

**EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE  
EXAMINATION, JUNE 2010**

EE 04. 802—INDUSTRIAL DRIVES

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

*Answer all questions.*

1. (a) Give a block diagram of a typical electric drive.  
(b) What is the principle of closed loop control of electric drive ?  
(c) What is rheostatic braking ?  
(d) What is the principle of operation of step down chopper ?  
(e) Explain the advantages of variable frequency induction motor drives.  
(f) What is the concept of rotor frequency control ?  
(g) What is self control mode of synchronous motor ?  
(h) What is brushless d.c motor ?

(8 × 5 = 40 marks)

2. (a) Briefly explain the components of the load torque. Give examples.

*Or*

- (b) Draw the circuit diagram and explain the operation of closed loop speed control with current limit control.

(15 marks)

3. (a) Draw the power circuit diagram of a three-phase converter feeding a D.C. motor. Explain its various modes of operation and speed-torque characteristics.

*Or*

- (b) Explain how regenerative braking is achieved in chopper controlled D.C. drives.

(15 marks)

4. (a) Explain the various schemes for induction motor speed control by voltage source converters.

*Or*

- (b) Explain with schematic diagram the slip power recovery scheme for induction motor.

(15 marks)

5. (a) Draw and explain the block diagram of a self controlled synchronous motor fed from a three-phase inverter.

*Or*

- (b) Draw and explain the block diagram of an microprocessor controlled synchronous motor drive.

(15 marks)

[4 × 15 = 60 marks]