Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No .....

MEPS-302(B)

M.E./M.Tech., III Semester

Examination, December 2016

Advanced Electrical Drives (Elective - II)

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) Each question carry equal marks.
iii) Total No. of questions are eight.

1. a) Explain factors influencing choice of electrical drives. 6
   b) A 60 H.P. motor has final temperature rise of 50°C on continuous full load. Its heating and cooling time constants are 100 and 150 minutes respectively. Load cycle consists of 20 minutes on certain load and 40 minutes on load. Find the rating of the motor on the above load cycle. What would be 10 minutes rating if above temperature limit is not exceeded, assuming losses proportional to square of load. 8

2. a) Explain the multiquadrant operation of a motor driving a hoist load. 6
   b) Describe the nature and classification of load torques. Also discuss components of load torque. 8

3. a) Explain the closed loop speed control scheme of D.C. drive for control below and above base speed with block diagram. 7

   b) Describe control techniques of chopper fed D.C. drives for multiquadrant operation with diagrams. 7

4. Explain transient analysis of starting and dynamic braking of separately excited motor with armature control. Also draw dynamic equivalent circuits. 14

5. a) Draw and explain slip controlled PWM inverter drive with regenerative braking (Induction motor). 7
   b) Draw and explain VSI fed induction motor drive. List the draw backs of stepped wave inverter over PWM inverter. 7

6. a) Give the closed loop speed control of load commutated inverter synchronous motor drive. 7
   b) Explain the measures for energy conservation in electrical drives. 7

7. Explain the construction and operation of switched reluctance motor SRM. Describe its operating modes and draw driving circuits also. 14

8. Write short notes on following (any two) : 14
   a) Hysteresis synchronous motor
   b) Synchronous reluctance motor
   c) Brushless DC motor.
   d) Solar and Battery powered drives

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