

Answer ALL Questions (Total Mark 50 Distributed Equally)

I) For Fig. 1, using loop analysis and short cut method, solve for i_1 , i_2 , i_3 , and i_4 . Then find v and the power delivered to 8 ohm resistor.

II) In Fig. 2, derive an equation for the output voltage V_o in terms of V_1 , V_2 , R_1 , R_2 , R_o , then calculate V_o and i if $V_1 = 1\text{V}$, $V_2 = 3\text{V}$, $R_1 = 1\text{K ohm}$, $R_2 = 2\text{K ohm}$, and $R_o = 4\text{K ohm}$

III) In Fig. 3, using Thevenin's Theorem, find the equivalent circuit between a-b, then find i , V_1 , V_2 .

IV) In Fig. 4, find the impedance seen by the source and $i(t)$ if $v(t) = 5 \cos(377t + 30^\circ)$

V) In Fig. 5, if $v(t) = 50 \cos(2000\pi t)$, $R = 1000 \text{ ohm}$, $C = 0.2 \text{ uF}$, find $i(t)$, $V_c(t)$.

GOOD LUCK

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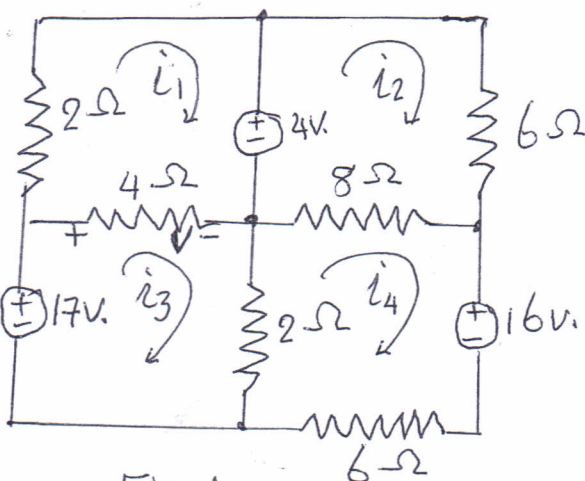


Fig. 1

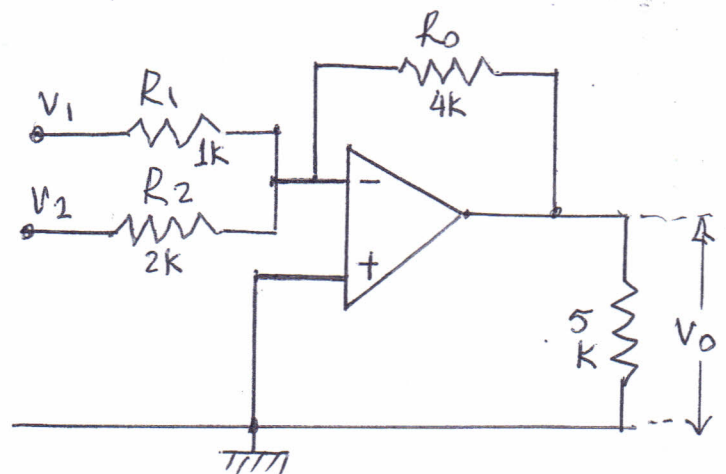


Fig. 2

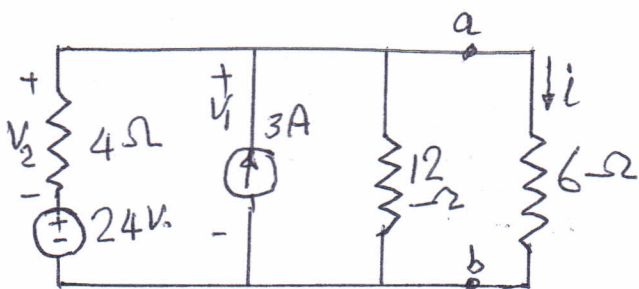
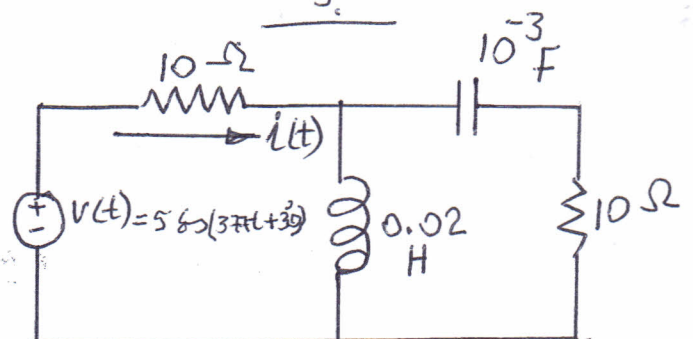


Fig. 3



$$v(t) = 5 \cos(377t + 30^\circ)$$

Fig. 4

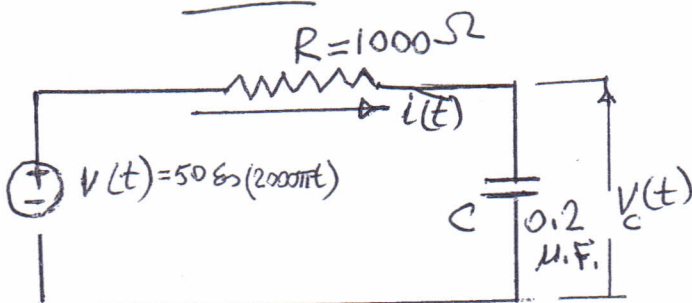


Fig 5