



# *TECHNICAL UNIVERSITY OF MOMBASA*

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*Faculty of Engineering and Technology*

*Department of Electrical and Electronic engineering*

**UNIVERSITY EXAMINATION:**

***Diploma in Electrical Power Engineering (DEPE 6)***

***ELECTRICAL DRIVES AND CONTROL II***

***EEP 2304***

**END OF SEMESTER EXAMINATION**

**SERIES: MAY 2016**

**TIME: 2 HOURS**

**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 any **THREE** Questions.

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

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### Question ONE

- (a)
  - (i) Explain an electric drive.
  - (ii) State Five advantages of electric drives
  - (iii) Draw the block diagram of an electric drive system and explain each block. (12 marks)
- (c) Compare between a d.c and a.c electric drive. (8 marks)

### Question TWO

- (a) State
  - (i) State two advantages of group drives
  - (ii) Three disadvantages of group drive (5 marks)
- (b) For each of the following driving motor selection criteria state four Considerations made.
  - (i) Electrical
  - (ii) Mechanical
  - (iii) Size and rating. (12 marks)
- (c) Explain the need for motor enclosures and describe three motor enclosures. (3 marks)

### Question THREE

- (a) State
  - (i) Two methods of speed control in DC motors.
  - (ii) Four methods of speed control in AC motors. (6 marks)
- (b) Draw the circuit of a controlled rectifier fed single phase two quadrant d.c drive. (6 marks)
- (c) Draw the diagram of a controlled rectifier three phase two quadrant d.c drive. ( 8 marks)

#### **Question FOUR**

- (a) State **FOUR** reasons why induction motors are widely used for drives. (4 marks)
- (b) State the Losses in an induction motor drive. (6 marks)
- (c)
  - (i) Draw the Torque - speed characteristics of an induction motor drive.
  - (ii) State the basis of choosing a starting arrangement.
  - (iii) State Three starting methods of Induction machines (10 marks)

#### **Question FIVE**

- (a) Explain Three methods of Induction motor braking. (9 marks)
- (b) With the aid of a diagram explain the operation of the Four quadrant drive. (8 marks)
- (c) Distinguish between active Load torque and passive load torque. (3 marks)