Code No: 154AE

R18

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year II Semester Examinations, August/September - 2021
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Common to CE, ME, MMT, MIE)

Time: 3 Hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1.a) Explain the KCL and KVL.
b) A circuit of three resistor 15Ω, 21Ω and 39Ω respectively joined in parallel is connected in series with fourth resistance. The whole circuit is applied with 60V and is found that the power dissipated in the 15Ω resistor is 36W. Determine the value of the fourth resistance and the total power dissipated in the circuit. [7+8]

2.a) Derive the relation between line and phase quantities of voltages and currents for a star connected system?
b) Define the R.M.S value and average value of an alternating quantity. [9+6]

3. What are the types of wires and cables? Explain. [15]

4.a) What are the important characteristics of batteries.
b) Explain the need of power factor improvement. [8+7]

5.a) Describe the working principle of a single-phase transformer.
b) A 4-pole, 300V d.c shunt generator has 720 wave connected conductors in its armature. The full load current is 50A and the flux per pole is 0.02Wb. The armature resistance is 0.3 ohms and the contact drop is 1V per brush. Calculate the full load speed of the motor. [8+7]

6.a) Derive torque equation in a D.C motor.
b) A 3-phase induction motor is wound for 4 poles and is supplied from 50 Hz systems. Calculate: i) the synchronous speed ii) the speed of the motor when slip is 4% and iii) the rotor current frequency when the motor runs at 600 r.p.m. [8+7]

7.a) Explain how a p-n junction is formed and state its properties under no bias, forward bias and reverse bias condition.
b) Explain the operation of center tapped full wave rectifier with neat diagram. [7+8]

8.a) With neat diagram explain the operation of p-n-p common emitter transistor.
b) Compare CB, CE and CC configurations of BJT. [8+7]

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