



**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.

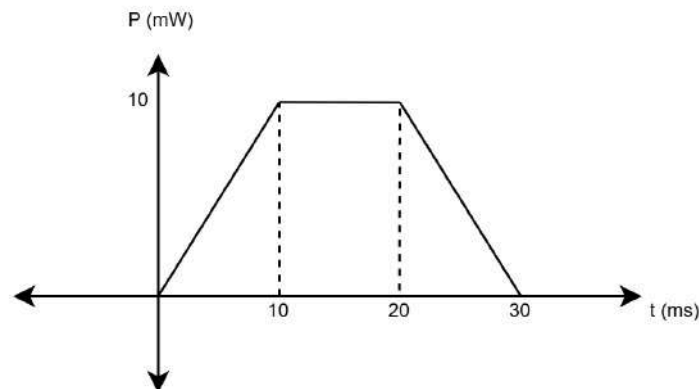
**Question 1: Answer all the questions.**

**(8 Marks)**

The power delivered to an element is shown in **Figure 1**. Answer the following questions:

[4+4]  
CO1

- i) Determine the total energy absorbed by this element from 0ms to 25ms.
- ii) Draw the energy vs time graph for the element from 0ms to 20ms.



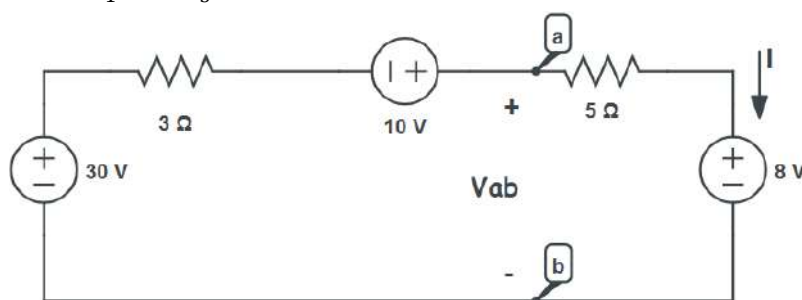
**Figure 1**

**Question 2: Answer all the questions.**

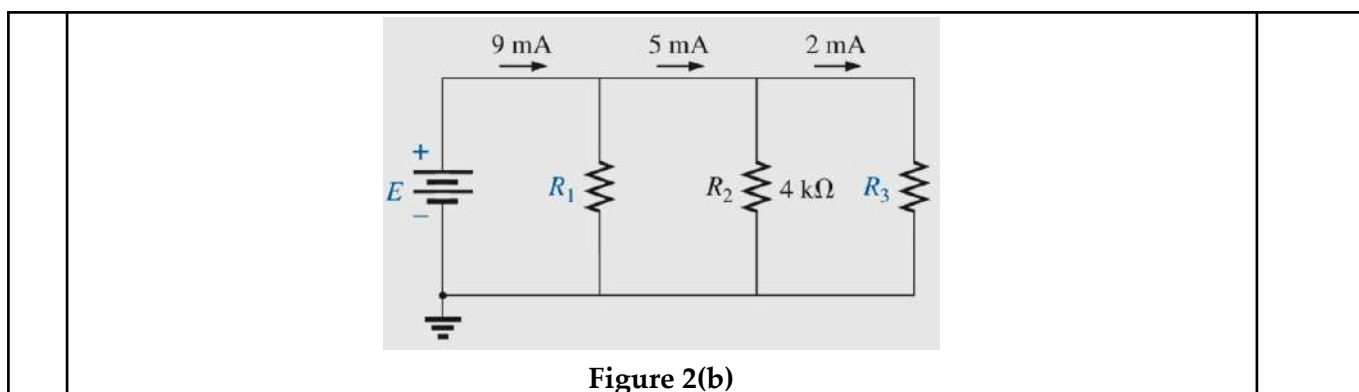
**(8 Marks)**

- i) Determine  $I$  and  $V_{ab}$  in the circuit shown in **Figure 2(a)** using KVL.
- ii) Apply KCL in the circuit shown **Figure 2(b)** 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  $R_3$ .

[4+4]  
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**Figure 2(a)**



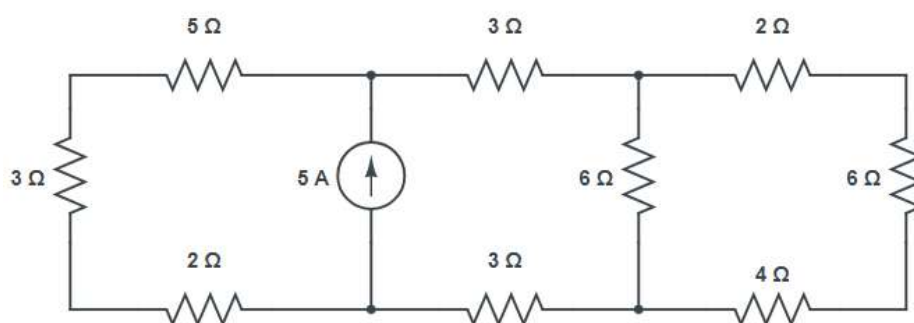
**Question 3: Answer all the questions**

**(6 Marks)**

Observe the circuit shown in **Figure 3** and answer the following questions:

- i) Determine the circuit's equivalent resistance.
- ii) Determine the voltage of the  $5\Omega$  resistor and the current of the  $4\Omega$  resistor using VDR, CDR.

[2+4]  
CO1



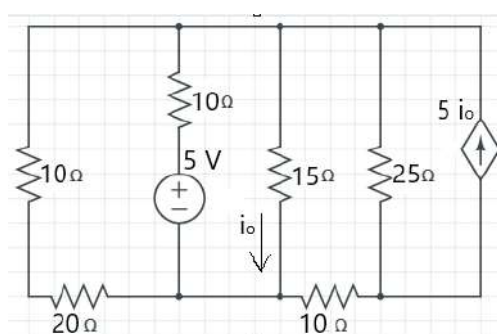
**Figure 3**

**Question 4: Answer all the questions.**

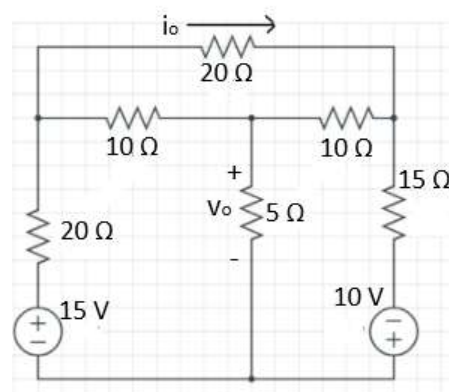
**(8 Marks)**

- i) Determine the current  $i_0$  using mesh analysis for the circuit shown in **Figure 4(a)**.
- ii) Determine  $i_0$  and  $v_0$  for the circuit shown in **Figure 4(b)** using node analysis.

[4+4]  
CO2



**Figure 4(a)**



**Figure 4(b)**