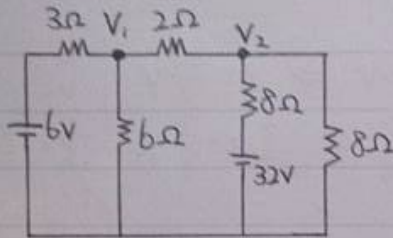


$$\rho \times \frac{L}{\pi r^2}$$

$$1.723 \times 10^{-8} \times \frac{50}{\pi \left[ \frac{1.63 \times 10^{-3}}{2} \right]^2} = 0.4128$$



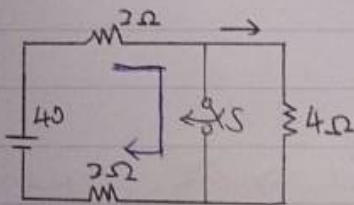
$$1 \text{ KCL: } \frac{V_1 - 6}{3} + \frac{V_1}{6} + \frac{V_1 - V_2}{2} = 0$$

$$\Rightarrow \left( \frac{1}{3} + \frac{1}{6} + \frac{1}{2} \right) V_1 - \frac{1}{2} V_2 - \frac{6}{3} = 0$$

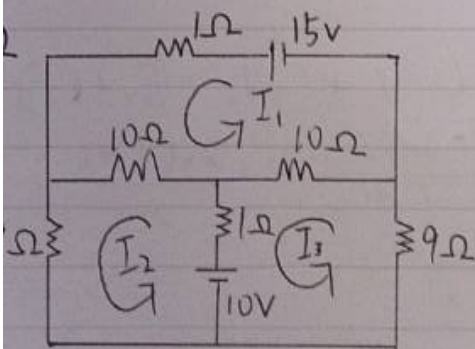
$$2 \text{ KCL: } \frac{V_2 - V_1}{2} + \frac{V_2 - 32}{8} + \frac{V_2}{8} = 0$$

$$\Rightarrow \left( \frac{1}{2} + \frac{1}{8} + \frac{1}{8} \right) V_2 - \frac{1}{2} V_1 - \frac{32}{8} = 0$$

$$V_1 = 7V, V_2 = 10V$$



閉合時, 电流經↑  
故無电流。



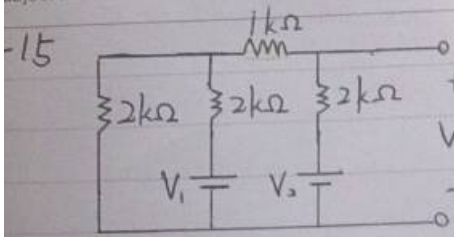
$$(1+10+10)I_1 - 10I_2 - 10I_3 = 15, a_{11} = 21$$

$$-10I_1 + (1+10+9)I_2 - I_3 = 10, a_{22} = 20$$

$$-10I_1 - I_2 + (9+10+1)I_3 = -10, a_{33} = 20$$

$$a_{11} + a_{22} + a_{33} = 61$$

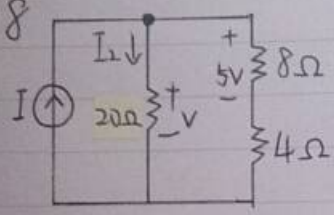
Subject : .....



$$V_0 \times V_1, V_{01} = V_1 \times \frac{2 \parallel (1+2)}{2 + [2 \parallel (1+2)]} \times \frac{2}{1+2} = \frac{1}{4}$$

$$V_0 \times V_2, V_{02} = V_2 \times \frac{1 + (2 \parallel 2)}{2 + [1 + (2 \parallel 2)]} = \frac{1}{2}$$

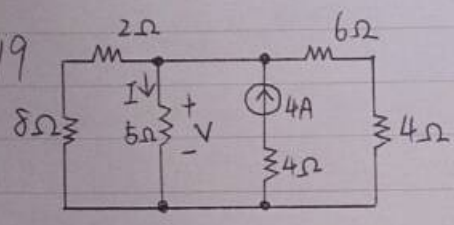
-18



$$V \times \frac{8}{8+4} = 5V \Rightarrow V = \frac{60}{8} V$$

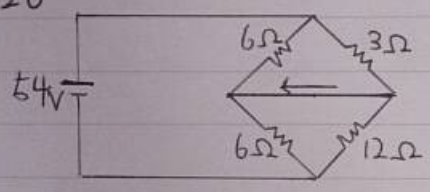
$$I_2 = \frac{V}{20} = \frac{3}{8} A, I_1 = \frac{5}{8} A, I = I_1 + I_2 = 1A$$

-19



$$I = \frac{\frac{1}{5}}{\frac{1}{2+8} + \frac{1}{5} + \frac{1}{6+4}} \times 4 = 2A$$

