MEPS-302(B) ELECTIVE

M.E./M.Tech. III Semester

Examination, December 2012

Advanced Electrical Drives

Time : Three Hours

Maximum Marks : 70

Note: Attempt any five questions. All questions carry equal marks.

1. a) Explain the concept of multi quod soft operation of an Electric Drive with a suitable example.

   b) Discuss the factors that are responsible for the choice of an Electrical Drives for a particular application.

2. a) Discuss the different components of load torques.

   b) Compare D.C. series motor and separately excited D.C. motor in terms of performance characteristics.

3. a) Discuss the different breaking techniques of D.C. Drives.

   b) Explain with relevant mathematical expressions and characteristics, the working of full converter fed D.C. Drives.

4. a) Explain with the help of block diagram the closed loop control of D.C. drives.

   b) A separately excited d.c. motor, operating from a single phase half controlled bridge at a speed of 1400 rpm, has an input voltage of 330 sin 314 t and a back emf of 80V. The SCR's are fired symmetrically at $\alpha = 30^0$. In every half cycle and armature resistance is 4Ω. Calculate I_a (average) and motor torque.

5. a) Discuss the different speed control methods of induction motor drive.

   b) Explain the operation of Induction motor drive when subjected to unbalanced supply voltages.

6. Discuss the construction, working and application area of following synchronous motor drives.

   i) Synchronous reluctance motor.

   ii) Hysteresis synchronous motor.

   iii) Permanent market synchronous motor drive.

7. a) Discuss the operation of brushless D.C. motor drive.

   b) Explain the construction and working of switched reluctance motor drives.

8. Write short notes on any two of the following :

   i) Solar and battery powered drives.

   ii) Traction drives.

   iii) Breaking of Induction motor drives.

   iv) Synchronous motor variable speed drives.

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