B.E. (Elect.) VII (Old) Electrical Drives and Control. 207

ws May 07-92

Con. 2261-07. (OLD COURSE) ND-7997

(3 Hours) [Total Marks : 100

Library MASTER

N.B. : (1) Question No. **1** is **compulsory.**
(2) Attempt any **four** out of remaining **six** questions.
(3) Assume any **suitable** data wherever required but **justify** the **same.**

1. (a) Explain the block diagram of an electrical drive. What are the functions of power modulator ? 10
   (b) What is steady state stability ? Explain with examples. 10

2. (a) What is load equalisation and why it is required ? 10
   (b) Explain the different drive circuits for stepper motors. 10

3. (a) A 200 V, 10 A, 1900 rpm shunt motor has the armature and field resistance of 0·5 and 400 ohms respectively. It drives a load whose torque is constant at rated torque. Calculate motor speed if the source voltage drops to 170 V. 10
   (b) Explain with block diagram the operation of Phase–Locked Loop (PLL) control. 10

4. Write short notes on :
   (a) Types of load torques 6
   (b) Dynamic Braking of DC motor 8
   (c) Textile mills. 6

5. (a) Explain four quadrant operation of electrical drive. 10
   (b) A 220 V, 1000 rpm, 100 A d.c. seperately excited motor has an armature resistance of 0·05 ohm. It is braked by plugging from an initial speed of 1050 rpm. Calculate : 10
      (i) Resistance to be placed in armature circuit to limit braking current to twice the full load valve.
      (ii) Braking torque.

6. (a) Name the different methods of speed control of three phase induction motor and explain any two. 10
   (b) The 10 minute rating of a motor used in a domestic mixer is 200 watts. The heating time constant is 40 min. and the maximum efficiency occures at full load (continuous). Determine the continuous rating. Derive the formula used. 10

7. Write short notes on : 20
   (a) Advantages of Electrical drives
   (b) Selection of motor power rating
   (c) Static Scherbius drive