**Roll No:** | | | | | | | | | | | |

# PRESIDENCY UNIVERSITY

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Bengaluru

**Mid Term Examinations - October 2026**

**Date:** 07/10/2026 **Time:** 02:00 PM - 03:30 PM

**Course Code:** EEE2500 **Course Name:** Network Theory

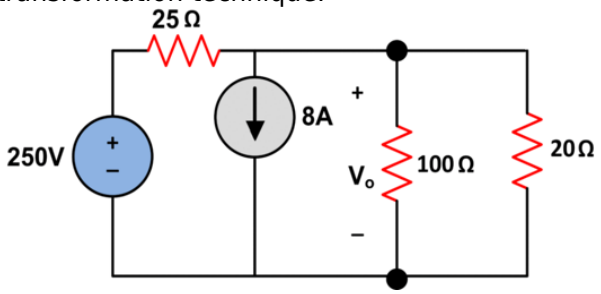
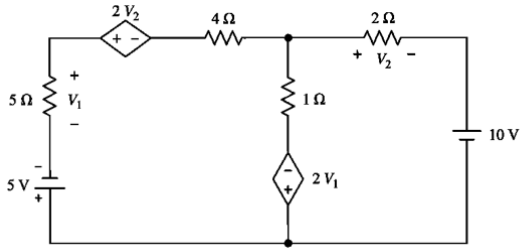
**Semester:** Third Semester **Max. Marks:** 50 **Weightage:** 50%

| CO - Levels | CO1 | CO2 |
|---|---|---|
| Marks | 26 | 64 |

**PART A: Answer Following Questions. 10 M**

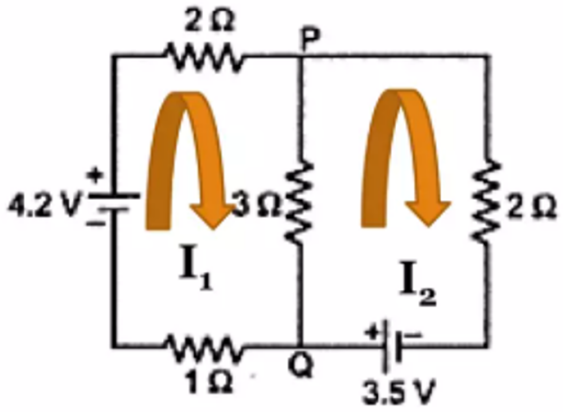
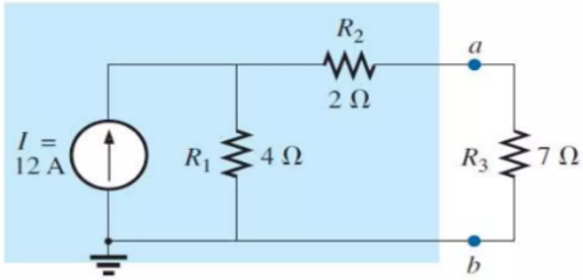
| Q.N. | Questions | M | CO | BT |
|---|---|---|---|---|
| 1 | Explain what happens when an ideal current source is replaced by an open circuit. | 2 | CO1 | BT2 |
| 2 | Distinguish between an ideal voltage source and a practical voltage source in terms of internal resistance and terminal voltage. | 2 | CO1 | BT2 |
| 3 | Define active and passive circuit elements and provide one example of each. | 2 | CO1 | BT1 |
| 4 | State the complete impedance matching condition required for maximum power transfer in an AC network, and specify what happens to the real power if the load is purely reactive (RL = 0). | 2 | CO2 | BT1 |
| 5 | State the primary conditions that a network must satisfy to be replaced by a Thevenin equivalent voltage source and series impedance (Vth and Zth). | 2 | CO2 | BT1 |

