

22538

11920

3 Hours / 70 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following: **10****
- a) Draw the block diagram of an electric drive.
 - b) State two applications of brushless DC motor.
 - c) State any four applications of stepper motor.
 - d) State the working principle of DC servomotor.
 - e) State the braking methods of DC motors.
 - f) Draw the electrical circuit diagrams of DC series and D.C. shunt motor.
 - g) Mention classification of single phase AC motors.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Draw and explain the working of capacitor start induction motors.
 - b) Compare squirrel cage and slip ring induction motors (any four points).
 - c) Describe the working of chopper controlled DC drive with neat diagram.
 - d) Explain with neat diagram 3ϕ full wave convertor drive using separately excited DC motor and also explain the need of free wheeling diode.
- 3. Attempt any THREE of the following:** **12**
- a) State the sequences of the stages and drives required in any stage for textile mill.
 - b) Give the constructional details of shaded pole motor with neat diagram.
 - c) State the sequences of the stages and drives required in any stage for sugar mill.
 - d) Describe the advantage and disadvantage of synchronous motor drives.
- 4. Attempt any THREE of the following:** **12**
- a) Enlist any eight functions of micro-controller in speed control of drives.
 - b) Explain with neat diagram single phase dual converter drive.
 - c) Explain the maintenance procedure for AC drives.
 - d) Draw the block diagram and explain the working of phase locked loop control of DC motor drive.

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

- a) Describe with sketches working of the three phase induction motor solar powered pump drives used for the lift irrigation.
- b) Explain the braking methods used in three phase induction motor in brief.
- c) Enlist any six functions of microcontroller in speed control of drives.

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

- a) Compare DC shunt motor and DC series motor with torque - speed characteristics and applications.
 - b) Describe with sketch 3ϕ dual converter drive.
 - c) List various methods of controlling speed of induction motor drive and explain any one method.
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