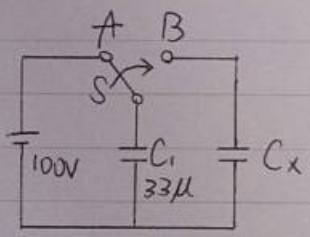
-20



$$R_{th} = (6 \parallel 3) + (6 \parallel 12) = 2 + 4 = 6\Omega$$

$$I = 9A$$

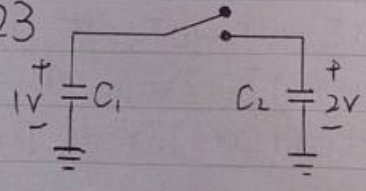
-22



$$75 = \frac{100C_1}{C_1 + C_x} \Rightarrow 75C_x = 25C_1$$

$$C_x = \frac{1}{3} C_1 = 11\mu F$$

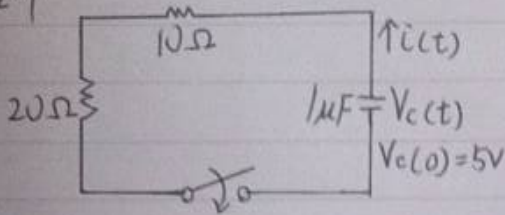
-23



$$Q_T = C_1 V_1 + C_2 V_2 = (C_1 + C_2) V$$

$$V = \frac{C_1 V_1 + C_2 V_2}{C_1 + C_2} = \frac{2 \times 1 + 1 \times 2}{2 + 1} = \frac{4}{3} V$$

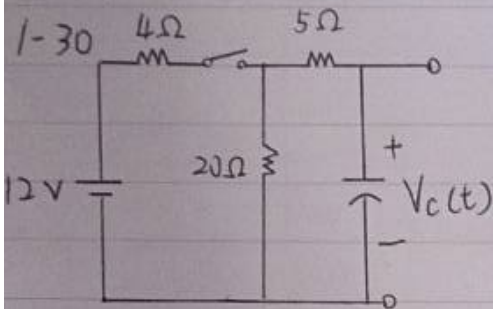
1-27



(a)  $RC = 30 \times 10^{-6} \text{ s} = 3 \times 10^{-5} \text{ s}$   
 $V_c(t) = V_{c0} \times e^{-\frac{t}{RC}} = 5 \times e^{-10^5 t / 3}$   
 $\Rightarrow i(t) = -\dot{V}_c(t) = -C \frac{dV_c(t)}{dt} = \frac{10^5}{3} \times 10^{-6} \times 5 e^{-10^5 t / 3}$   
 $= \frac{1}{6} e^{-10^5 t / 3}$   
 $= \frac{1}{6} e^{-10^5 \times (3 \times 10^{-5}) t / 3}$

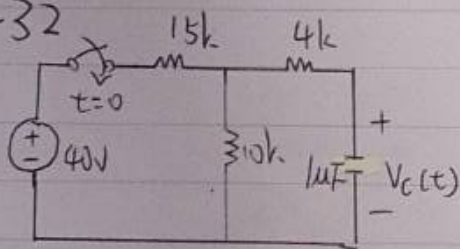
(b)  $V_c(t = 3 \times 10^{-5}) = 5 \times e^{-1}$   
 $= 5 \times e^{-1} \text{ V}$

1-30



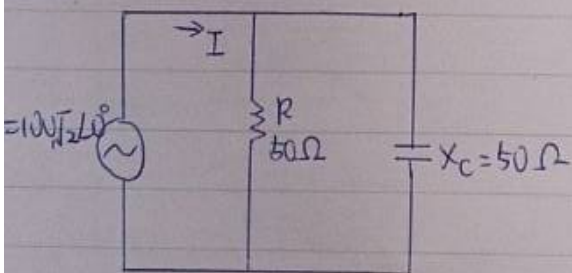
$RC = 25 \times 50 \times 10^{-6} = 1.25 \times 10^{-3} \text{ s}$   
 $V_c(t=0^-) = 12 \times \frac{20}{20+4} = 10 \text{ V}$   
 $V_c(t) = (10 - 0) \times e^{-\frac{t}{RC}} = 10 \times e^{-800t}$

1-32



$RC = [(15 \parallel 10) + 4] \times 10^3 \times 10^{-6} = 10^{-3} \text{ s}$   
 $V_c = 0$   
 $V_c(t \rightarrow \infty) = 40 \times \frac{10}{15+10} = 16 \text{ V}$   
 $V_c(t) = (0 - 16) e^{-t/RC} + 16 = 16(1 - e^{-t/RC})$

1-35



$I = \frac{100\sqrt{2} \angle 0^\circ}{50} + \frac{100\sqrt{2} \angle 0^\circ}{-j50}$   
 $= 2\sqrt{2} \angle 0^\circ + 2\sqrt{2} \angle 90^\circ$   
 $= 4 \angle 45^\circ$