

Assignment

Paper Name: Electrical Circuit Analysis

UPC: 2222011203

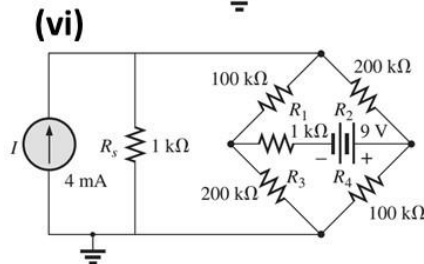
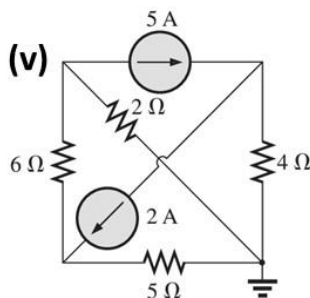
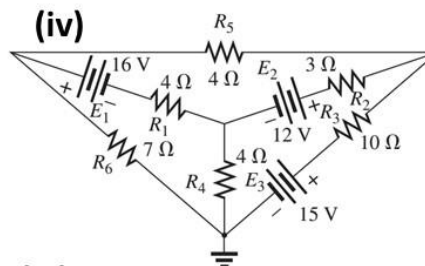
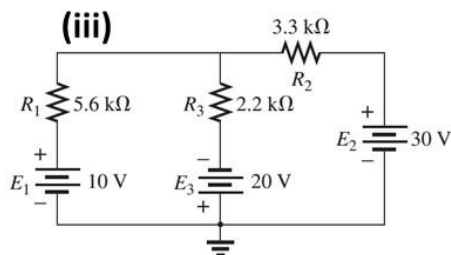
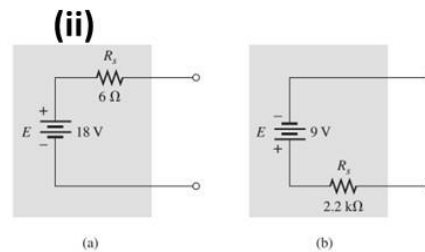
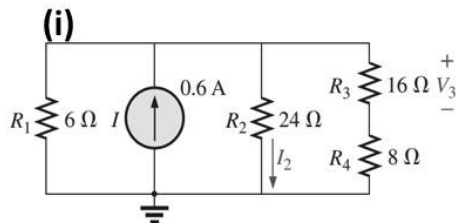
B.Sc. (H) Physics, Session: 2023-24

