C 20285

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, JUNE 2006

EE 2K 802/PTEE 2K 801—INDUSTRIAL DRIVES

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

I. (a) State reasons for using load equalisation in electric drives.

(b) Describe different methods of speed sensing in electric drives.

(c) Draw and explain briefly the torque speed characteristics of a semiconverter feeding a separately excited dc motor.

(d) List the advantages offered by dc chopper drives over line-commutated converter controlled dc drives.

(e) State and explain the soft start methods employed for induction motors.

(f) Explain the advantages of variable frequency induction motor drives.

(g) What are the similarities between brushless dc motor and a conventional dc motor ? Also state the advantages of brushless dc motor.

(h) Write short notes on : PWM drives.

(8 × 5 = 40 marks)

II. (a) List essential parts of electrical drives. What are the functions of each parts ?

Or

(b) Explain the operation of a closed-loop speed control scheme with inner current control loop. Also describe the functions of inner current control loop.

III. (a) Draw and explain the operation of a speed control of a dc series motor by a single-phase semiconverter for the continuous motor current. Draw also the associated voltage and current waveforms.

Or

(b) Describe in detail the operation of dual converter. With and without circulating current modes.

IV. (a) Draw and explain the speed-torque characteristics with variable frequency control for two different modes. (i) operation at constant flux and (ii) operation at constant (V/f) ratio.

Or

(b) Draw the circuit diagram and explain the working of slip-power recovery system using solid-state system.

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

Or

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

(4 × 15 = 60 marks)