

Code No: 157EM**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech IV Year I Semester Examinations, February/March-2022****ELECTRIC DRIVES AND CONTROL****(Civil Engineering)****Time: 3 Hours****Max. Marks: 75****Answer any Five Questions
All Questions Carry Equal Marks**

- 1.a) Elucidate choice of Electric drives.
b) Discuss various losses in Electric drives. [8+7]
- 2.a) What are the Electric motors used in Electric drives. Discuss.
b) Discuss power modulators used in electric drives. [8+7]
- 3.a) Obtain the fundamental torque equation of electric drive.
b) What is meant by load equalization? Discuss. [8+7]
- 4.a) Explain the dynamic equation of a synchronous motor during hunting and determine the expressions for natural frequency of oscillation and damped frequency of oscillation.
b) Determine the natural frequency of oscillation of a 50 Hz, 20 pole, 1000 kW, 6.6 kV synchronous motor having a total inertia of 2600 kg.m² and a torque angle of 30° when the power developed is 1000 kW. If the damping power coefficient is 2.5 kW/elec. degree, determine the damped frequency of oscillation. [9+6]
- 5.a) Discuss Speed control of DC motors using single phase half controlled rectifiers
b) Explain the various starting methods of DC Motor Drives. [8+7]
6. Discuss the operation of three phases fully controlled converter fed DC motor drives with relevant waveforms. [15]
7. Discuss speed control using pole changing, stator voltage control for induction motor drives. [15]
- 8.a) Explain the procedure of measurement of Energy conservation in Electric drives.
b) Discuss maintenance of motors in electric drives. [8+7]

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