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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

M.Tech I Year I Semester Regular Examinations Jan 2020

ELECTRIC DRIVES SYSTEMS

(Power Electronics)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1 Explain briefly about Fundamentals of torque equation. **12M**

OR

2 What are the different types of torque that involved in drive system **12M**

UNIT-II

3 Explain about three phase to two phase transformation in Induction Motor. **12M**

OR

4 What are the types of closed loop speed control schemes are used in multi motor drives? **12M**

UNIT-III

5 State and explain different methods of speed sensing. **12M**

OR

6 Explain the Principles of DC motor speed control. **12M**

UNIT-IV

7 An induction motor has the following parameters 5 HP=3-phase, 60hz, 4-pole, star connected $R_s=0.277\Omega$, $R_r=0.183\Omega$, $L_m=0.0538H$, $L_r=0.056H$. Effective stator to rotor turns ratio, $a=3$. The motor is supplied with its rated and balanced voltages. Find the q and d axes steady state voltages and currents and phase currents I_{qr} , I_{dr} , I_a and I_β , when the rotor is locked. Use the stator –reference frames model of the induction machine. **12M**

OR

8 Discuss the operation of dc traction drive employing PWM and Load Commutated inverter. **12M**

UNIT-V

9 Explain briefly about nature of load in electric traction. **12M**

OR

10 An electric train weighing 500 tonne climbs up-gradient with $G=8$ and following speed-time curve: **12M**

(i) Uniform acceleration of 2.5 Km/hr/sec for 60 sec

(ii) Constant speed for 5 min

(iii)Coasting for 3 min

(iv) Dynamic braking at 3 kmphps to reset.

The resistance is 25N/tonne, rotational inertia effect 10% and combined efficiency of transmission and motor is 80%. Calculate the specific energy consumption.

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