

國立臺灣科技大學 110 年度產業碩士專班招生(秋)試題

專 班 別：電力電子
科 目：電路學

(總分為 100 分)

不得使用計算器

1. Given the circuit in Fig. P1, calculate the currents i_1 through i_4 . (15 %)

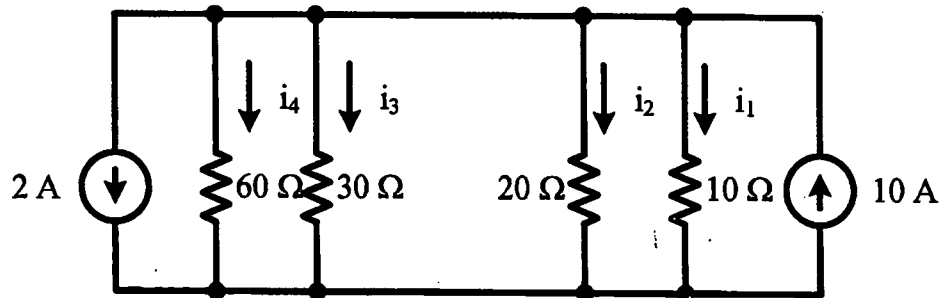


Fig. P1

2. Find v_o and i_o in the circuit in Fig. P2, (15 %)

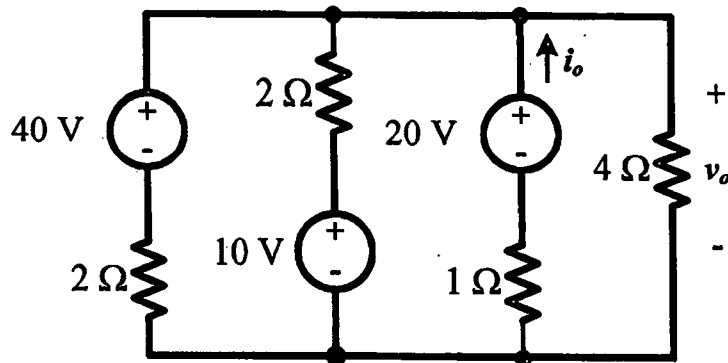


Fig. P2

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

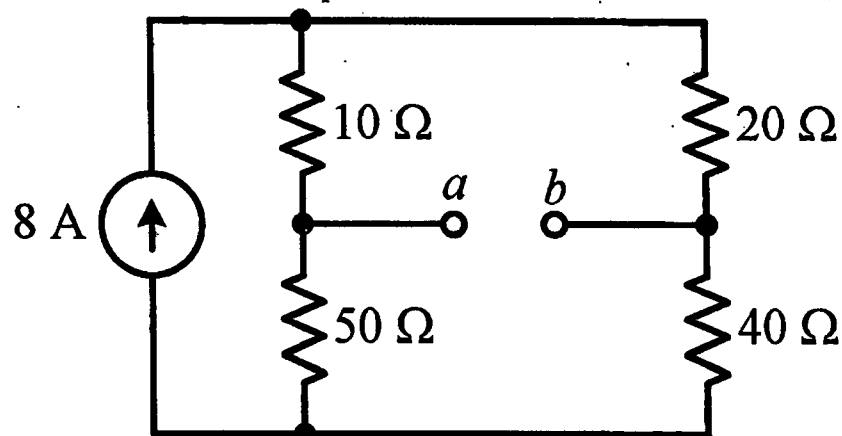


Fig. P3



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4. For the op amp circuit in Fig. P4, find $v_o(t)$ for $t > 0$, given that $v(0) = 3$ V. (15 %)

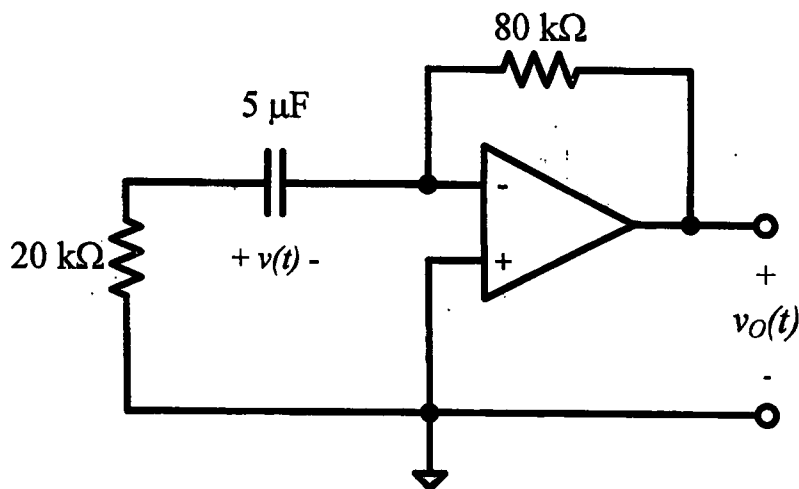


Fig. P4

5. The waveform shown in Fig. P5 is a half-wave rectified sine wave. Find the root mean square value and the amount of average power dissipated in a 10-Ω resistor. (15 %)

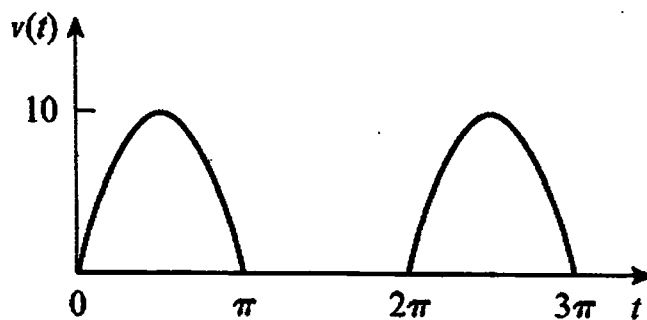


Fig. P5

6. It is desired to realize the transfer function

$$\frac{V_2(s)}{V_1(s)} = \frac{2s}{s^2 + 2s + 6}$$

using the circuit in Fig. P6. Choose $R = 1 \Omega$, find L and C . (20 %)

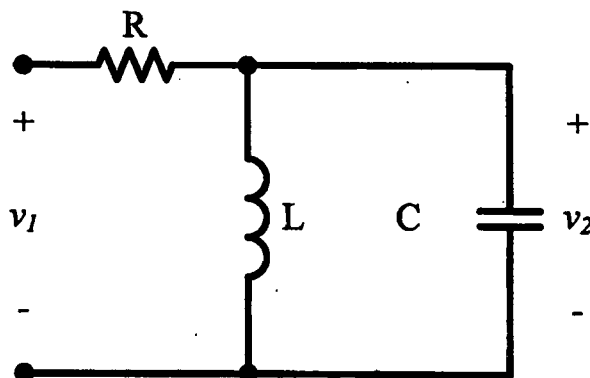


Fig. P6

