

**TECHNICAL UNIVERSITY OF MOMBASA**

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MATHEMATICS AND PHYSICS

**UNIVERSITY EXAMINATION FOR:**

**BACHELOR OF SCIENCE IN MEDICAL ENGINEERING (BSMD), BACHELOR OF TECHNOLOGY IN MEDICAL ENGINEERING (BTMD)**

AMA 4105: CALCULUS II

END OF SEMESTER EXAMINATION

**SERIES:** JULY 2017

**TIME:** 2 HOURS

**DATE: APRIL**

**Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

This paper consists of five questions. Attempt Question and any other two Questions.

**Do not write on the question paper.**

**Question ONE**

1. Find the following indefinite integral
2. **3mks**
3. .  **3mks**
4. Using integration by parts or otherwise find

**5mks**

1. Determine  **3mks**
2. Determine the area bounded by the parabola y2 = 2x and straight line x-y=4  **3mks**
3. Find **4mks**
4. Find the perimeter of a cardioid whose equation is p=a(1+)

**5mks**

1. Find  **4mks**

**QUESTION TWO (20mks)**

1. Find ∫cos5x dx  **6mks**
2. Evaluate by Trapezoidal rule, dividing x=1 to x=10 into nine intervals **6mks**
3. Find by reduction ∫cos8x dx  **8mks**

**QUESTION THREE (20 MARKS)**

1. Find  4 marks
2. Find  if . 4 marks
3. Evaluate  6 marks
4. Find the integral . 3 marks
5. Use the mid-point rule with n=5 to approximate  correct to 3d.p. 3 marks

**QUESTION FOUR (20 MARKS)**

1. Suppose an object moves along some unknown curve y=f(x) in the x, y plane in such a way that at each point (x, y) on the curve, the tangent line has a slope. Find an equation for the curve given that it passes through the point (2,1). 3 marks
2. Find. 3 marks
3. If find  at x=0. 3 marks
4. Determine  5 marks
5. Evaluate if . 6 marks

**QUESTION FIVE (20 MARKS)**

1. Evaluate  if . 5 marks
2. Find  3 marks
3. Evaluate  3 marks
4. Use cylindrical shells to find the volume of a solid generated when a region enclosed between in the interval and the x-axis is revolved about y - axis. 6 marks
5. Solve  3 marks

THE END