International Islamic University Chittagong (IIUC)

Department of Computer and Communication Engineering

Final Examination

Program: B.Sc. Engg. (CCE) | **Semester: Spring 2022**
Course Code: CCE – 1103 | **Course Title: Basic Electrical Engineering**
Total Marks: 50 | **Time: 2 Hours 30 Minutes**

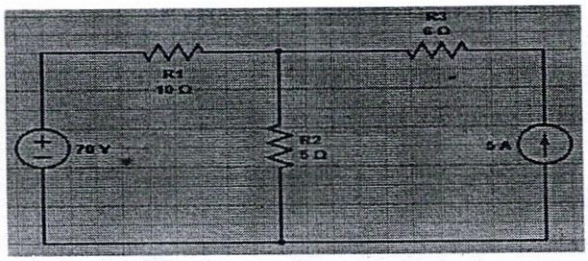
Instructions:

1. Attempt 2 questions from part A and 3 questions from part B.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

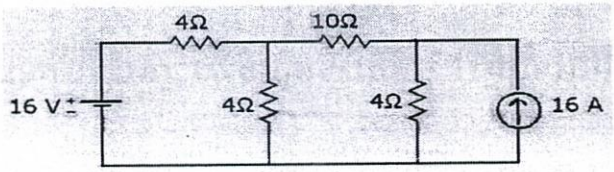
Part A

[Answer any two questions from following]

Q1. **(a)** Calculate current flowing through each resistor and also calculate node voltage for the network. **5** **CLO – 2**

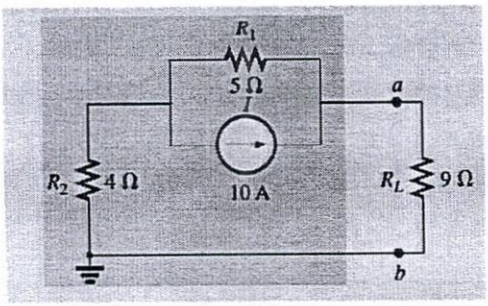


(b) Find the current through 10 Ω resistance in the given network by using superposition theorem. **5** **CLO – 2**

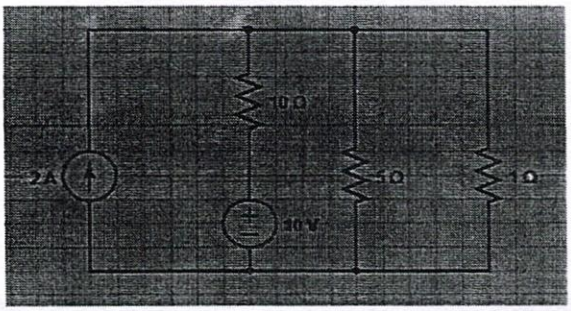


Q2. **(a)** Point out the differences between Thevenin's Theorem and Norton's Theorem. **2** **CLO – 2**

(b) Find the Norton equivalent circuit for the network external to the 9 Ω resistor in Figure. **4** **CLO – 2**



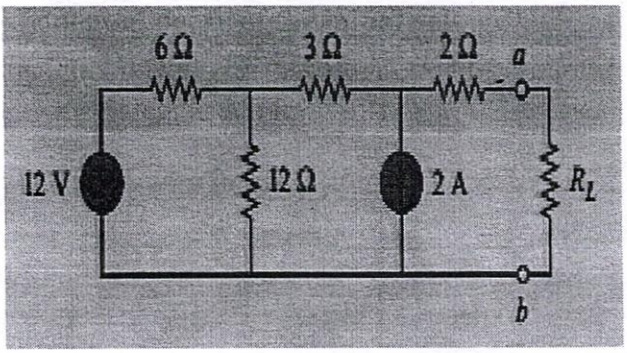
(c) In the circuit of figure, find the power loss in the 1Ω resistor by Thevenin's Theorem. 4 CLO – 2



Q3. (a) "Capacitor acts as an open circuit and Inductor acts as a short circuit in DC" justify the statement. 3 CLO – 1

