

Quiz 1 - Sec 2

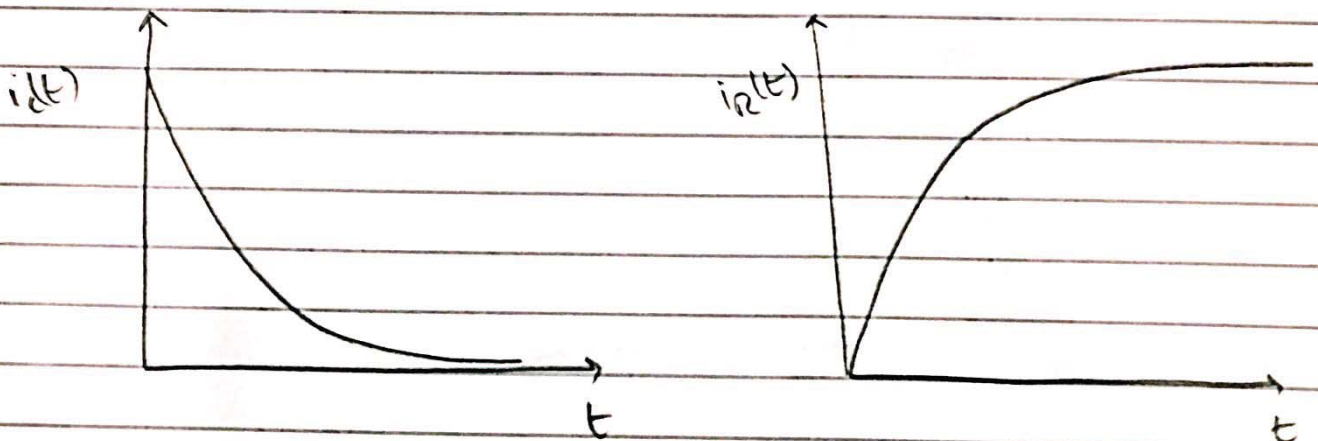
Solution Manual

Q:1

(a) $V_C(t) = V_R(t)$

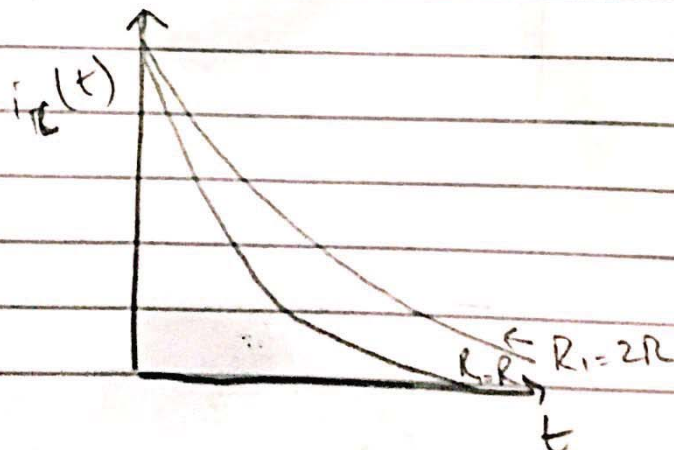
$$i_R(t) = \frac{V_R(t)}{R}$$

$$i_C(t) = I_0 e^{-t/RC}$$

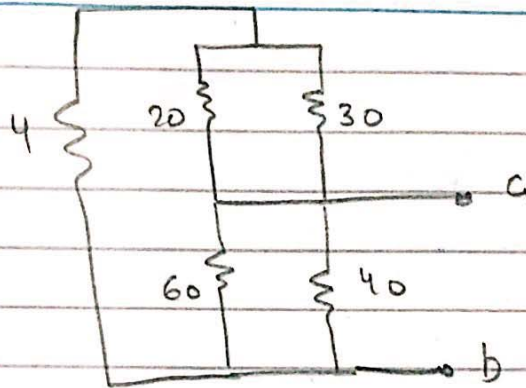


(b) $\tau = RC$

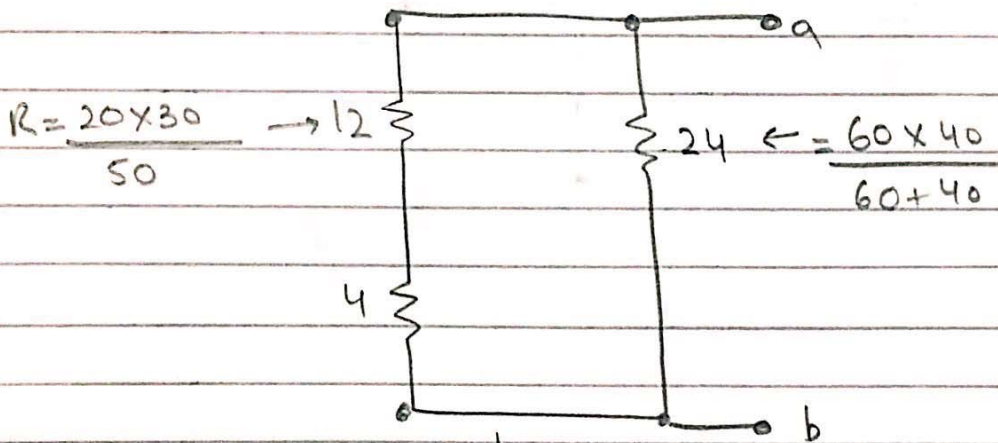
For $R_1 = 2R$, time constant \uparrow , charging decreases.



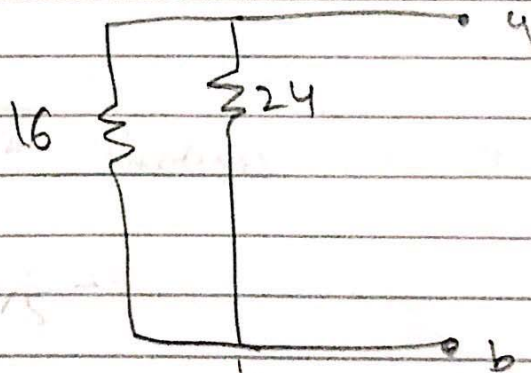
Q:2



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$$\frac{1}{R_{eq}} = \frac{1}{16} + \frac{1}{24}$$
$$R_{eq} = 48/5 \Omega$$

A final equivalent circuit diagram showing a single resistor of $48/5$ ohms between terminals 'a' and 'b'.