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International Islamic University Chittagong (IIUC)

Department of Computer and Communication Engineering

Midterm Examination

Program: **B.Sc. (Engg.)**
Course Code: **CCE–1103**
Total Marks: **30**

Semester: **Autumn 2022**
Course Title: **Basic Electrical Engineering**
Time: **1 Hours 30 Minutes**
Date: 27/09/2022

(i) Answer all the questions. The figures in the right-hand margin indicate full marks.
(ii) Course Learning Outcomes (CLOs) and Bloom's Levels are mentioned in additional Columns.

Course Learning Outcomes (CLOs) of the Questions

CLO1 Understand the concepts of basic Circuit element, basic circuit, and basic circuit Laws and magnetic circuit laws.

CLO2 Introduce series parallel circuit and different network theorem to analysis the circuits.

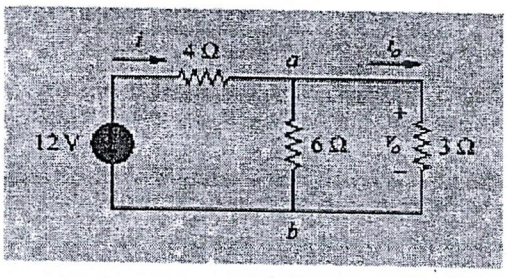
Bloom's Levels of the Questions

Letter Symbols	R	U	Ap	An	E	C
Meaning	Remember	Understand	Apply	Analyze	Evaluate	Create

Q1. a) What do you mean by **1volt** and **1ampere of current**? **CLO1 R 2**

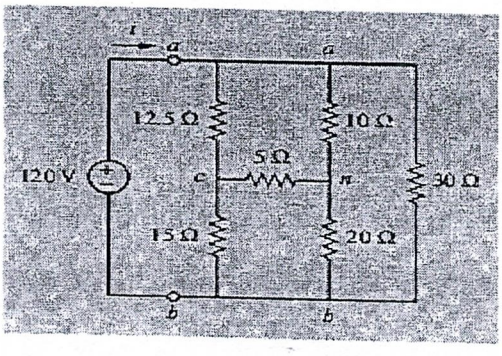
b) **"Every potential difference is not an emf and vice-versa"**—Justify the statement. **CLO1 E 4**

c) Find i_o **and** v_o in the circuit given below and also calculate the **power dissipated** in the 3-Ω resistor. **CLO1 Ap 4**

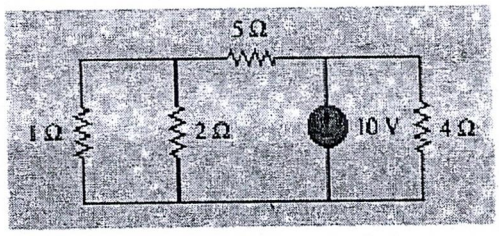


Q2. a) Derive an expression for equivalent resistances of a **star connected** network to transform into a **delta connected** network. **CLO1 Ap 5**

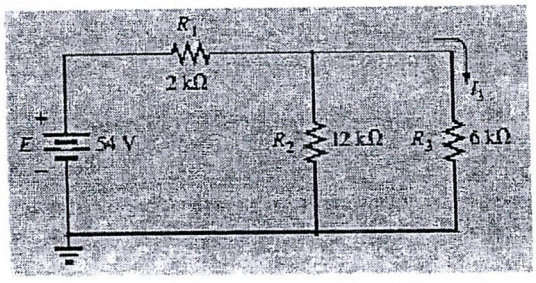
b) Using the expression found above in 'a', obtain the **equivalent resistance** R_{ab} for the circuit given below and use it to find current i. **CLO1 Ap 5**



Q3. a) Define – **Node, Branch and Loop** and determine how many branches and nodes does the given circuit have? CLO1 R, E 5

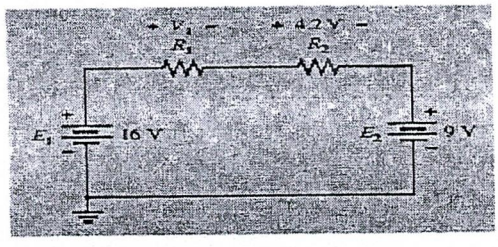


b) Find **current I_3** for the series-parallel network in the figure given below. CLO2 Ap 5



OR

Q3. a) State KCL and KVL and Use Kirchhoff's voltage law to determine the **unknown voltage** for the circuit given below - CLO1 R, E 5



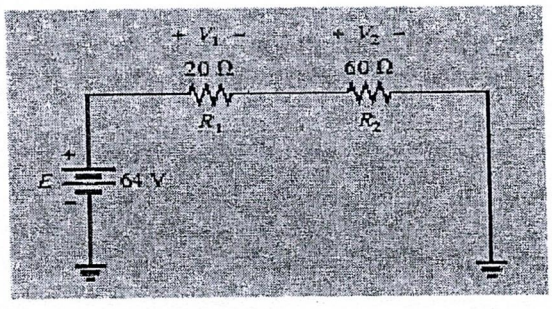
b) For the series circuit given below - CLO2 U, Ap 5

I. Without making any calculations, how much larger would you expect the voltage across R_2 to be compared to that across R_1?

II. Find the voltage V_1 using only the voltage divider rules.

III. Using the conclusion of part (I), determine the voltage across R_2.

IV. Use the voltage divider rule to determine the voltage across R_2, and compare your answer to your conclusion in part (III).



***** Good Luck *****