**Name: ………………………………………………….Class: ……..….......................................**

**Date: ………………………………… Adm No: ……………………………………..........**

**OPENER EXAMS**

**TERM 3 2023**

**FORM TWO MATHEMATICS**

**Answer all the questions from this section**

1. Use the tables of reciprocal only to evaluate $\frac{1}{0.325}$ hence evaluate$\frac{\sqrt[3]{0.000125}}{0.325}$ (3 marks)
2. The figure below shows a rhombus PQRS with PQ = 9 cm and angle SPQ = 600. SXQ is an arc of a circle centre P.

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Calculate the area of the shaded region leaving your answer to 2 decimal places (3 marks)

1. Evaluate (3 marks)

$\frac{36-8×-4-15(-3)}{3×-3+-8[6-\left(-2\right)]}$

1. Simplify (3 marks)

$\frac{2y^{2}-3xy-2x^{2}}{4y^{2}-x^{2}}$

$$ $$

1. A UK tourist comes to Kenya with £30 000. He pays 20% commission and his expenses in Kenya amounted to Kshs. 900 000. How much money did he remain with, in Kshs?

1UK £ = Kshs. 70.50 (3 marks)

1. All prime numbers less than 10 are arranged in descending order to form a number which forms a quotient of 1076 with a certain number X. Determine the value of X. (3 marks)
2. Four machines give out signals at intervals of 24 seconds, 27 seconds, 30 seconds and 50 seconds respectively. At 5.00 pm all the four machines give out a signal simultaneously. Find the time the four machines will next give the signal simultaneously. (3 marks)
3. Write down integral values of x that satisfy the following inequalities. (3 marks)

$3<13-2x$

$12+5x\geq 7$

1. If $cos x=\frac{4}{5}, $find the value of $\tan(x-\sin(x))$ without using tables or calculators (3 marks)
2. Given that the coordinates of point P are (4, -3) and the column vector **PQ** = $\left(\begin{matrix}2\\5\end{matrix}\right)$, find the coordinates of point Q (3 marks)
3. Use logarithm tables to evaluate (4 marks)

$\sqrt{\frac{0.256×14.7}{8.6×38.5}} $

1. The volumes of two similar solid cones are 1080 cm3 and 1715 cm3. If the curved surface area of the smaller cone is 840 cm3, find the curved surface area of the larger cone (4 marks)
2. Common salt has a density of 2.2glcm3 while sand has a density of 3.2glcm3. if 0.8kg of salt is mixed with 1.5kg of sand, find the density of the mixture (3 marks)
3. If $4^{3y-4x}=64 $and $ 3^{y}÷ 9^{x}=1$, solve for $x $and $y$ (3 marks)
4. Solve the simultaneous equations using elimination method (3 marks)

$3x+2y=12$

$4x-2y=2$

1. Express 17.3$\dot{6}$ as a fraction in simplest form (3 marks)

1. A straight line L1 passes through the points P(5, -2) and Q(-3, 6)
2. Find the equation of L1 in the form $ax+by=c$ where a, b and c are integers. (3 marks)
3. A line L2 passes through a point R (0, 3) and is perpendicular to L1~~.~~
4. Find the equation of L2 in the form$y=mx+c$ (2 marks)
5. Determine the coordinates of the point where L1 and L2 intersect (3 marks)
6. Another line L3 is parallel to L1 and passes through R. find the x-intercept of L3 (3 marks)