UnitedInternationalUniversity

Department of Computer Science and Engineering

Course Code: EEE 2113 | Course name: Electrical Circuit

Fall 2020 | MID Examination | 20 marks | 60min

There are five (5) questions here. Question 1, 2 & 3 are mandatory. Answer any one from question 4 & 5.

Data Generation for example ID - 011xxyyzz

Last 6 digits will be used as data	**011**	R_{xx}	R_{yy}	R_{zz}
Example ID	011	xx	yy	zz
Your ID	011			

1. Obtain the equivalent resistance at the terminals a-b. All resistors have a value of R_{yy} **Ω**. [5]

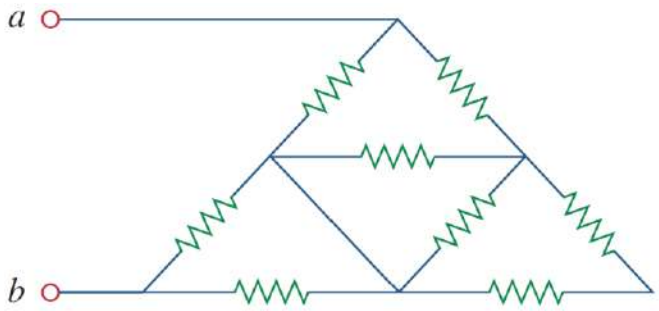

Figure for Q-1

2. Find V_1, V_2, I_1, I_2, I_3 & I_4 in the following circuit using voltage and current division rules. [5]

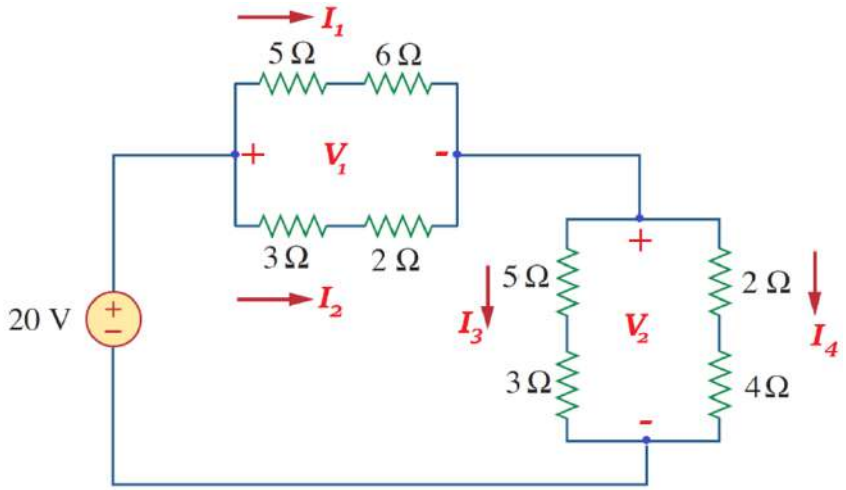

Figure for Q-2

3. Power consumed by a **10 Ω** resistor is given by, [5]

$$p(t) = 1000cos^2(\boldsymbol{R_{xx}}\pi t) \;\; W$$

(a) Derive the expression of current $\boldsymbol{i(t)}$ through this resistor.
(b) Derive an expression for charge $\boldsymbol{q(t)}$.
(c) Calculate the amount of charge flown though the resistor within 70 $\boldsymbol{ms}$.
(d) Write down the expression of voltage $\boldsymbol{v(t)}$ across the resistor.

4. Use mesh analysis method to find $\boldsymbol{v_0}$ in the following circuit. [5]

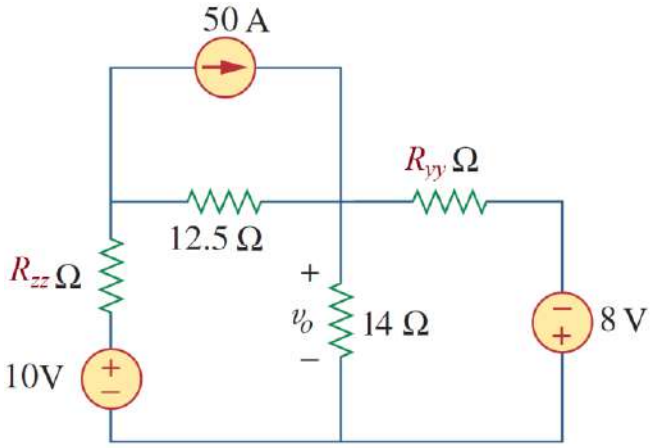

Figure for Q-4

5. Use node analysis method to obtain $\boldsymbol{v_0}$ in the following circuit. [5]

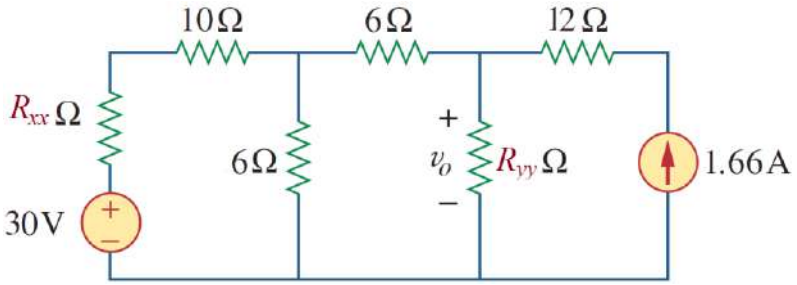

Figure for Q-5