

國立台灣科技大學九十六學年度碩士班招生試題

系所組別：電機工程系碩士班甲組

科目：電路學

總分 100 分

1. For the two-ports shown in Fig.1, determine the Z parameters representation of the network. (15 %)

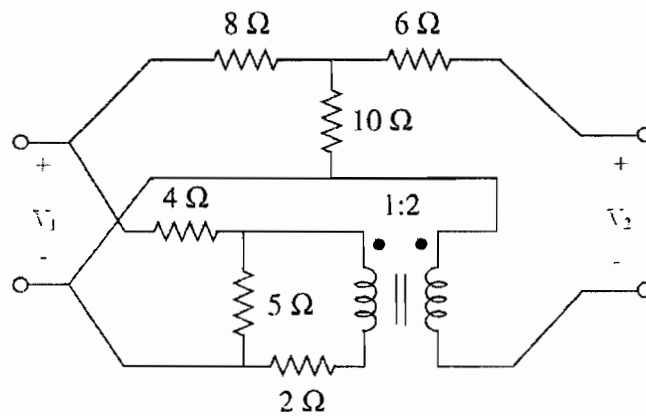


Fig.1

2. Assuming that the load impedance is to be purely resistive, what load should be connected to terminals a - b of the circuits in Fig.2 so that the maximum power is transferred to the load? (15 %)

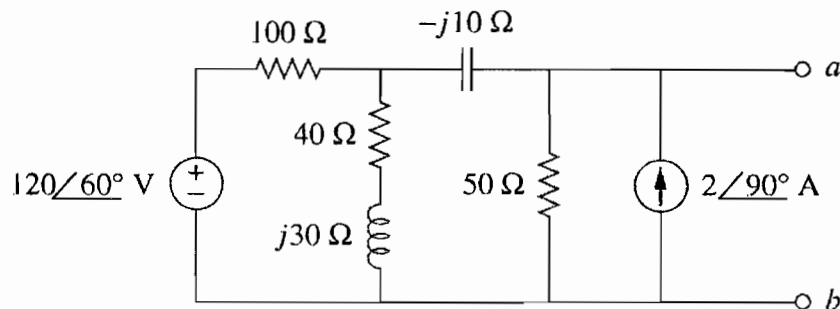


Fig.2

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3. Let the circuit in Fig.3 have $v_s(t) = 24 \text{ V}$, $i_c = 3 i_y$, $v_c = 1 \Omega \times i_x$, and $R = \infty$ (an open circuit). Find:

(a).the nodal voltage of v_1 , v_2 ,

(b).the equivalent input resistance $R_{eq} = v_s/i_1$. (20 %)

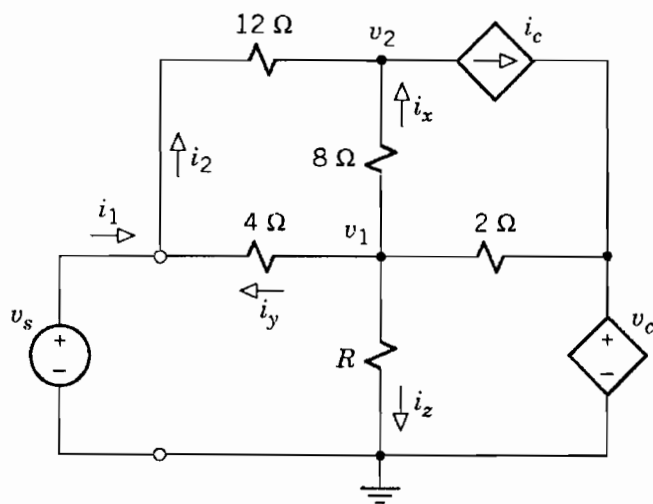


Fig.3

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4. Obtain the Thevenin and Norton equivalent circuits at terminals a-b for the circuit shown in Fig. 4 (15 %)

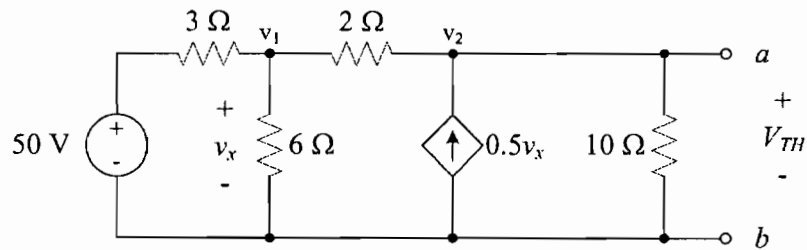


Fig. 4

5. For the circuit shown in Fig. 5, find $v(t)$ and $i(t)$ for $t > 0$. (20%)

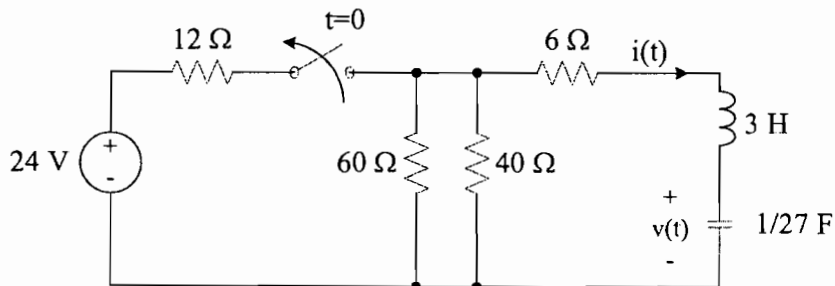


Fig. 5

6. For the AC circuit shown in Fig. 6, calculate the transfer function V_o/V_s (15 %)

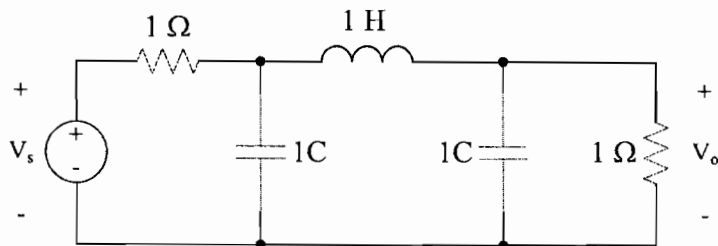


Fig. 6