

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION  
DECEMBER 2009

EE 04 802—INDUSTRIAL DRIVES

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

*Answer all questions.*

1. (a) Give the concept of electric drive.  
(b) Give the classification of load torques.  
(c) What is regenerative braking ?  
(d) What is a two quadrant d.c. drive ?  
(e) Discuss the important relative merits and demerits of CSI drives.  
(f) What are the advantages of PWM ?  
(g) Explain the operation of synchronous Reluctance motor.  
(h) List the advantages of microprocessor controlled a.c. drives.

(8 × 5 = 40 marks)

2. (a) Explain the fundamental torque equations. What are the components of the load torque ?

*Or*

- (b) Explain the concept of current control of electric drive.

(15 marks)

3. (a) Explain with diagram and relevant waveforms the operation of a dual converter as a four quadrant drive.

*Or*

- (b) Discuss different control methods used in a D.C. chopper.

(15 marks)

4. (a) Explain the induction motor operation when the  $V/f$  ratio is held constant. Also derive the expression for the maximum torque.

*Or*

- (b) Suggest certain modifications for improving the power factor of the slip power recovery scheme.

(15 marks)

**Turn over**

5. (a) Draw and explain the operation of a three-phase brushless d.c. motor drive. Also explain the related waveforms.

*Or*

- (b) Explain with a suitable block diagram the control of an induction motor using microprocessor.

(15 marks)

[4 × 15 = 60 marks]

