**P425/1**

**PURE MATHEMATICS**

**Paper 1**

**July/August**

**3 Hours**



**ELITE EXAMINATION BUREAU MOCK 2019**

**Uganda Advanced Certificate of Education**

PURE MATHEMATICS

**PAPER 1**

**3 Hours**

**INSTRUCTIONS TO CANDIDATES**

* *Attempt all the* ***eight*** *questions in section* ***A*** *and any* ***five*** *from section* ***B****.*
* *All working must be clearly shown.*
* *Mathematical tables with a list of formulae and squared paper are provided.*
* *Silent, simple non programmable scientific calculators and a list of formulae may be used.*
* *State the degree of accuracy at the end of each answer using* ***CAL*** *for calculator and* ***TAB*** *for tables.*

**Turn Over**

**SECTION A (40 Marks)**

**Attempt ALL questions in this section.**

1. Solve the inequality (5marks)

2. Evaluate (5marks)

3. Solve the equation for. (5marks)

4. The line is a tangent to the circle with centre at. Find the equation of the circle. (5marks)

5. Expand in ascending powers of up to the term in. Hence by taking x=1, obtain the value of correct to four significant figures. (5marks)

6. If, show that. (5marks)

7. The position vectors of the points P and Q are respectively. Find the acute angle between PQ and the line;

(5marks)

8. Solve the differential equation,. Given that y (6) = 0. (5marks)

**SECTION B (60MARKS)**

**Attempt ONLY 5 questions in this section.**

9. a) Show that;

. Hence or otherwise, solve the simultaneous equations.

(7marks)

b) Solve the equation (5marks)

10. a) Find x, if . (5marks)

b) Express in the form giving the value of r and a, hence find. (7marrks)

11. a) Differentiate with respect to x.

i)

ii) , simplify your answers (8marks)

b) if show that . (4marks)

12. a) Show that the line and the plane are parallel and find the perpendicular distance of the line from the plane. (6marks)

b) Find the equation of the plane passing through the origin and parallel to the lines’

and . (6marks)

13. a) Solve the differential equation

; Given that. (4marks)

b) A certain game park was found to have 100 lions. Given that the lions die at a rate proportional to the number of lions present and the initial death rate is 5 lions per year.

i) Form a differential equation and solve it.

ii) How many lions will be in the park after six years? (8marks)

14. a) Given that where show that . (6marks)

b) The polynomial has as one of the roots. Find the other three roots of the equation. (6marks)

15. a) Work out . (5marks)

b) The area bounded by the curve, and the x-axis is rotated about the x-axis through a ½ -turn. Find the volume of the solid generated. (7marks)

16. a) find an equation of the circle that passes through the points. (5marks)

b) The line is a tangent to the circle Find the coordinates of the points of contact of the tangent for each value of C. (7marks)

**END**