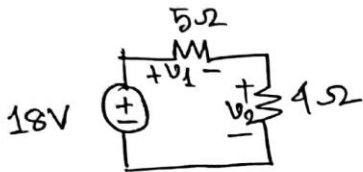
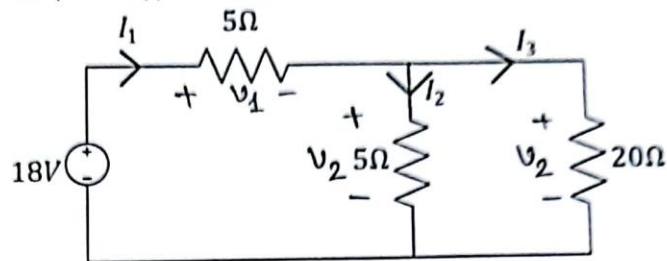




EAST WEST UNIVERSITY  
 Department of Computer Science and Engineering  
 Fall 2022 Semester  
 CSE209 Electrical Circuits, Section-3, Class Test-1  
 Marks: 10  
 Time: 25 minutes

ID#	Name

1. (a) Determine the unknown currents  $I_1, I_2, I_3$  for the following circuit. [3]  
 (b) Determine power supplied or absorbed by each element of the circuit. [3]



$$V_1 = \frac{18}{5+4} \times 5 = 10 \text{ V}$$

$$V_2 = \frac{18}{5+4} \times 4 = 8 \text{ V}$$

$$I_1 = \frac{V_1}{5} = \frac{10}{5} = 2 \text{ A}$$

$$I_2 = \frac{V_2}{5} = \frac{8}{5} = 1.6 \text{ A}$$

$$I_3 = \frac{V_2}{20} = \frac{8}{20} = 0.4 \text{ A}$$

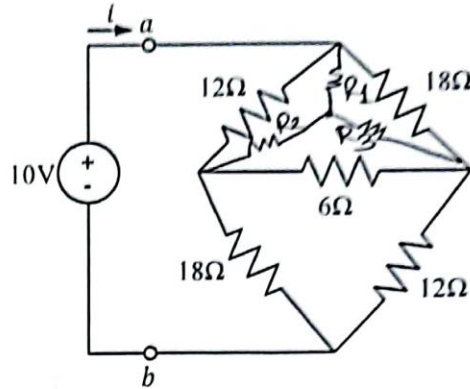
$$P_{18\text{V}} = -18 \times I_1 = -18 \times 2 = -36 \text{ W}$$

$$P_{5\Omega} = V_1 \times I_1 = 10 \times 2 = 20 \text{ W}$$

$$P_{5\Omega} = V_2 \times I_2 = 8 \times 1.6 = 12.8 \text{ W}$$

$$P_{20\Omega} = V_2 \times I_3 = 8 \times 0.4 = 3.2 \text{ W}$$

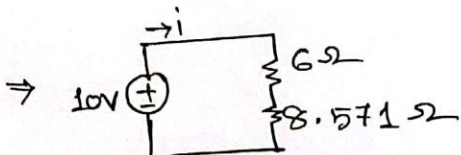
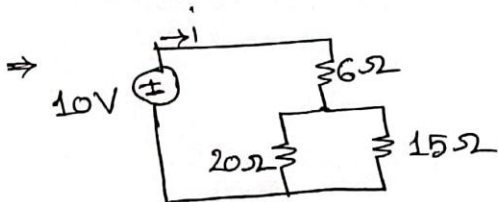
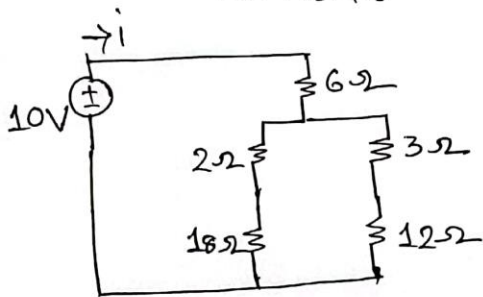
2. Determine  $R_{ab}$  and  $I$  in the following circuit. [4]



$$R_1 = \frac{12 \times 18}{12 + 18 + 6} = 6 \Omega$$

$$R_2 = \frac{12 \times 6}{12 + 18 + 6} = 2 \Omega$$

$$R_3 = \frac{18 \times 6}{12 + 18 + 6} = 3 \Omega$$



$$\therefore R_{ab} = 6 + 8.571 = 14.571 \Omega$$

$$i = \frac{10V}{R_{ab}} = \frac{10V}{14.571 \Omega} = 0.686 A$$