

班 別：電力電子
科 目：電路學

(總分為 100 分)

不得使用計算器

1. Calculate V_o and I_o in the circuit of Fig. P1 (10 %)

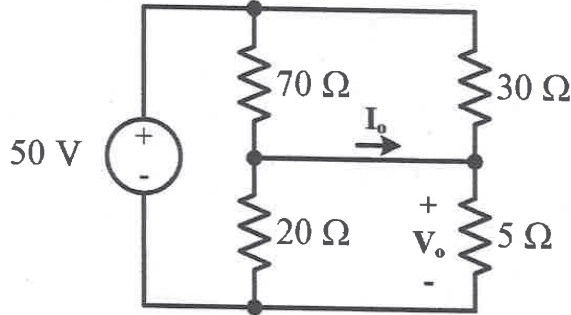


Fig. P1

2. Find the node voltages (V_1 through V_4) in the circuit of Fig. P2 (20 %)

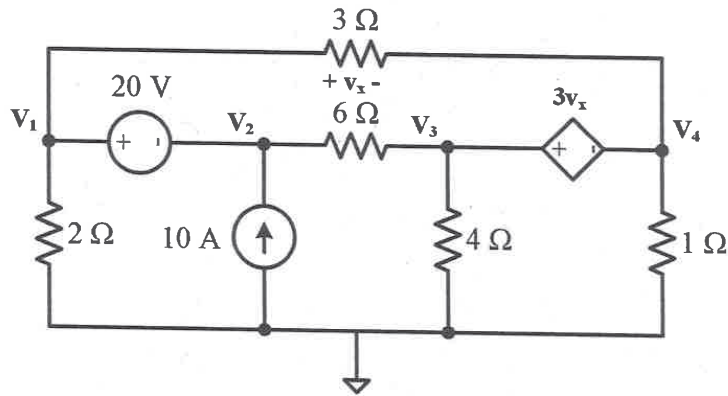


Fig. P2

3. Determine the Thevenin and Norton equivalents at terminals a-b of the circuit in Fig. P3 (20 %)

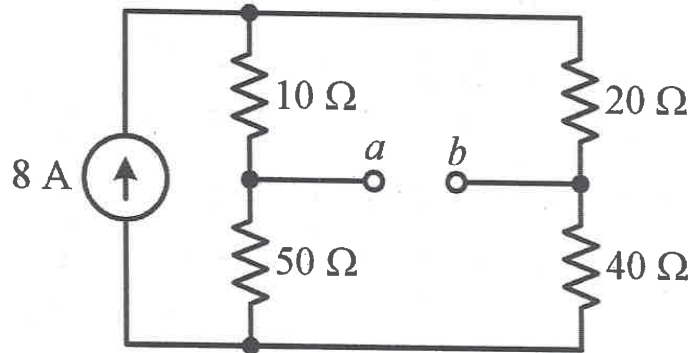


Fig. P3

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4. Fig. P4 shows a series RLC circuit. If the circuit is driven at resonance by a voltage source $v_s(t) = 50\cos(\omega t)$ mV, then calculate (a) resonant frequency $\omega_o = ?$ rad/s (5 %), (b) quality factor Q_S (5 %), (c) inductor voltage v_L (5 %), and (d) loop current i (5 %).

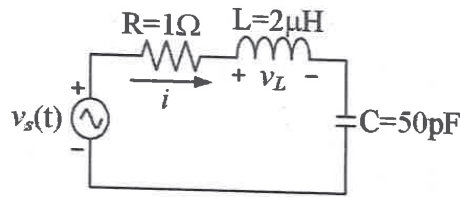


Fig. P4

5. Let the circuit in Fig. P5 have a voltage source $5\cos(3t)$ V. Please calculate Z , i_1 , and i_2 . (15%)

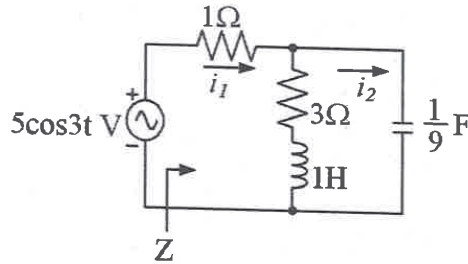


Fig. P5

6. Please calculate i_1 , i_2 , and v_1 as shown in Fig. P6. (15 %)

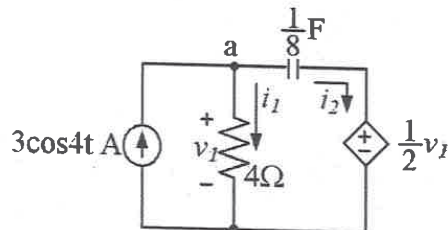


Fig. P6