



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

## UNIVERSITY EXAMINATION FOR:

DIPLOMA IN TELECOMMUNICATION ENGINEERING

### PHYSICAL SCIENCE FOR ENGINEERS

UNIT CODE: APS 2150

SPECIAL/SUPPLEMENTARY EXAMINATION

**SERIES: SEPTEMBER 2018**

**TIME: 2 HOURS**

**DATE: Sep 2018**

#### Instructions to Candidates

You should have the following for this examination

-*Answer Booklet, examination pass and student ID*

This paper consists of FIVE questions. Question ONE is compulsory. Then Attempt any TWO

#### **Questions**

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

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#### QUESTION ONE

A tool has a cutting speed 180mm/Sec at an instant in time and two-tenths of a second later a speed of 50mm/Sec . Determine the acceleration in  $M/S^2$  indicating whether positive or Negative.

20 Marks

#### QUESTION TWO

a) With the aid of diagrams, describe Electromagnetic Spectrum 6 Marks

b) Describe the production and detection of four types of Electromagnetic waves

12 Marks

- c) Give ONE application of one type of Electromagnetic Waves stated in Q2b above  
2 Marks

### QUESTION THREE

A gantry Crane starts from rest and accelerating uniformly reaches a speed of 1.8 M/Sec in 3 Seconds. The Crane continues to move at this Speed for a further 12 Seconds after which it is reduced uniformly in speed so that it comes to rest in a further 5 Seconds.

Draw a velocity- time graph and determine the following:-

- a) The Initial Acceleration
- b) The Final Acceleration
- a) The distance moved by the Crane during Acceleration
- b) The total Distance covered

20 Marks

### QUESTION FOUR

- a) Define Crystal Diode 2 Marks
- b) Derive the efficiency of a half wave Rectifier 6 Marks
- C) With the aid of diagrams and waveforms, describe the Construction and operation of a Full  
Wave Bridge Rectifier

12 Marks

