TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN BUILDING AND CIVIL ENGINEERING

(INSTITUTION BASED EXAMINATION)

AMA 2250: ENGINEERING MATHEMATICS III

SERIES: MARCH 2017

TIME: 2 HOURS

Instructions to Candidates
You should have the following for this examination
-Answer Booklet, examination pass and student ID
-Pocket calculator
This paper consists of **FIVE** questions. Attempt any **THREE** questions
Do not write on the question paper
Mobile Phones are NOT allowed inside the examination room

QUESTION ONE

(a) Evaluate $\int \frac{x^2+2}{(x+4)(x-2)}dx$ (13 Marks)

(b) Find $\int_1^5 2xe^x \, dx$ (7Marks)

QUESTION TWO

(a) Evaluate $\int x^2 Sin2x \, dx$ (9 marks)

(b) Find $\int \frac{1}{x^2(x-1)} dx$ (11 marks)

QUESTION THREE

(a) Evaluate $\int Sin(x+1)Cos^5(x+1) dx$ (5 marks)

(b) Find $\int xLnx \, dx$ (5 marks)

(c) Evaluate $\int \frac{x^2+2}{x(x+1)^2} dx$ (10 marks)

QUESTION FOUR

(a) $\int_4^6 \frac{4x-1}{(x-3(x+3)} \, dx$ (10 marks)

(b) $\int \frac{12x+1}{(6x^2+x)^{\frac{3}{2}}} \, dx$ (4 marks)

(c) $\int_1^5 xe^{2x} \, dx$ (6 marks)

QUESTION FIVE

(a) Determine area bounded by the functions $y = 4x^2 + 2$ and $y = 6$ (8 marks)

(b) Determine the position for centroid for the area bounded by the function $y = x$ and x-axis between $x = 0$ and $x = 3$ (12 marks)