United International University **(UIU)**

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

MID Exam, Trimester: Fall 2024

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

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

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)

The power delivered to an element is shown in **Figure 1**. Answer the following questions: [4+4] CO1

i) Determine the energy absorbed by this element from 0s to 12s.

ii) Draw the energy vs time graph for the element.

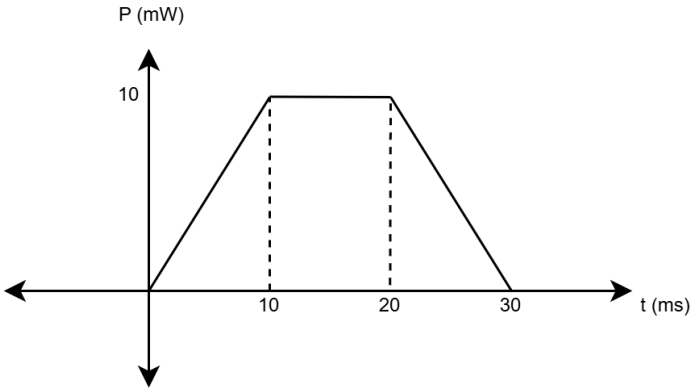

Figure 1

Question 2: Answer all the questions. (8 Marks)

i) Determine I and V_{ab} in the circuit shown in **Figure 2(a)** using KVL. [4+4] CO2

ii) Apply KCL in the circuit shown **Figure 2(a)** to determine the current through the resistors R_1 and R_3. Furthermore, using basic Ohm's law, calculate the value of R_1 and R_3.

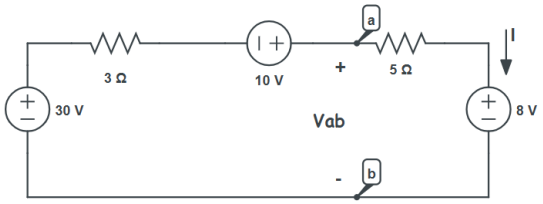

Figure 2(a)

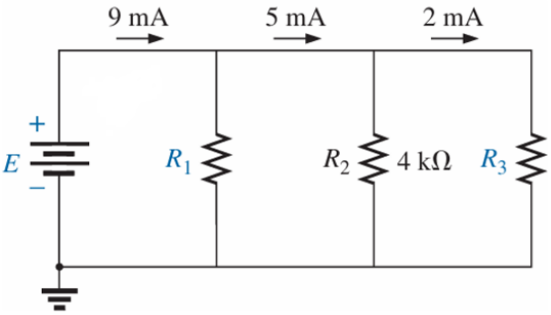

Figure 2(b)

Question 3: Answer all the questions (6 Marks)

Observe the circuit shown in **Figure 3** and answer the following questions: [2+1+3] CO1

i) Determine the circuit's equivalent resistance.

ii) Determine the power supplied by the 5A current source.

iii) Determine the voltage of the 5Ω resistor and the current of the 4Ω resistor using VDR, CDR.

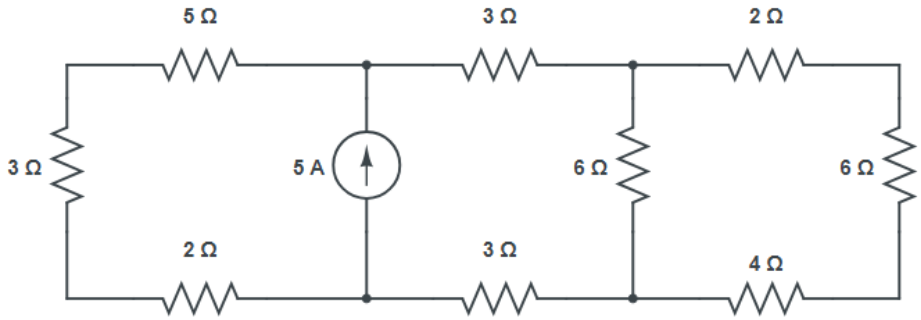

Figure 3

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

i) Determine the voltage across 25Ω and i_0 using mesh analysis for the circuit shown in **Figure 4(a)**. [4+4] CO2

ii) Determine i_0 and v_0 for the circuit shown in **Figure 4(b)** using node analysis.

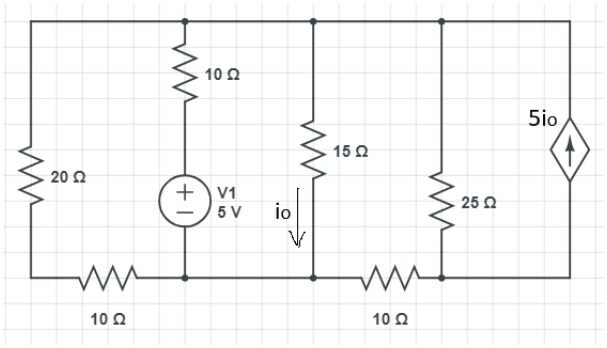

Figure 4(a)

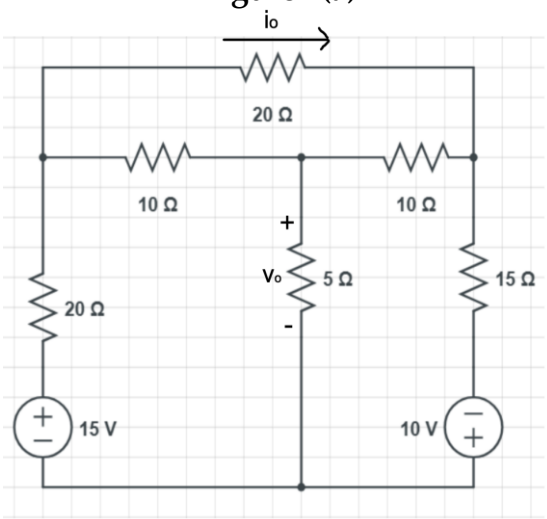

Figure 4(b)