Code No: 157EM

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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

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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.m^2 and a torque angle of 30^0 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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