



TECHNICAL UNIVERSITY OF MOMBASA
Faculty of Applied & Health
Sciences

DEPARTMENT OF MATHEMATICS & PHYSICS

DIPLOMA IN BUILDING & CIVIL ENGINEERING (DBCE 13J)
DIPLOMA IN MEDICAL ENGINEERING (DME)

AMA 2350: ENGINEERING MATHEMATICS V

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2014

TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions

$$f(x) = \begin{cases} -2 & \text{when } -\pi < x < \frac{\pi}{2} \\ 5 & \text{when } \frac{-\pi}{2} < x < \frac{\pi}{2} \\ -2 & \text{when } \frac{\pi}{2} < x < \pi \end{cases}$$

and has a period of 2π (12 marks)

- b) Find the half-range Fourier sine series to represent the function $f(x) = 3x$ in the range $0 \leq x \leq \pi$ (8 marks)

Question Five

- a) Find the particular solution of the differential equation:

$$\left(\frac{2y-x}{y+2x} \right) \frac{dy}{dx} = 1$$

given that $y = 3$ when $x = 2$ (14 marks)

- b) Solve the differential equation $\frac{dy}{dx} = x(1-2y)$ (6 marks)