

Due Date: 11/11/2019

BASICS OF ELECTRICAL CIRCUITS
HOMEWORK - I

1. For the circuit given in Figure 1, obtain the equations to analysis the circuit using Chord (Line) current method such that unknown variables are i_1, i_2 and i_3 ($v_7 = \alpha i_4, v_4 = \beta i_6$).
2. For the circuit given in Figure 2, obtain the equations to analysis the circuit using Generalized Branch Voltages method such that unknown variables are v_1, v_3 and v_4 ($i_5 = Gv_6, i_6 = -Gv_5, i_7 = \alpha i_1$).
3. For the circuit given in Figure 3, obtain the equations to analysis the circuit using generalized (modified) Chord (Line) current method such that unknown variables are i_3, i_5 and i_7 ($V_6 = \gamma i_7, V_4 = \beta i_4, i_3 = \alpha v_4$).
4. For the circuit given in Figure 3, obtain the equations to analysis the circuit using Generalized Branch Voltages method such that unknown variables are v_2 and v_4 (the tree branches $\{1, 2, 4, 6\}$). ($V_6 = \gamma i_7, V_4 = \beta i_4, i_3 = \alpha v_4$).
5. For the circuit given in Figure 4, obtain the equations to analysis the circuit using generalized (modified) Chord (Line) current method ($i_6 = \gamma i_1, v_5 = \alpha i_2, v_4 = \beta i_7$).
6. For the circuit given in Figure 5, obtain the equations to analysis the circuit using Generalized Branch Voltages method ($i_8 = v_5, i_5 = \gamma v_8, v_6 = \alpha v_2$).

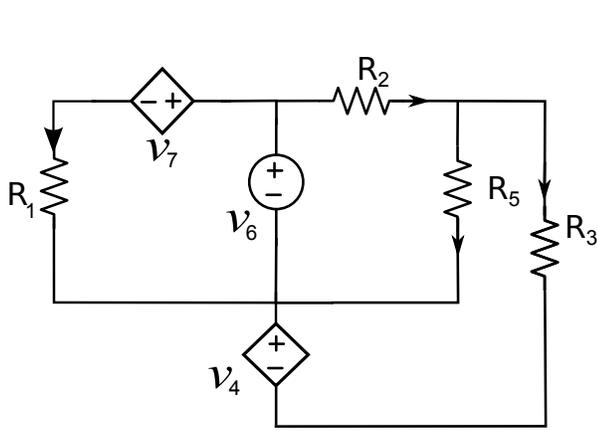


Figure 1

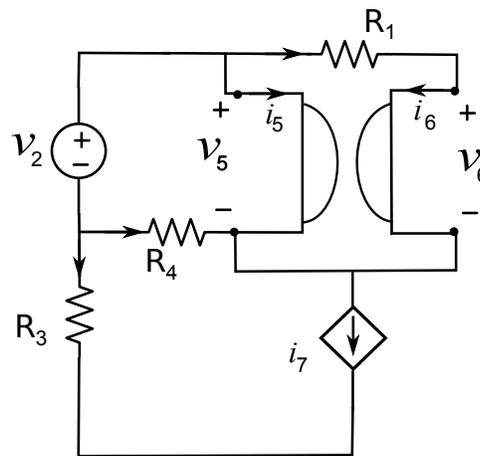


Figure 2

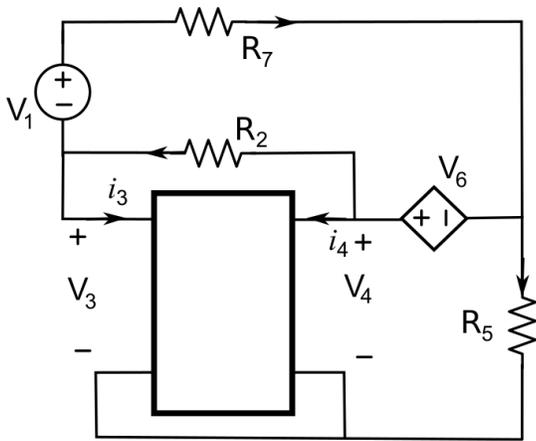


Figure 3

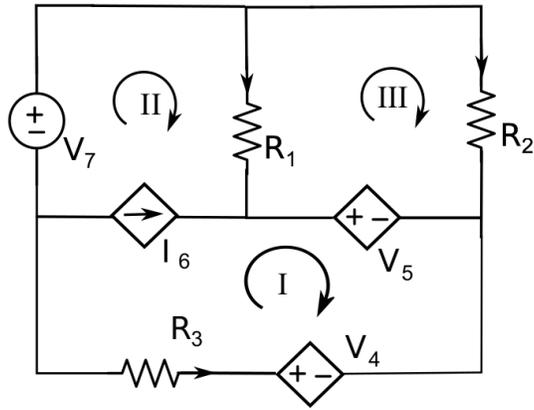


Figure 4

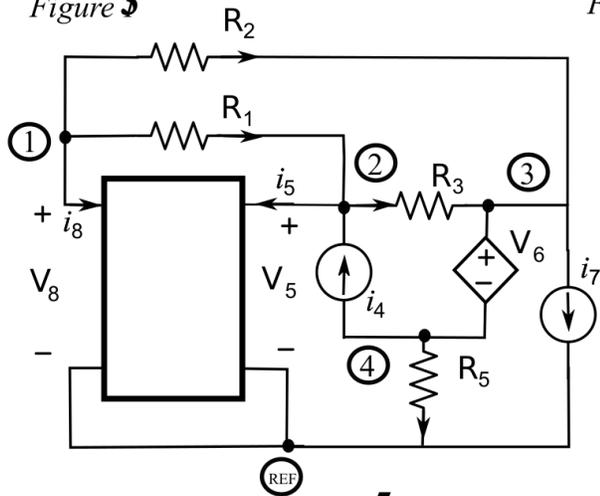


Figure 5