**JOMO KENYATTA UNIVERSITY**

**OF**

**AGRICULTURE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2014/2015**

**YEAR 3 SEMESTER I EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY**

**SMA 2102: CALCULUS II**

**DATE: APRIL 2015 TIME: 2 HOURS**

**INSTRUCTIONS: Answer questions ONE and ANY OTHER TWO questions.**

**QUESTION ONE**

1. Find the slope of the curve at the point (4marks)
2. The gradient function of a curve is given as . Find the equation of this curve given that it passes through the point (5marks)
3. Evaluate (5marks)
4. Calculate the exact area bounded by the curve and the x-axis from to (6marks)
5. Use the trapezoidal rule with to estimate (9marks)

**QUESTION TWO (20 MARKS)**

1. Differentiate the following functions with respect to ;
2. (6marks)
3. Decompose the function into partial fractions and hence evaluate (10marks)
4. Evaluate (4marks)

**QUESTION THREE (20 MARKS)**

Use appropriate integration rules to obtain the integrals below;

1. (3marks)
2. (6marks)
3. (4marks)
4. (5marks)
5. (2marks)

**QUESTION FOUR (20 MARKS)**

1. Find the mean value of the function y= over the interval [0, 2] (5marks)
2. The area bounded by the curve and the x-axis is revolved about the x-axis. Calculate the volume of the solid generated (7marks)
3. Find the arc length of the graph of from to (5marks)
4. Evaluate dx (3marks)

**QUESTION FIVE (20 MARKS)**

1. Find the area between the curves and (6marks)
2. Use the Simpson’s rule with to estimate (9marks)
3. Show that the volume of a sphere radius r is given by (5marks)