C 56377 (Pages 2) Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2009

EE2K 802 / PTEE2K 801 INDUSTRIAL DRIVES

Time : Three Hours Maximum : 100 Marks

I. (a) Explain the different components of Load torque.

(b) Draw and explain the concept of closed loop control of electrical drive.

(c) How does a separately excited DC motor operate when fed by a 3-phase semiconverter.

(d) Describe the two quadrant operation of the DC shunt motor with transistorized chopper circuit.

(e) Briefly state the PWM principle for the voltage controlled fed Induction motor drive.

(f) Compare the VSI and CSI fed AC drive.

(g) Explain the self controlled synchronous motor drive.

(h) Describe the constructional features of a brushless DC motor.

II. (a) (i) State the advantages of electric drive. (7 marks)

(ii) What do you understand by constant torque drive and constant power drive. (8 marks)

Or

(b) Derive the total equivalent torque refer to the motor shaft for the case of loads with rotational motion. (15 marks)

III. (a) Explain the different speed control techniques of DC motor. Mention the merits and demerits for each case. (15 marks)

Or

(b) (i) Describe the Four quadrant operation of DC shunt motor with the Dual Converter fed DC drive. (8 marks)

(ii) Draw and explain the motoring and regenerative braking characteristics of chopper controlled series motor. (7 marks)

Turn over

IV. (a) (i) Describe the slip speed control of 3 phase Induction motor with the help of necessary equations.

(8 marks)

(ii) How will you a get a variable frequency control from a CSI ? Explain.

(7 marks)

Or

(b) (i) Explain the VSI IM drive with regenerative braking capability.

(7 marks)

(ii) What are the different starting methods of single phase Induction motors ? Explain with a sketch.

(8 marks)

V. (a) Explain the closed loop speed control of load commutated inverter synchronous motor drive.

(15 marks)

Or

(b) Describe the operation of Microprocess based speed control of squirrel-cage Induction motor with a flowchart.

(15 marks)

[4 × 15 = 60 marks]