International Islamic University Chittagong (IIUC)

Department of Electronic and Telecommunication Engineering

Mid Term Examination

Program: **B.sc (Engg.)**
Course Code:**EEE 1121**
Total Marks: **30**

Semester: **Spring 2023**
Course Title:**Electrical Circuit I DC**
Time:**1 Hour 30 Minutes**

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

Course Outcomes (COs) of the Questions	
CLO1	Understand the concepts of basic Circuit element, basic circuit, and basiccircuit Laws and magnetic circuit laws.
CLO2	AnalyzeElectric Circuits and Components using suitable engineering analytical techniques.

Bloom's Levels of the Questions						
Letter Symbols	**R**	**U**	**Ap**	**An**	**E**	**C**
Meaning	Remember	Understand	Apply	Analyze	Evaluate	Create

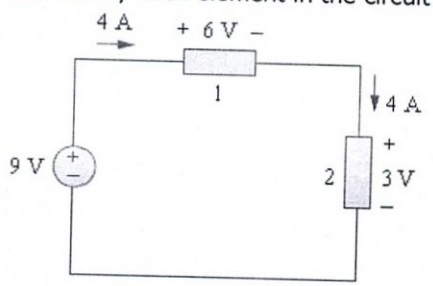
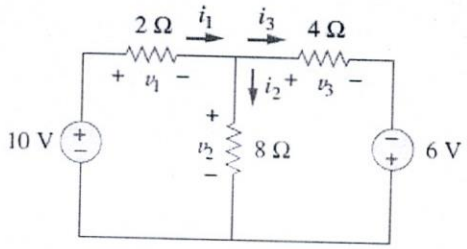
Q1.	**a)**	Differentiate between Active and Passive elements of an Electrical Circuit with examples. **OR** Explain the law of conservation of charge. How many electrons does a 1C charge include? Show the calculation.	**CLO1**	**U**	**3**
	b)	Defining Voltage, Current and Power theoretically and mathematically, derive a relationship between these three quantities.	**CLO1**	**U**	**4**
	c)	Determine the power absorbed by each element in the circuit in Fig.1.  Fig. 1	**CLO2**	**An**	**3**
Q2.	**a)**	According to ohm's law, how does resistance react with respect to change in voltage or current through the conductor? Justify.	**CLO1**	**U**	**3**
	b)	Find the voltages and currents in Fig. 2  	**CLO2**	**An**	**4**

		Fig. 2			
	c)	In the circuit of Fig. 3, calculate V1 and V2.	CLO2	An	3

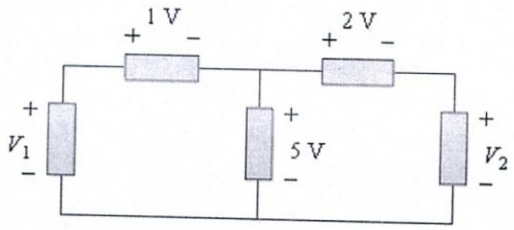


Fig. 3

OR

Find i1, i2, and i3 in Fig. 4.

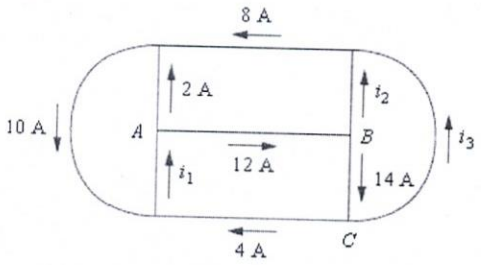


Fig. 4

Q3.	**a)**	Distinguish between Series and Parallel branches with respect to nodes. Can there be nodes where the connected branches are neither series nor parallel?	**CLO1**	**U**	**3**
	b)	Determine equivalent resistance between points a and b in the following circuit of Fig. 5.	**CLO2**	**An**	**4**

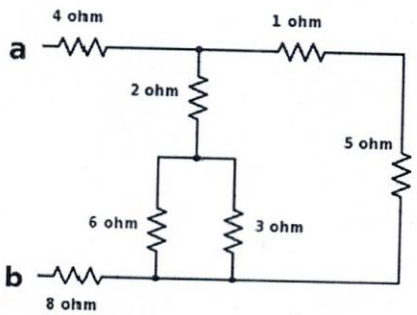


Fig. 5

OR

Determine equivalent resistance between points a and b in the following circuit of Fig. 6

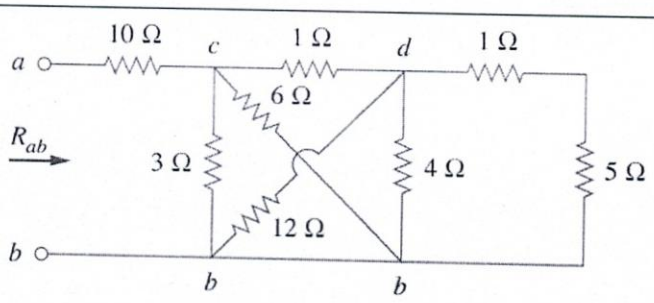


Fig. 6

	c)	Obtain the equivalent resistance in Terminal a-b of Fig. 7	CLO2	An	3

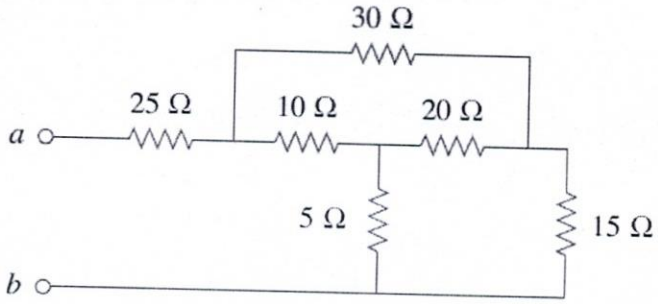


Fig. 7