

Total No. of Pages :

Register Number :

7863

Name of the Candidate :

DIPLOMA IN DRIVES AND CONTROL EXAMINATION DECEMBER 2013.**120 — CONTROL OF ELECTRIC DRIVES**

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.**All questions carry equal marks.**

1. (a) How are electric drives classified? Explain. (10)
- (b) Explain the speed torque characteristics of various types of loads. (10)
2. (a) Explain the starting techniques of various types of DC motor drives. (10)
- (b) How is the power rating for a drive motor selected based on thermal limits? Explain. (10)
3. (a) Obtain the second order model for a field controlled DC motor. (10)
- (b) Explain the stability analysis of an electric drive. (10)
4. (a) Develop a state equation formulation for power electronic circuits feeding an electrical machine. (10)
- (b) Obtain the mathematical model of an AC machine. (10)
5. (a) What are the specifications of transient response for a closed loop control system? Explain. (10)
- (b) Write the equation of a PID controller. What are the controller parameter in a PID controller? (10)
6. (a) What are the specifications of steady state response for a closed loop system? Explain. (10)
- (b) How is a closed loop control system different from an open-loop control system? Explain with examples. (10)

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7. (a) With neat diagrams explain any one analog method and any one digital method for measuring speed. (10)
- (b) With neat diagrams explain the principle of operation and working of an eddy current sensor. (10)
8. (a) With neat diagrams, explain any one analog method and any one digital method for measuring power. (10)
- (b) Why are ADCs and DACs used in electric drive systems? Explain. (10)
9. (a) Explain the PLC based control of an electric drive. (10)
- (b) What are the advantages and limitations of digital techniques in speed control? (10)
10. Write notes on (any TWO) : $2 \times 10 = 20$
- (a) Control schemes for a paper mill.
- (b) Control schemes for a lift.
- (c) Control schemes for a textile mill.
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