4mks
4. The length of a room is 3 metres longer than its width. A carpet whose area is 18m2 is laid in the middle of the room leaving a margin 50cm wide between the wall and the carpet all around the room.
5. Taking w to represent the width of the room, express the dimensions of the carpet in terms of w. 2mks
6. Write down the area of the carpet in terms of w. 2mks
7. Determine the dimensions of the room. 3mks
8. The space between the wall and the carpet is covered with polythene material which costs sh. 145 per square metre. Find the cost of the material required. 3mks