**NAME: ………………………………………………………….CLASS:……ADM NO:………**

**END OF TERM EXAM**

**MATHEMATICS PAPER**

**FORM 3**

**PAPER 1**

**TERM 2 – 2021**

**TIME: 2 HRS**

**INSTRUCTIONS:**

**Answer all the questions in the spaces provided.**

1. Use reciprocals and square root tables to evaluate: (3mks)

0.3 + √0.498

0.0351

1. Peter bought a shirt and sold it to Kamau at a profit of 10%. Kamau sold the same skirt to Omondi at a price of Kshs. 2,700/= thus making a loss of 15%. Find the price at which Kamau bought the shirt from Peter. (3mks)
2. In the figure below, O is the centre of the circle and OB bisects angle ABC. Given that angle BAC=40o, find angle ABO. (3mks)
3. A,B and C are three points on a straight line (in that order) on horizontal ground. A and B are on the side of C. At point C stands a vertical tower 173.2M high. The distance from A to B is 100M and the angle of elevation of the top the tower from A is 30o. Find the angle of elevation of the top of tower from B. (3mks)
4. Solve for x: 2x-3 x 8 x2+2= 128 (3mks)
5. Find the integral values of x for which : 5≤3x + 2, and 3x – 14< -2 (3mks)
6. Find the value of ‘a’ in the figure below, if its area is 128cm2, (3mks)
7. The scale of a map is given as 1:20000. Find the actual area in hectares of a region represented by a triangle of sides 6cm, 7cm and 4cm. (4mks)
8. The figure below shows a prism ABCDEF with BC=BF=4cm and AF=3cm.
9. Find AB (1mk)
10. Draw the net for the prism above. (3mks)
11. A triangular plot ABC is such that AB=72m, BC= 80m and AC=84M. calculate the acute angle between the edges AB and BC. (3mks)
12. Two towns A and B are 365Km apart. A bus left town A at 8:15a.m. and travelled towards town B at 60Km/hr. At 9.00 a.m. a car left town B towards town A at a speed of 100km/hr. the tow vehicles met at town C which lies between towns A and B. find the time of the day when the two vehicles met. (4mks)
13. A photograph is reduced in the ratio 3:5 for a newspaper. Further, the photograph is reduced in the ratio 4:5 for a textbook. Find the ratio of the newspaper size to the textbook size. (3mks)
14. The vertices of a square are P( -3,-3), Q( -1, -3) R(-1,1-) and S(-3,-1) if the square is first reflected in the line y=-x and followed by a translation of vector -1 find the co-ordinates

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of the final image of the square. (3mks)

1. The line whose equation is 3y=2x-12 cuts the x-axis at point A and the y-axis at point B. if M is the mid point of AB, find the co-ordinates of A, B and M. (3mks)
2. Calculate the value of a and b in the figure below. (3mks)
3. The fourth number of four consecutive numbers is 2n+3. If their sum is 1766, find the first number. (2mks)

**SECTION B**

1. At the beginning of a certain year Gaitho deposited sh. 100,000 in an investment account which earned compound, interest at 15% per annum. At the beginning of each subsequent year, he deposited a further sh. 5000 in the same account. Determine:
2. How much money he had in the account after 5 years. (7mks)
3. The percentage interest earned over the five years. (3mks)
4. The unshaded region in the figure below is reflected in the x-axis.
5. Write the coordinates of A’ and B’ the images of A and B after the reflection. (2mks)
6. Show the new region R’ after the reflection, in the same axes, hence calculate its area. (2mks)
7. Write down the inequalities which satisfy the new region. (6mks)
8. a. Draw a circles, centre O, radius 4cm and mark a point A’ which is 9cm from the centre. (1mk)

b. Construct two tangents from A to touch the circle at points B and C. measure the lengths

of the tangents AB and AC. (3mks)

c. Calculate the area of triangle ABO. (2mks)

d. On the same drawing, construct a triangle APO which has the same area as triangle ABO

and in which has the same area as triangle ABO and in which AP=PO. Measure and write

down the length of AP. (4mks)

1. A box contains 15 white, 9 pink and 3 brown cloth pegs. The pegs are identical except for the colour, two pegs are picked at random, one at a time, without replacement.
2. Draw a probability space to show all the possible outcomes. (2mks)
3. Find the probability that:
4. A white peg and a brown peg are picked. (4mks)
5. Both pegs are of the same colour. (4mks)
6. The figure below shows the motion of a car for various parts of a journey named A,B,C and D.
7. Calculate the acceleration for the parts.
8. AB (2mks)
9. BC (2mks)
10. CD (2mks)
11. Calculate the total distance covered by the car in kilometers. (4mks)
12. P and Q are points whose coordinates are (-2, 4) and (x,y) respectively. B is another point (2,0) such that PQ = 3QB. Find.
13. X and Y (3mks)
14. The magnitude of BQ (2mks)

b. OABC is a parallelogram, O is the origin, A is (6, 4) and B is (4, 8)

1. Express OC and AB as column vectors. (3mks)
2. Given that M is the mid. Point of BC, write the coordinates of M. (2mks)
3. The area A cm2 of a cylinder depends partly on r and partly on r2, where r is the radius of the base, when r=1cm, A=7cm2 and when r =2cm, A=16cm2,
4. Find an expression for A in terms of r. (4mks)
5. Calculate the radius when the area is 115cm2, give your answer to 1 d.p. (4mks)
6. Find the radius for which the two parts are equal. (2mks)
7. Water flows through a cylindrical pipe of diameter 4.2cm at a speed of 50m/min.
8. Calculate the volume of water delivered by the pipe per minute in litres. (3mks)
9. A cylindrical storage tank of depth 3m is filled by water form this pipe at the same rate of flow. Water begins flowing into the empty storage tank at 8.30a.m. And is full at 3.10p.m. calculate the area of cross section of this tank in m2. (4mks)
10. A family consumes the capacity of this tank in one month. The cost of water is sh. 40 per thousand litres plus a fixed basic charge of sh. 1650. Calculate this family’s water bill for a month. (3mks)