112-1 ELECTRICAL ENGINEERING FUNDAMENTAL I

Name: Quiz 4 2023.11.2

Note: Show your mathematic works and make your calculation accuracy to at least the 4th digit behind the decimal point.

1. (30%) Use ***superposition*** to obtain i_o for the circuit of Fig. 1.

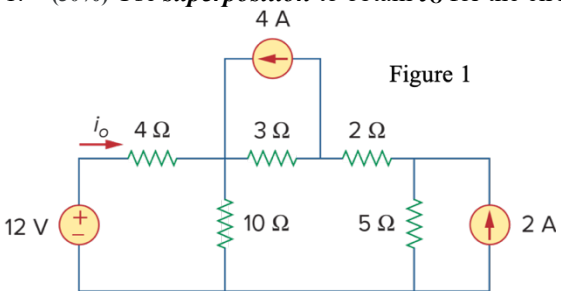

Figure 1

2. (20%) Use ***source transformation*** to obtain v_o in the circuit of Fig. 2. (Draw the equivalent circuit as you convert the source.)

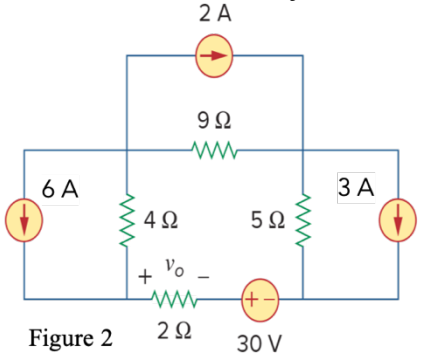

Figure 2

3. **(30%)** In the circuit of Fig. 3, use the ***Thevenin*** theorem to find the V_{Th} and R_{Th} across the terminal a-b.

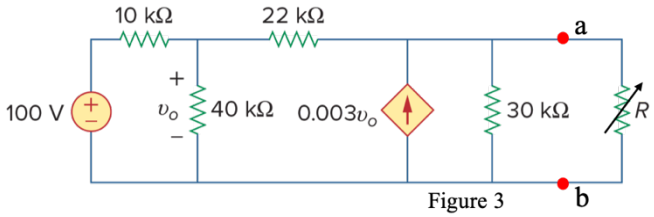

Figure 3

4. **(30%)** For the circuit in Fig. 4,
   (A) 10% Use the Norton theorem to obtain the Norton equivalent (find I_{SC} and R_N, and draw the Norton equivalent circuit)) at terminals a-b
   (B) 10% Convert the Norton equivalent circuit of (A) into its Thevenin's form.
   (C) 10% As the circuit is connected to a load, what is the maximal power that can be transferred to the load?

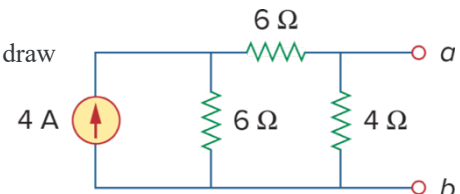

Figure 4