United International University **(UIU)**

Dept. of Computer Science & Engineering **(CSE)**

MID Exam, Trimester: Spring 2024

Course Code: CSE 113/EEE 2113**; Course Title:** Electrical Circuits

Total Marks: 30**; Duration:** 1 hour 30 min

Any examinee found adopting unfair means would be expelled from the trimester/ program as per UIU disciplinary rules.

Question 1: Answer all the questions. (8 Marks)

Answer the following questions for the circuit shown in **Figure 1**: [4+4]

i) The current shown in **Figure 1** is flowing through a 5Ω wire. Now, draw the charge, q vs. time graph for this current considering the initial charge in the wire is 1C at t=0s.

ii) Draw the power absorbed by this wire vs. time graph.

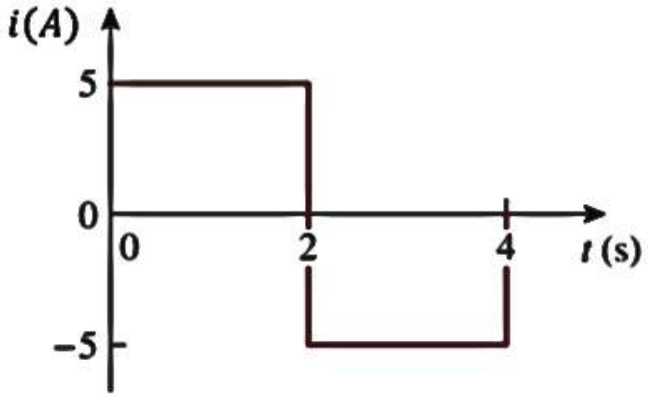

Figure 1

Question 2: Answer all the questions. (6 Marks)

For the circuit shown in **Figure 2**, answer the following questions: [3+3]

i) **Write** the KVL equations for the Loops, L1 and L2.

ii) **Calculate** the values of **Vx** and **Iy**.

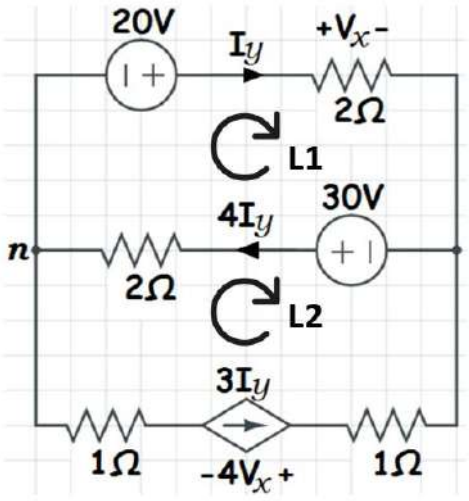

Figure 2.

Question 3: Answer all the questions (8 Marks)

Answer the following questions for the circuit shown in **Figure 3 (a-b)**: [4+4]

i) If R_{eq} = 10 Ω for the circuit shown in **Figure 3(a),** then find the value of **R**.

ii) Figure out the values of v_1, v_2 in the circuit shown in **Figure 3(b)**.

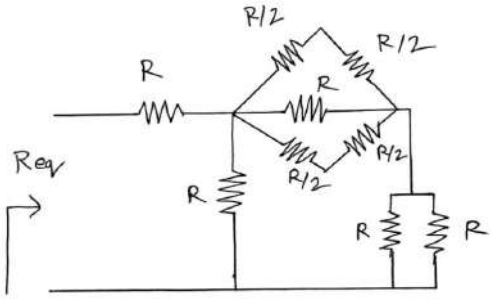

Figure 3a

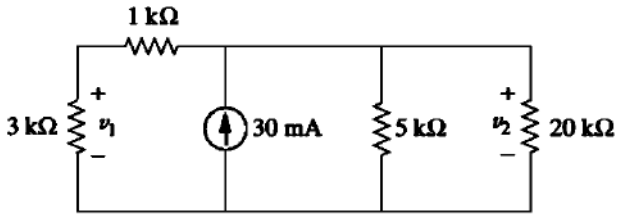

Figure 3b

Question 4: Answer all the questions. (8 Marks)

Answer the following questions for the circuit shown in **Figure 4 (a-b)**: [4+4]

i) Find the current, i , and the voltage, Vo in **Figure 4a** using mesh analysis.

ii) Using nodal analysis in **Figure 4b**, find the values of v_1 and v_2.

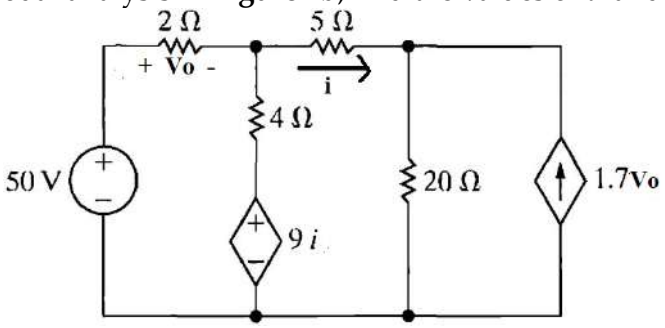

Figure 4a.

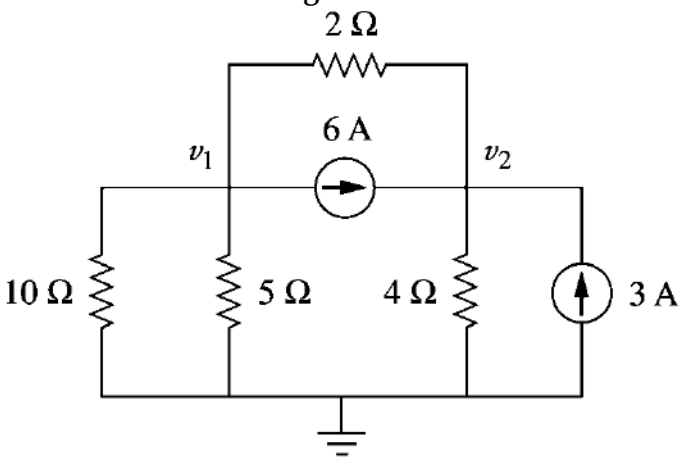

Figure 4b.