Indian Institute of Information Technology Design and Manufacturing, Kancheepuram
Department of Electronics and Communication Engineering
Quiz 1 – September 2023

Course: Electrical Circuits for Engineers   **Course Code:** EC1000

Date: 20/09/2023 (Duration 1 hour)   **Total Marks:** 20
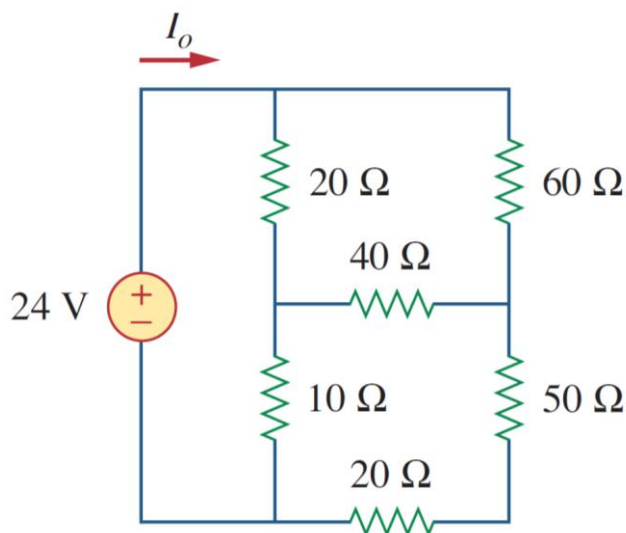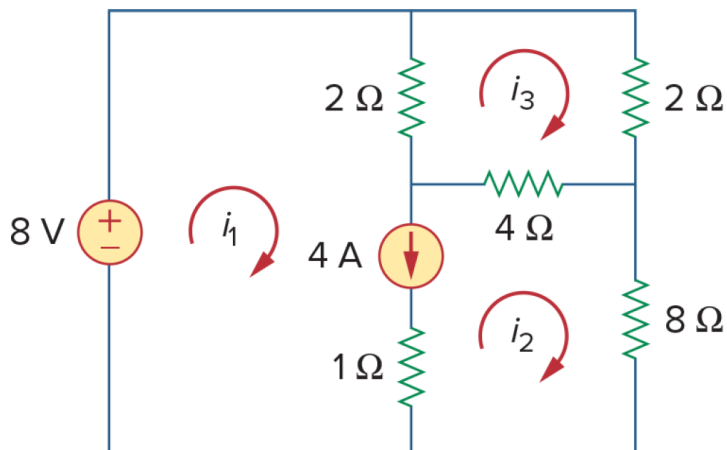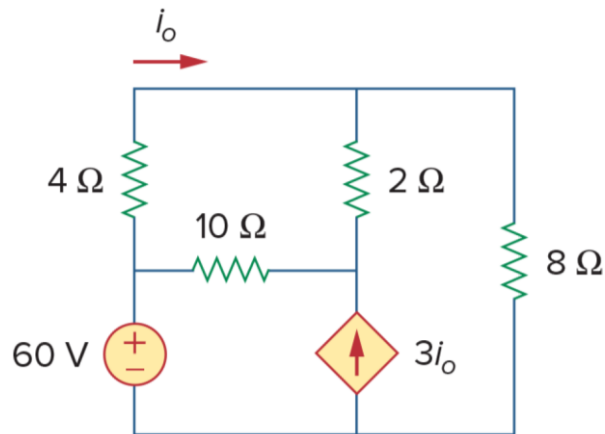
Note: Answer all the questions in sequence

1. (a). A 600-W TV receiver is turned on for 4 h with nobody watching it. If electricity costs 10 rupees per unit, how much money is wasted? **(1 mark)**

    (b). A flashlight battery has a rating of 0.8 ampere-hours (Ah) and a lifetime of 10 hours. (i) How much current can it deliver? (ii) How much power can it give if its terminal voltage is 6 V? (iii) How much energy is stored in the battery in Wh? **(2 marks)**

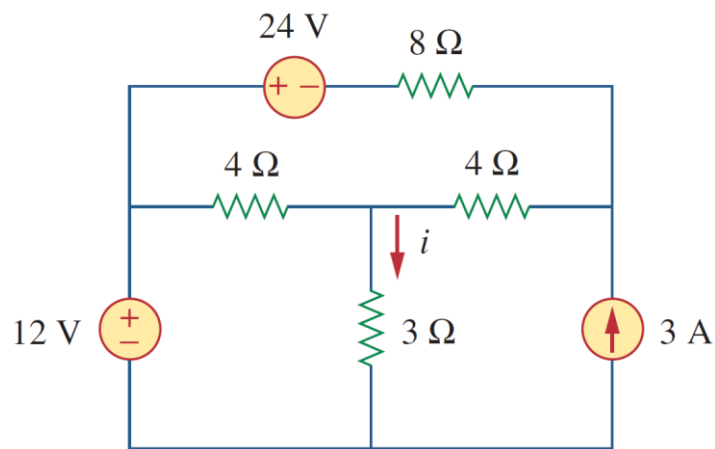2. Determine R_{eq} and I_o in the below circuit **(3 marks)**

3. Use mesh analysis to determine i_1, i_2, and i_3 in the following circuit. **(4 marks)**
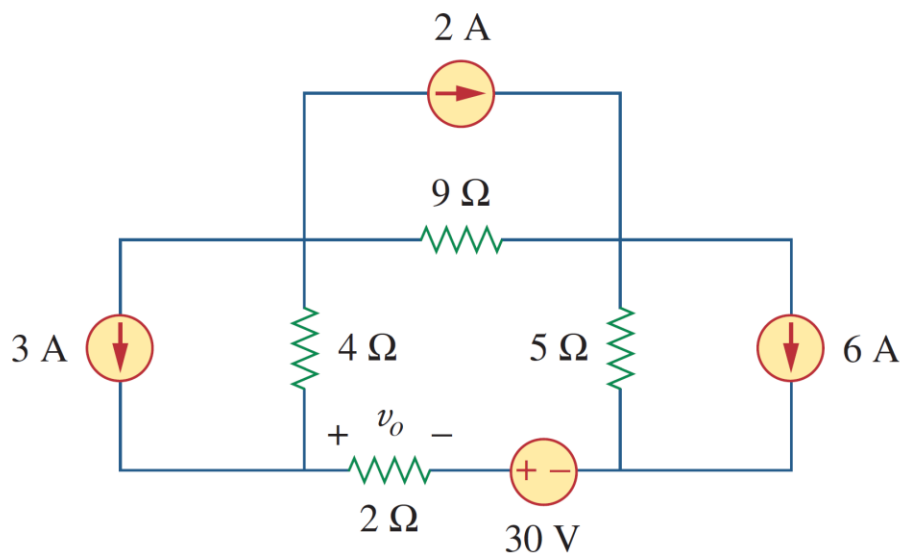
4. Using nodal analysis, find current i_o in the following circuit. **(4 marks)**

i_o

4 Ω   10 Ω   2 Ω

8 Ω

60 V (+ −)   3i_o

5. For the circuit in Figure below, use the superposition theorem to find i. **(4 marks)**

24 V   8 Ω

4 Ω   4 Ω

i

12 V (+ −)   3 Ω   3 A

6. Obtain v_o in the circuit of figure using source transformation. **(2 marks)**

2 A

9 Ω

3 A   4 Ω   5 Ω   6 A

+ v_o −

2 Ω   30 V

*********************Best Wishes*********************