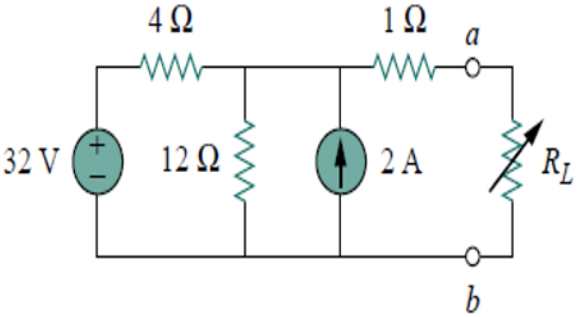
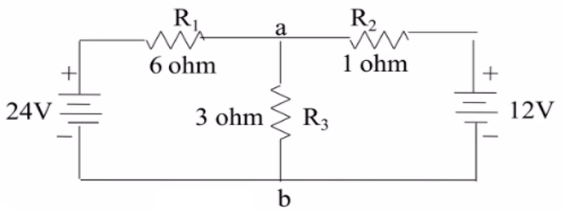
**PART B : Answer Any 1 Following Questions. 10 M**

| Q.N. | Questions | M | CO | BT |
|---|---|---|---|---|
| 6 | Calculate the voltage shown in below Fig.1. by applying the source transformation technique.<br><br><br>Fig.1 | 10 | CO1 | BT3 |
| 7 | Apply mesh analysis to determine the currents in each mesh of the circuit shown in Fig. 2.<br><br><br>Fig.2 | 10 | CO1 | BT3 |

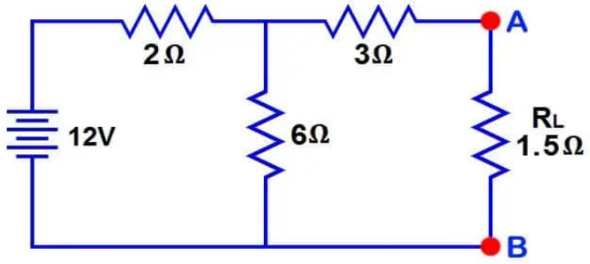
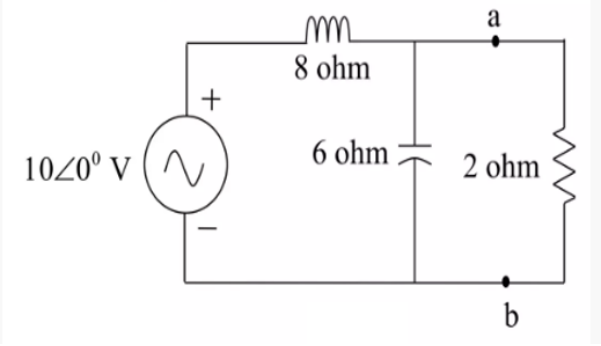


PTO (Please Turn Over)

| PART C: Answer Any 1 Following Questions. 10 M | | | | |
|---|---|---|---|---|
| **Q.N.** | **Questions** | **M** | **CO** | **BT** |
| 8 | Using the Superposition Theorem, calculate the current through branch PQ for the circuit shown in Fig. 3 and cross verify the same.<br><br><br>Fig.3 | 10 | CO2 | BT3 |
| 9 | Apply Thévenin's theorem to obtain the equivalent circuit of the network in the shaded area shown in Fig. 4, and write the Thévenin theorem statement.<br><br><br>Fig.4 | 10 | CO2 | BT3 |

| PART D: Answer Any 1 Following Questions. 10 M | | | | |
|---|---|---|---|---|
| **Q.N.** | **Questions** | **M** | **CO** | **BT** |
| 10 | Calculate the Thévenin equivalent circuit of the network to the left of terminals a–b in the circuit shown in Fig. 5 using Thévenin's theorem.<br><br><br>Fig. 5 | 10 | CO2 | BT3 |
| 11 | Calculate the current through the 3 Ω resistor in the network shown in Fig. 6 using Norton's theorem.<br><br><br>Fig.6 | 10 | CO2 | BT3 |

| PART E: Answer Any 1 Following Questions. 10 M |
|---|

| Q.N. | Questions | M | CO | BT |
|---|---|---|---|---|
| 12 | Calculate RN, IN, the load current, and the load voltage of the circuit shown in Fig.7 using Norton's theorem.<br><br><br>Fig.7 | 10 | CO2 | BT3 |
| 13 | Calculate the Thévenin equivalent circuit, load impedance for maximum power transfer, and maximum power delivered to the load for the network shown in Fig.8.<br><br><br>Fig.8 | 10 | CO2 | BT3 |