Total No. of Questions :8] *[Total No. of Printed Pages :1*

Roll No .....

MEPE - 201

M.E./M.Tech., II Semester Examination, June 2016

Solid State Controllers of Drives

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Design a control scheme for a microprocessor controlled Class C chopper feeding a separately excited DC motor for motoring and breaking action.
   b) Draw circuits of different type of choppers.

2. a) Explain the advantages of microcontroller based electric drives when compared to dedicated hardware control technology.
   b) Explain the application areas and functions of microprocessor drive technology.

3. a) Draw the block diagram of direct torque control of a VSI fed squirrel Cage induction motor drive and state necessary equations used in modelling.
   b) Explain merits and demerits of vector control method over V/F control method for A.C. machines.

4. a) Explain the working principle of sine PWM. Using single phase full bridge inverter.
   b) Draw the circuit diagram of a three phase current driven inverter using power MOSFET and explain its working.

5. a) Explain slip recovery scheme used for controlling speed of slip ring induction motor.
   b) Explain control scheme for switch reluctance motor.

6. a) Discuss the programmable controllers used for three phase synchronous motor drives for specific applications.
   b) Explain CSI and VSI fed PWM controlled synchronous motors.

7. a) Explain how a microprocessor must interface with power electronics control to make a drive system.
   b) Permanent magnet brushless AC motor drives.

8. a) Power quality improvement in AC drives.
   b) A single phase fully controlled bridge converter feeds power to a dc motor having back emf 80 V and a resistance of 0.5 ohm and very large inductance with an input supply of 230 V, 50 Hz.

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