S.3 BEGINNING OF TERM III EXAMS 2023

MATHEMATICS

2 hours

INSTRUCTIONS:

ATTEMPT ALL QUESTIONS

1. Given that $P^1(2,4)$ $Q^1(8,2)$ $R^1(8,6)$ are the images of PQR under translation T $\begin{pmatrix}3\\4\end{pmatrix}$

   (a) Find the coordinates of PQ and R

   (b) Represent triangles PQR and P^1 Q^1 R^1 on the same coordinate axes.

2. The length of a garden is 14 metres longer than the width. Given that the are the garden is 32 square metres. Find the perimeter of the garden

3. Express $\frac{\sqrt{5}+2}{\sqrt{5}-2}$ in the farm $a+b\sqrt{C}$. Hence state the values of a b an

4. Factorize (a) $a^2 + ab + b^2 + ba$

   (b) $4x^2 - 4xy - y^2 + xy$

5. A cone has a volume of 81 cm3. If under an enlargement of linear scale ½ it forms a cone of volume V, Find the value of V.

6. Show the region for which $y \leq x + 1$ by shading the unwanted region.

SECTION B

7. A triangle KLM with vertices K (-2, 2), L (-2,6) and M (1,6) was given a positive quarter turn about the centre (0,1) onto $K^1L^1M^1$. Obtain the co-ordinates of $K^1L^1M^1$

8. A rectangular sheet of length 8cm and width 7cm was used to form a cylinder with both ends enclosed. Calculate:

   (a) The radius r, of the circular end of the cylinder formed.
   (b) The area of the curved surface of the cylinder formed.
   (c) The total surface area of a closed cylinder
   (d) Volume of the cylinder (use $\pi = 3.142$)

9. Peter and John were s.3 class mates, peter liked matooke, meat and chips. If peter's likes were all the likes of john except beans, chicken and rice among John's likes.
   (a) Represent their likes on a Venn diagram
   (b) Identify the unlikes of peter.
   (c) Collect their foods or likes into one set . And state the number of items in a set.

10. Opio was asked to make a water trough for animals to drink form a frame of a cuboid with an open top. If he was given measurements of 250cm by 150cm by 120cm.
   (a) How much water will the trough contain in litres?
   (b) Find the surface area of the trough made.

END