(b) State Maximum Power Transfer Theorem and derive an expression for P_{max}. 3 CLO – 2

(c) Find the value of R_L for maximum power transfer in the circuit of Figure. Find the maximum power. 4 CLO – 2



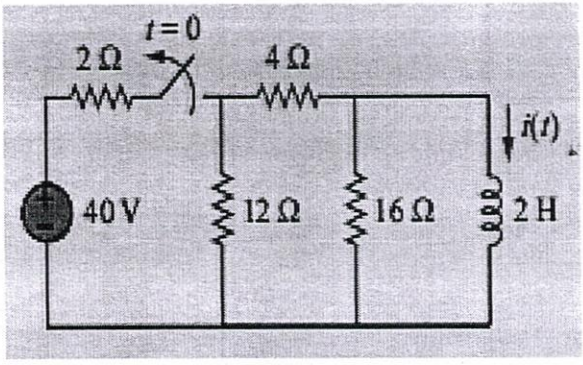
Part B

[Answer any three questions from the following]

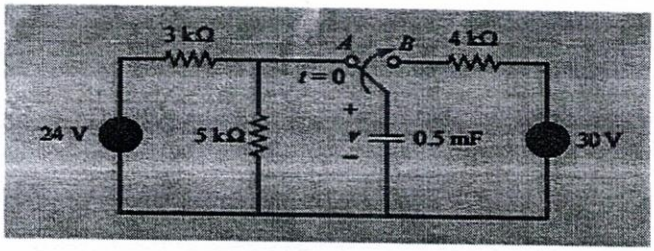
Q4. (a) Point out why First order circuits are named so. 2 CLO – 1

(b) Justify the statement with proper derivation - **"Voltage response of the RC circuit is an exponential decay of the initial voltage".** 4 CLO – 2

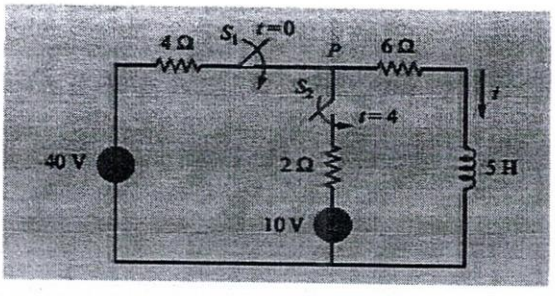
(c) The switch in the circuit of Figure has been closed for a long time. At t = 0, the switch is opened. Calculate i(t) for t >0. 4 CLO – 2



Q5. **(a)** The switch in Figure has been in position A for a long time. At t = 0, the switch moves to B. Determine v(t) for t >0 and calculate its value at t = 1 s and 4 s. **5 CLO – 2**



(b) At t = 0, switch 1 in Figure is closed, and switch 2 is closed 4 s later. Find i(t) for t >0. Calculate i for t = 2 s and t = 5 s. **5 CLO – 2**

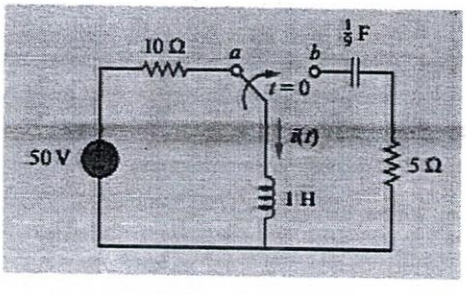


Q6. **(a)** Define: Magnetic Flux, Permeability and Reluctance. **3 CLO – 1**

(b) Explain the equivalent Ohm's law of Magnetic Circuit. **3 CLO – 1**

(c) Explain Hysteresis curve with proper figure. **4 CLO – 2**

Q7. **(a)** The circuit in Figure has reached steady state at t = 0⁻. If the make before-break switch moves to position b at t = 0, calculate i(t) for t >0. **5 CLO – 2**



(b) Find v(t) for t >0 in the RLC circuit of the Figure. **5 CLO – 2**