**P425/1**

**Pure**

**Mathematics**

**Paper 1**

**3hrs**

**UGANDA ADVANCED CERTIFICATE OF EDUCATION**

**PRE REGISTRATION EXAMINATIONS**

**PURE MATHEMATICS**

**PAPER 1**

**3HOURS**

**Instructions**

*Answer all the eight questions in Section A and any Five from Section B.*

*All necessary working must be shown clearly.*

*Silent non-programmable scientific calculators and Mathematical tables with a list of formulae may be used.*

**SECTION A (40MARKS)**

**Answer all questions in this Section**

1. By using row reduction to Echelon, solve the simultaneous equations.

(5marks)

2. Express as a Cartesian equation. (5marks)

3. Solve the equation for . (5marks)

4. Differentiate with respect to . (5marks)

5. Given that has repeated roots, find the possible values of k and hence find the root. (5makrs)

6. Find (5marks)

7. The sum of the first n terms of a series is , find the nth term ; hence state the first term. (5marks)

8. Use small increments to estimate the value of to 2 decimal places.

(5marks)

**SECTION B (60MARKS)**

Answer any **FIVE** questions. All questions carry equal marks.

9. a) Given that find the values of and if

where is the complex conjugate of z. (6marks)

b) Using demoivres theorem, find the square root and represent the roots on an argand diagram. (6marks)

10. a) Solve for in the equation n = 120. (6marks)

b) Expand up to the term in and by using deduce the value of

11. a) Solve the equation . (6marks)

b) Prove that for any triangle ABC . (6marks)

12. a) Differentiate from first principles. (6marks)

b) A curve is defined by and , determine the equations of tangent and normal to the curve at the point where

13. Differentiate with X

i) (3marks)

ii) (3marks)

b) Find the height of the right circular cylinder of maximum volume that can be cut from a sphere of radius metres. (6marks)

14. a) Find the area bounded by the curve , the x-axis and lines

and (6marks)

b) The portion of the curve from to is rotated about the x-axis through 3600 to form a solid. Find the volume of the solid generated.

(6marks)

***\*\*END \*\****