Code No : **20EE1T01**

R20

I B. TECH I SEMESTER REGULAR EXAMINATIONS, AUGUST - 2021
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Common to CSE, IT, CSM, AID, CSO and CIC)

Time : 3 Hours **Max. Marks : 70**

Note : Answer **ONE** question from each unit **(5 × 14 = 70 Marks)**

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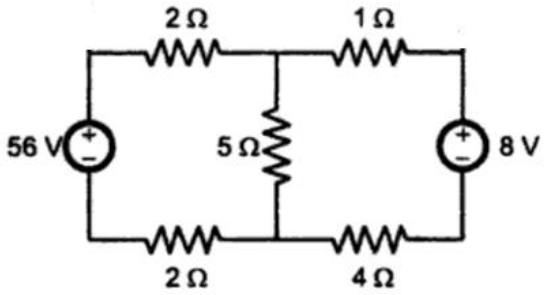
UNIT-I

1. a) State and explain ohm's law? and what are the limitations of ohm's law? [7M]

   b) Find current through 5 Ω resistor for the circuit shown below? [7M]



(OR)

2. a) Define and explain average value, RMS value. derive the expression for form factor of a sinusoidal wave [8M]

   b) obtain the power factor and the apparent power of a load whose impedance is Z = 60 + j40 ohms when the applied voltage is v(t) = 150 cos(377t + 10^o) V. [6M]

UNIT-II

3. a) Derive the EMF equation of DC generator [7M]

   b) Write the applications of DC shunt generator and DC series generator [7M]

(OR)

4. a) Derive an expression for the torque equation of a dc motor [7M]

   b) Explain the Swinburne's test to determine no-load losses of a dc machine [7M]

UNIT-III

5. a) Explain with sketches the constructional features of single phase transformer. [7M]

   b) List and explain various losses in a single phase transformer [7M]

(OR)

6. a) Explain the principal of operation of the 3-phase induction motor. [8M]

   b) What are the applications of three phase induction motor [6M]
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UNIT-IV

7. a) Discuss the operation of a PN junction diode and also explain its V-I characteristics [7M]

   b) Explain the differences between intrinsic and extrinsic semiconductors. [7M]

(OR)

8. a) How is Zener diode used as a voltage regulator? [6M]

   b) Explain the operation of half wave rectifier with the help of neat diagram. [8M]

UNIT-V

9. a) Explain the input and output characteristics of a transistor in CB configuration [7M]

   b) Explain the input and output characteristics of a transistor in CC configuration [7M]

(OR)

10. a) Explain how transistor can be used as an amplifier. [7M]

    b) Explain the operation of OPAMP as a non-inverting amplifier. [7M]

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