NAME: ………………………....................**ADM NO:** ………….. **CLASS:** ……..…….
FORM 3.
MATHEMATICS
END TERM 1 2020 EXAM
TIME: 1 HOUR 15 MINS

INSTRUCTIONS:
Attempt all the questions in the spaces provided.

1. Form the quadratic equation whose roots are:
   (a) -2 and -3   (2 mks)

   (b) 7 and -11   (2 mks)

2. Find the minimum possible perimeter of a regular hexagon whose side measures 12.6cm to one decimal places.   (2 mks)

3. If θ lies between 0° and 360° and $\sin\theta = 0.5$, find all the possible values of θ .   (3 mks)

4. Find y if $\log_2 y - 2 = \log_2 92$ (3 mks)

5. Solve the following equation using completing the square method:
   $X^2 -8X - 30 = 0$ (2 mks)

6. Simplify by rationalizing the denominator   (3 mks)

   $$\frac{3 - \sqrt{2}}{3 + \sqrt{2}}$$

7. Simplify the following without using table or a calculator: (3 mks)
   $$\frac{\text{Log } 27 - \log 9}{\log 3}$$

8. A positive two-digit number is such that the product of its digits is 24. When the digits are reversed, the number formed is greater than the original number by 18. Find the number.(4 mks)
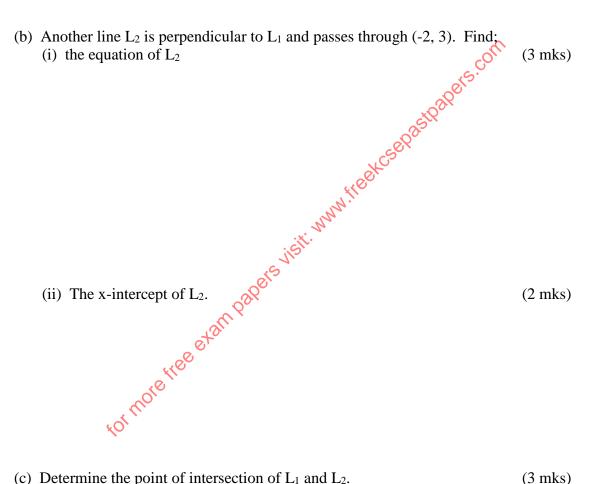
9. (a) Round off 395.184 to four significant figures.   (2 mks)

    (b) Truncate to three decimal place: 17.3489   (2 mks)

10. Without using mathematical tables or a calculator, evaluate: (3 mks)
$$\frac{5.4}{0.025 \times 3.6}$$

11. Juma left his home at 8.30am. He drove a distance of 140km and arrived at his aunt's home at 10.15am. Determine the average speed in km/h, for Juma's journey.   (3 mks)

12. Given that Sin $2x$ = Cos $(3x-10^{o})$, find tan X correct to 4 significant figures.   (3 mks)

13. (a) A line L_1 passes through the points (3, 3) and 5, 7). Find the equation of L_1 in the form
    $y = mx + c$, where m and C are constants.   (4 mks)

    (b) Another line L_2 is perpendicular to L_1 and passes through (-2, 3). Find;
        (i) the equation of L_2 (3 mks)

        (ii) The x-intercept of L_2.   (2 mks)

    (c) Determine the point of intersection of L_1 and L_2.   (3 mks)