Semester -II

Due date: 22/03/2024

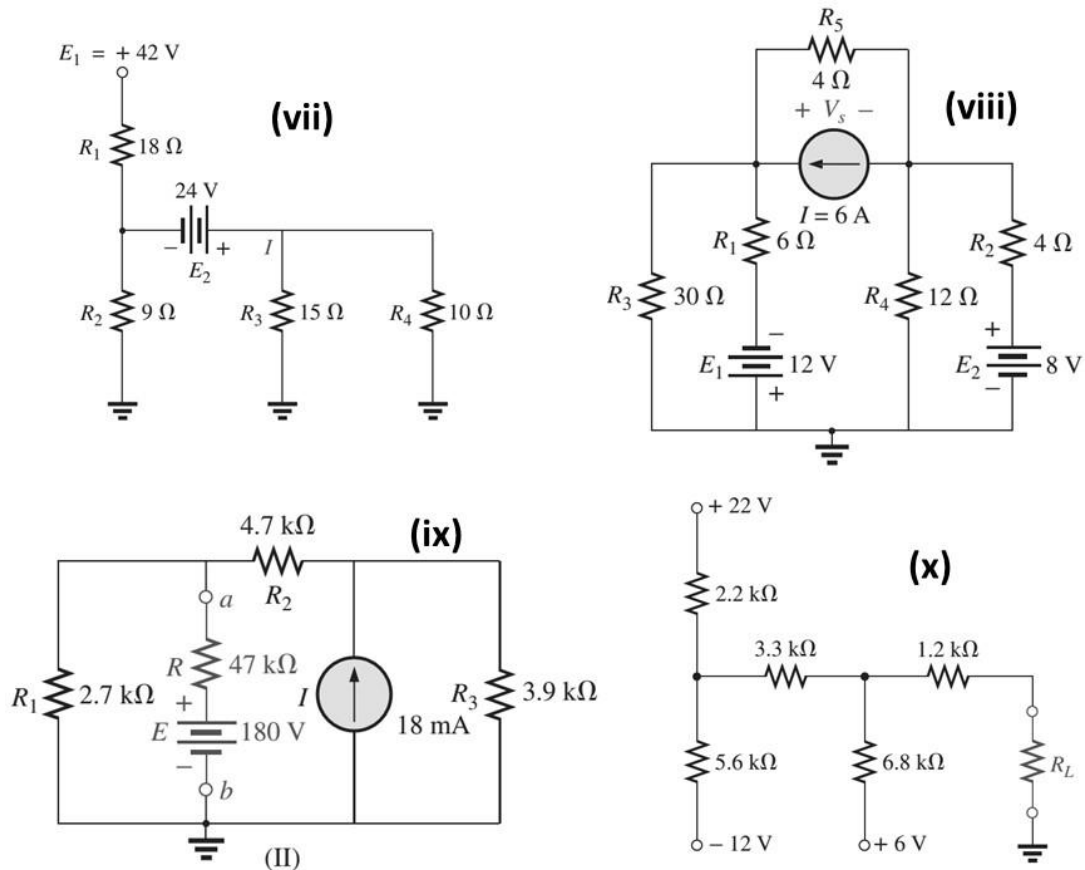
Questions

1. Find voltage V_3 and current I_2 for the network in Fig. (i).
2. Convert the voltage sources in Fig. (ii) to current sources.
3. Find the current through each resistor for the networks in Fig. (iii), using mesh analysis.
4. Write the mesh equations for the networks in Fig. (iv). Using determinants, solve for the loop currents in each network. Use clockwise mesh currents.
5. Determine the nodal voltages for the networks in Fig. (v). Also, find the voltage across each current source.
6. Write the nodal equations for the bridge configuration in Fig. (vi).



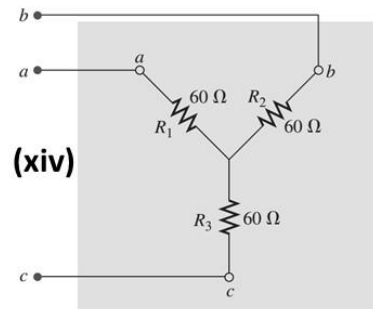
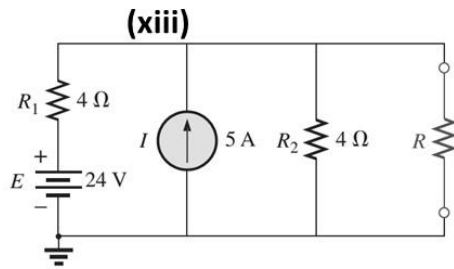
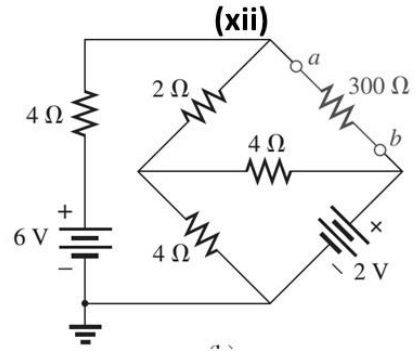
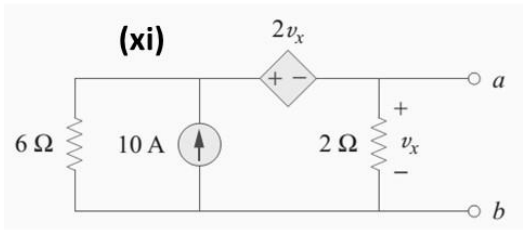
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7. Find the current I through the 24 V source in Fig. (vii), using superposition principle.
8. Find the voltage across the 6 A source in Fig. (viii), using superposition principle.
9. Find the Thévenin equivalent circuit for the portions of the networks in Fig. (ix) external to points a and b.
10. For the network in Fig. (x) find the Thévenin equivalent circuit for the network external to the load resistor R_L .



11. Find the Norton equivalent circuit of the circuit in Fig. (xi) at terminals a-b.
12. Find the Norton equivalent circuit for the portions of the networks in Fig. (xii) external to branch a-b.
13. (a) For the network in Fig. (xiii), determine the value of R for maximum power to R .
(b) Determine the maximum power to R .
14. Convert the Y in Fig. (xiv) to a Δ .

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