R13

BASIC ELECTRICAL & ELECTRONICS ENGINEERING
(Common to CSE & IT)

Time: 3 hours   Max. Marks: 70

Answer all the questions
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PART – A

UNIT – I

1 (a) Explain the star-delta transformation with the necessary equations.
   (b) A RLC circuit has a resistance of $25\ \Omega$ and an inductance of 64 mH and a capacitance of $80\ \mu F$ connected in series across 110 V, 50 Hz mains. Determine: (i) Impedance of the circuit. (ii) Current taken from the mains.

OR

2 Define and explain average value, RMS value, form factor and peak factor. Also derive the expression for form factor of a sinusoidal wave.

UNIT – II

3 (a) State and explain the maximum power transfer theorem.
   (b) Determine the admittance parameters of the T network shown in figure below.
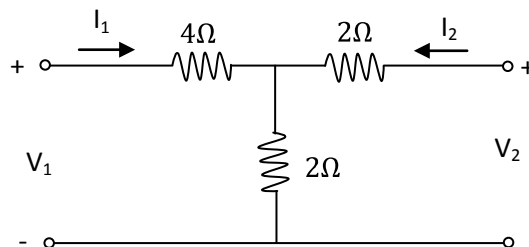
OR

4 (a) In the given circuit, find the current through the $10\ \Omega$ using superposition theorem.
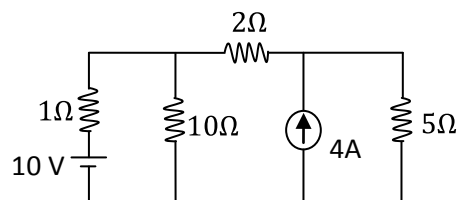
   (b) Derive the expression for the Z parameters in terms of Y parameters.

UNIT –III

5 (a) Derive the EMF equation of a DC generator.
   (b) Explain the principle of operation of 3-phase induction motor.

OR

6 (a) Explain the applications of DC motors.
   (b) Derive the torque equation of a 3-phase induction motor.

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PART – B

UNIT – I

7   (a)   Compare N-type and P-type semiconductor.
    (b)   With neat circuit diagram, explain the operation of half wave rectifier circuits.

OR

8   (a)   Define drift current.
    (b)   Write short notes on diode as switch and diode as rectifier.

UNIT – II

9   Explain the input and output characteristics of transistor in CE configuration.

OR

10 (a)   Compare Bipolar junction transistor and junction field effect transistor.
    (b)   Explain the operation of junction field effect transistor with suitable diagram.

UNIT – III

11 (a)   State the Barkhausen conditions for sinusoidal oscillation.
    (b)   Explain the operation of differentiator amplifier with a neat diagram.

OR

12 (a)   List out the classification of oscillators circuits.
    (b)   Write short notes on inverting and non-inverting amplifiers.

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