17696

15162

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory*.

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

Marks

1. Attempt any FIVE of the following : **20**

(a) State the factors that should be considered for drive selection.

(b) Compare between AC drives and DC drives on the basis of (i) Type of motor (ii) Speed of operation (iii) Power circuit used (iv) Applications.

(c) Define electric drive. Draw its block diagram.

(d) Explain difference between speed control and braking in electric drive.

(e) Explain the meaning of load equalization. State the condition of load equalization.

(f) List the different methods of speed control of induction motor.

(g) Give detailed classification of drives with their applications.

(h) State different requirements of adjustable speed drives.

2. Attempt any TWO of the following : **16**

(a) State the purpose, types and applications of various types of enclosures used in electric drives.

(b) State different types of load cycles and draw its graphical representation.

(c) Draw speed-torque and torque armature characteristics of each of the following motors : dc shunt motor, dc series motor, dc cumulative compound motor and dc differentials motor.

3. Attempt any TWO of the following : **16**

(a) Draw and explain the circuit diagram of rotor resistance control by chopper method for induction motor.

(b) With the help of block diagram explain the use of phase lock loop (PLL) for speed control of DC motors.

(c) Draw and explain the torque-speed characteristics of 3 phase induction motor and show the different regions on it.

4. Attempt any TWO of the following : **16**

(a) Compare group drive and individual drive. (8 points)

(b) State the function of bearing used in drives. Explain the types of bearings with its applications.

(c) Explain the feature of transmission of mechanical power used in drives with their types and applications.

5. Attempt any TWO of the following : **16**

(a) Draw and explain the circuit diagram of V/F control method used in AC drives. What is the effect of frequency on slip ?

(b) Draw and explain the slip – power recovery speed control method of three phase induction motor.

(c) With the help of a neat circuit diagram and associated waveform, explain the working of single phase full converter drive using DC series motor.

6. Attempt any FOUR of the following : **16**

(a) Describe stator voltage control method for speed control of induction motor.

(b) Explain starting of induction motor using soft starter.

(c) Explain the speed control of DC servo motor.

(d) Explain the working of three phase semi converter drive

(e) Draw the block diagram of DC drive and state its applications.

———————