**P425/1**

**PURE MATHEMATICS**

**PAPER 1**

**July/August 2017**

**3hrs**

**RESOURCEFUL MOCK EXAMINATIONS, 2017**

**Uganda Advanced Certificate of Education**

**PURE MATHEMATICS**

**(P425/1)**

**TIME: 3HOURS**

**INSTRUCTIONS TO CANDIDATES**

* *Attempt all the questions in section A and five from section B.*
* *Working must be shown clearly*
* *Silent non programmable calculator may be used.*
* *Any additional question(s) answered will not be marked.*

**SECTION A**

1. Prove that

2. The first term of an AP and G.P are each their common difference and

common ratio are x and the sum of their first 3 terms is equal. Find the possible values of x.

3. .

4. Solve

5. Find the equation of the normal to the curve at the point where .

6. Show that when the quadratic expression.

have a common root then

7. Given that

P = , show that

8. Use the substitution.

**SECTION B**

9. Describe the locus of the complex number z which moves in the argand diagram.

b) Find the fourth roots of -16i

10. If A, B and C are angles of a triangle prove that

b) By expressing 6co in the form. Find the maximum and minimum value of 6

11. The curve with the equation where a and b are constants has a turning point at (1, -2). Find the values of a and b.

Find the equation of all the asymptotes.

Sketch the curve.

12. Differentiate

b) Prove that . Use the substitution

c) The displacement of a particle at time t is measured from a fixed point and , prove that , if x = 3 when t = 1 and x = , prove that c = 5

13. Show that the lines

intersect. Find the point of intersection.

b) OAB is a triangle with OA = , c is amidpoint of OB, D is the midpoint of AB and E is amidpoint of OA. OD and AC interest at F. if AF = hAC and OF = KOD. Find the values of h & k. show that B, F & E are collinear.

14. a) Solve

b) A radioactive substance disintegrates at a rate proportional to it’s mass one half of the given mass of a substance distergrates 136 days, calculate the time required for of a substance to disintergrate. If the original mass of a substance was 100gm. Calculate the mass after 34 days.

15. Find the equation of the tangents to the curve at y = x3 at (t, t3) prove that this tangent meets the curve again at Q(-2t – 8t3). Find the locus of the midpoint of PQ.

b) Given that y = mx + c is a tangent to the circle (x – a)2 + (y – b)2 = r2. Show that

(1 + m2)r2 = (c-b+am)2.

16. a)

b)

**END**