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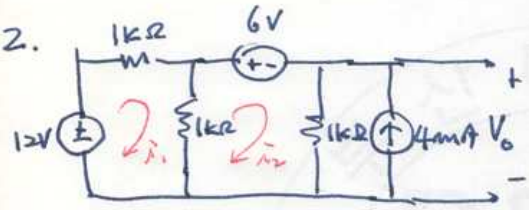
전기전자공학 개론 숙제 #2 정답지.

1. $\frac{v-12}{1k} + \frac{v}{1k} + \frac{v-4}{1k} = 0$

$3v = 16 \quad \therefore v = \frac{16}{3}$ [V]

$\therefore I_o = \frac{v}{1k} = \frac{16}{3}$ [mA]

2.



$-12 + 1k i_1 + 1k(i_1 - i_2) = 0$

$2k i_1 - 1k i_2 = 12 \quad -①$

$1k(i_2 - i_1) + 6 + 1k(i_2 + 4m) = 0$

$-1k i_1 + 2k i_2 = -10 \quad -②$

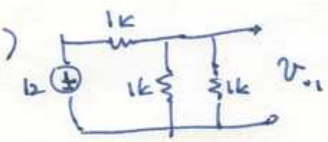
①과 ②를 연립,

$i_2 = -\frac{8}{3}$ mA

$v_o = (-\frac{8}{3}m + 4m) \cdot 1k$

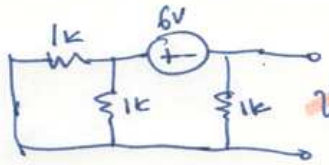
$= \frac{4}{3}$ [V]

3 i)



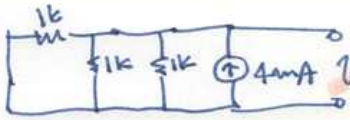
$v_{o1} = 4$ [V]

ii)



$v_{o2} = -4$[V]

iii)



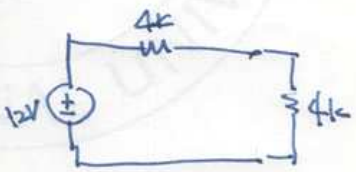
$v_{o3} = \frac{4}{3}$ [V]

$\therefore v_o = v_{o1} + v_{o2} + v_{o3} = \# \frac{4}{3}$ [V]

4.

$v_o = \frac{4}{3}$ [V]

5. Thevenin's eq. circuit



$R_L = 4$ kΩ

$P_{max} = \left(\frac{12}{8k}\right)^2 4k$

$= 9$ [mW]