

Total No. of Pages : 2

Register Number :

**7864**

Name of the Candidate :

**DIPLOMA EXAMINATION DECEMBER 2013.**

**(DRIVES AND CONTROL)**

**130 — SOLID STATE DRIVES**

Time : Three hours

Maximum : 100 marks

**Answer any FIVE questions**

1. (a) Explain in detail the operation of three – phase fully controlled converter fed dc drive with neat waveforms for  $\alpha = 60^\circ$  and  $\alpha = 90^\circ$ . (12)
- (b) Explain in detail regenerative braking of Dc separately excited motor. (8)
2. (a) Comparison between conventional and solid state drives. (10)
- (b) Explain the operation of dual fed drives. (10)
3. (a) Explain the four quadrant operation of chopper fed dc drive. (10)
- (b) Explain the operation of type – B chopper fed dc drive. (10)
4. (a) Discuss the strategies of current limit and time ratio control. (10)
- (b) With a neat power circuit diagram, explain the motoring and regenerative braking of Dc series motor using a chopper. (10)
5. Explain the slip recovery scheme with neat diagram. (20)
6. (a) Explain the operation of stator frequency control. (10)
- (b) Explain the constant horse power operation. (10)
7. (a) Explain the operation of self – controlled synchronous motor. (10)
- (b) Explain the modes of operation of synchronous motor drive. (10)
8. (a) Explain the voltage source inverter fed synchronous motor drive. (10)
- (b) What are the merits, demerits and characteristics of load commutated CSI? (10)

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9. (a) Explain the principle of operation, construction and working of a permanent magnet stepping motor. (15)
- (b) Mention the applications of servo motor and stepper motor. (5)
10. Explain the operation of Ac and Dc servomotor. (20)
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