

BASICS OF ELECTRICAL CIRCUITS
Homework II

1. For the circuit given in Figure 1, obtain the equations to analysis the circuit using Generalized Branch Voltages method ($i_1 = \alpha v_2$, $i_3 = \beta v_1$).
2. For the circuit given in Figure 2, obtain the equations to analysis the circuit using generalized (modified) mesh current method ($v_6 = \gamma i_2$, $i_7 = \beta v_3$).
3. In figure 3, $i_k = 0.1 \sin(\omega t)$, $i_N = v_N^2$, $i_b = 2v_N$, $R_1 = 1\Omega$ find the approximate solutions of $V_N(t)$ for all operating points.
4. Find the Thevenin equivalent with respect to the terminals A and B for the circuit in Figure 4 ($v_5 = \alpha v_3$).
5. For the circuit given in Figure 5, obtain the equations to analysis the circuit using Generalized Nodal Voltage method ($i_6 = \alpha i_3$).
6. For the circuit given in Figure 6, obtain the equations to analysis the circuit using generalized (modified) mesh current method ($i_6 = \gamma i_1$, $v_5 = \alpha i_2$, $v_4 = \beta i_7$).

