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 $\int_2^4 \frac{2x-1}{x^2-4} d$x dx   (10 Marks)

(b) Find the partial fractions for $\frac{x+2}{x(x+1)^2}$ and hence evaluate $\int \frac{x+2}{x(x+1)^2}$ dx   (10 Marks)

QUESTION TWO

(a) Find the area bounded by the function $y = 4x^2 + 2$ and $y = 4$ (8 marks)

(b) Evaluate $\int_1^5 \frac{1}{x^2(x-1)} dx$ dx   (12 marks)

QUESTION THREE

(a) Evaluate $\int 3xe^x dx$ (7 marks)

(b) Find the partial fractions for $\frac{x^2+4}{x^2-x-2}$ and hence evaluate $\int \frac{x^2+4}{x^2-x-2} dx$ (13 marks)

QUESTION FOUR

(a) Evaluate $\int x^2 Cos3x dx$

         (9 marks)

(b) Find position of centroid for the area bounded by the function $y = x^2$ and x axis, between $x = 0$ and $x = 3$.   (11 marks)

QUESTION FIVE

(a) Determine area bounded by the functions $y = x^2$ and $y = 3$ (8 marks)

(b) Evaluate $\int \frac{x^2+1}{(x-1)(x+2)} dx$ (12 marks)