22538

24225

3 Hours / 70 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.

Marks

1. Attempt any FIVE of the following : **10**

(a) Write any two applications of permanent magnet motor.

(b) Draw schematic diagram of single phase capacitor run motor.

(c) State any four advantages of microcontroller based control of drives.

(d) Draw a neat diagram of single phase full converter drive.

(e) Draw Speed-Torque characteristics of DC shunt and DC series motor.

(f) Give any two applications of brushless DC motor.

(g) Calculate step angle of rotation if a stepper motor has four pairs of phases and six teeth on rotor.

2. Attempt any THREE of the following : **12**

(a) Describe rotor resistance control technique employed for speed control of induction motor.

(b) Compare AC drives and DC drives. (Any four points)

(c) With neat diagram, explain synchronous motor drive using microcontroller.

(d) Explain the working of phase locked loop control of DC motor with neat diagram.

3. Attempt any THREE of the following : **12**

(a) State the sequence of stages & drives required in each stage for textile mills.

(b) With the help of neat diagram, explain voltage source inverter control for speed control of Induction Motor.

(c) Draw and explain stepper motor drives employing microcontroller.

(d) Draw speed torque characteristics of Induction motor showing all regions.

4. Attempt any THREE of the following : **12**

(a) Explain four braking methods of Induction motor.

(b) List various stages involved in paper mill and its speed ratings at each stage.

(c) With the help of neat diagram, explain DC motor drive using microcontroller.

(d) Give the constructional details of three phase squirrel cage induction motor.

(e) Enlist different parameters for selection of a drive.

5. Attempt any TWO of the following : **12**

(a) With the help of neat circuit diagram, explain working of three phase semi converter drive. State equation of average armature voltage.

(b) For a single phase dual converter, answer the following :

(i) Describe its working with neat diagram.

(ii) Interpret with input/output waveforms.

(c) For a shaded pole motor, answer the following :

(i) Give the constructional details with neat diagram.

(ii) State any two applications.

6. Attempt any TWO of the following : **12**

(a) Compare single phase SCR drives with three phase SCR drives. (Any six points)

(b) Describe the constructional details of universal motor with neat diagram. State any two advantages and applications of it.

(c) Identify the type of chopper for forward motoring & forward braking of DC motor. Justify your answer with neat sketch & waveforms.
