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Reg. No: ⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year II Semester Supplementary Examinations December 2018
ELECTRICAL TECHNOLOGY
(Electronics & Communication Engineering)

Time: **3 hours**   Max. Marks: **60**

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

UNIT-I

1 A short shunt compound generator delivers a load current of 30 A at 220 V and has armature, series–field and shunt–field resistances of 0.05 Ω, 0.030 Ω and 200 Ω respectively. Calculate the induced e.m.f and the armature current. Allow 1.0 V per brush for contact drop.   12M

OR

2 Explain the characteristics of D.C generator.   12M

UNIT-II

3 a. Explain types of D.C motor.   6M
    b. A 250V,4 pole D.C shunt motor has two circuit armature winding with 500 conductors. The armature circuit resistance is 0.25 ohms, field resistance is 125 ohm and the flux per pole is 0.02Wb.Find the speed and torque developed if the motor draws 14A from the mains.   6M

OR

4 Explain any two methods of speed control of D.C shunt motor.   12M

UNIT-III

5 a. Define efficiency and voltage regulation of a transformer. Show how the power factor affects both of them.   6M
    b. Draw the phasor diagram of a single phase transformer for R and L load.   6M

OR

6 a. Explain the various losses and derive the condition for maximum efficiency of a transformer.   6M
    b. A 10KVA,2000/400V single phase transformer has the following data R1=5 Ω, X1=12 Ω, R2=0.2 Ω, X2=0.48 Ω. Determine the secondary terminal voltage at full load ,0.8 p.f lagging when the primary supply voltage is 2000V.   6M

UNIT-IV

7 a. Derive torque equation of 3-phase induction motor under running condition.   6M
    b. Derive condition for maximum torque under running condition   6M

OR

8 a. Explain the terms slip, slip speed, rotor frequency, rotor emf.   6M
    b. A 3-phase 50HZ,4 pole induction motor has a slip of 4% calculate   6M
       i) Speed of the motor.   ii) Frequency of rotor emf.

UNIT-V

9 Explain the theory of operation of a synchronous motor.   12M

OR

10 Explain the Synchronous impedance method for calculating the regulation of a three phase alternator.   12M

*** END ***