TECHNICAL UNIVERSITY OF MOMBASA

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

Question ONE

(a)   (i)   Define an electric drive.
      (ii)   Explain FOUR factors to be considered in the selection of drive.
                                                                        (10 marks)

(b)   State;
            (i)   FIVE advantages of electric drives.
            (ii)   classification of drives.
                                                                        (7 marks)

(c)   Distinguish between active Load torque and passive load torque. (3 marks)

Question **TWO**

(a)   Draw the block diagram of a general electric drive system and explain each
      block.   **(10 marks)**
(b)   Draw the diagram and explain the operation of the 4 quadrant electric drive.
                                                                     (10 marks)

Question **THREE**

   (a)   Explain **FOUR** ways in which the speed of an electric motor can be
         controlled.   **(8 marks)**
   (b)   Draw a circuit of a 3 phase cyclo converter drive system and explain its
         operation.   **(6 marks)**
   (c)   Draw the circuit of a single phase controlled rectifier 4 quadrant DC drive
         and indicate the quadrant each converter operates
                                                                      (6 marks)

Question **FOUR**

(a)   Explain **THREE** types of-motor ratings.   (6 marks)
(b)   Draw the heating and cooling curve of an electric motor.   (5 marks)
(c)   A motor for a varying load drives a 20kW load for two minutes,
       10 kW for three minutes and is stopped for three minutes and the cycle
       is repeated.
       Determine the continuous rating of motor for this duty cycle.

Question FIVE

(a)   State **FOUR** reasons why induction motors are widely used for drives.
                                                                (4 marks)

(b)   State the Losses in an induction motor drive and how arise.   (7 marks)

(c) Explain Three methods of Induction motor braking.   (9 marks)