

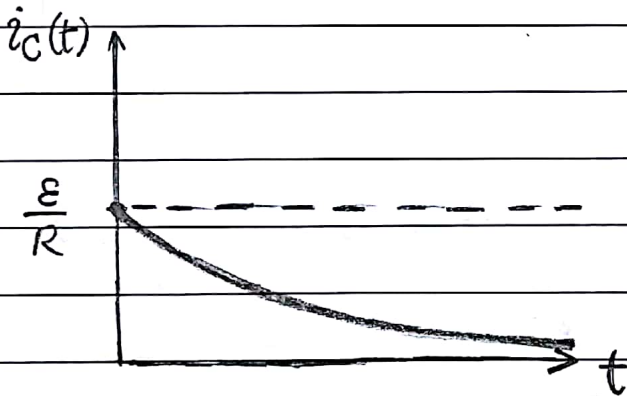
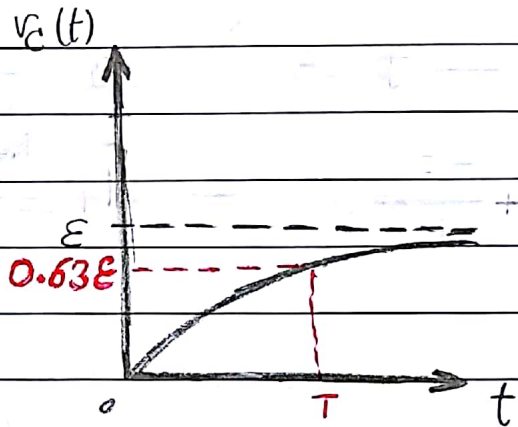
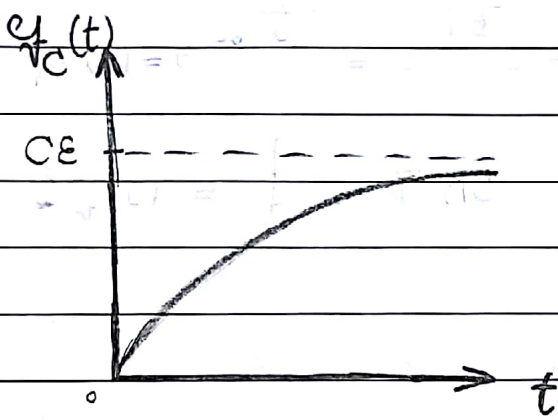
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$$\rightarrow R \frac{dq_c(t)}{dt} + \frac{q_c(t)}{C} = \varepsilon_C \rightarrow q_c(t) = C\varepsilon (1 - e^{-\frac{t}{RC}})$$

$$q_c(t=0) = 0 \rightarrow v_c(t) = \frac{q_c(t)}{C} = \varepsilon (1 - e^{-\frac{t}{RC}})$$

$$i_c(t) = \frac{dq_c(t)}{dt} = \frac{\varepsilon}{R} e^{-\frac{t}{RC}}$$



$t=0 \rightarrow C: \text{شماره کلید}$

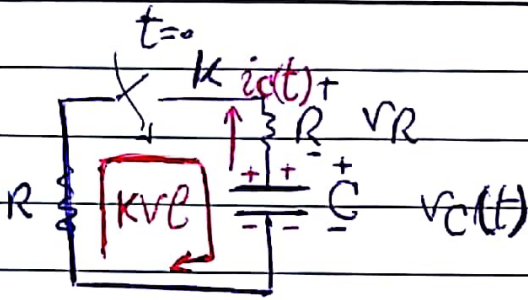
$t=\infty \rightarrow C: \text{شماره باز}$

$$i_c(t) = \frac{dq_c(t)}{dt} = \frac{d}{dt} (C v_c(t)) = C \frac{dv_c(t)}{dt}$$

$$\frac{d}{dt} (C v_c(t)) = C \frac{d}{dt} (v_c(t)) \rightarrow i_c(t) = C \frac{d}{dt} v_c(t)$$

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شماره خان: _____



$v_C(t=0) = v_0$

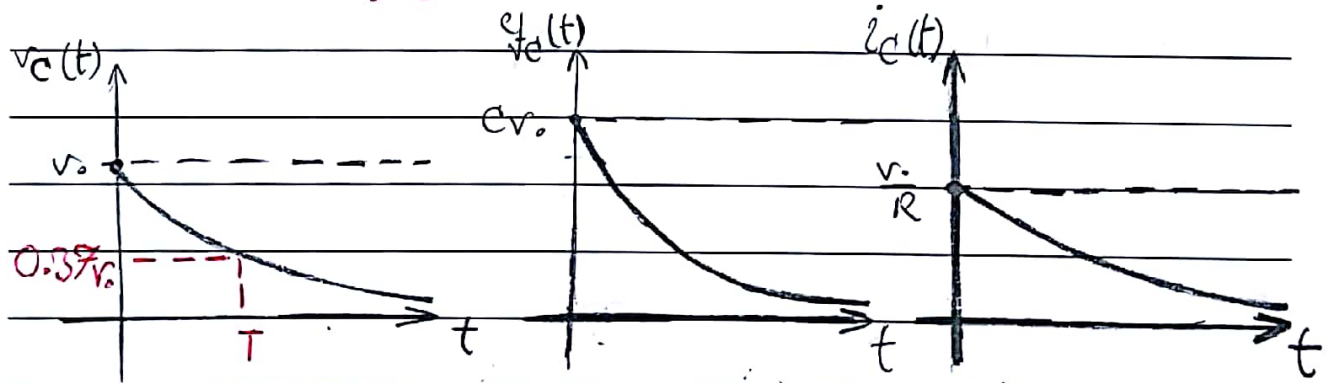
KVL: $v_R + v_C = 0$

$-Ri_C(t) + v_C(t) = 0$
 $-C \frac{dv_C(t)}{dt}$

$\rightarrow RC \frac{dv_C(t)}{dt} + v_C(t) = 0 \rightarrow v_C(t) = Ae^{-\frac{t}{RC}}$

$v_C(t=0) = v_0$
 $v_C(0) = Ae^{-\frac{0}{RC}} = v_0 \rightarrow v_0 = A \rightarrow v_C(t) = v_0 e^{-\frac{t}{RC}}$

$i_C(t) = -C \frac{dv_C(t)}{dt} = -C v_0 \left(-\frac{1}{RC}\right) e^{-\frac{t}{RC}} = \frac{v_0}{R} e^{-\frac{t}{RC}}$



$t=0 \rightarrow C$: R_{eq} v_0 R_{eq} v_0

$t=\infty \rightarrow C$: R_{eq} v_0 R_{eq} v_0

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سازگار کامل خانان

چون زمان t به بی نهایت میل کند (یعنی در هر زمان که $t \rightarrow \infty$ میل کند)

$T = RC$ if $t = RC = T \Rightarrow v_C(t) = \mathcal{E}(1 - e^{-1})$

$= 0.63 \mathcal{E}$

اگر برای $v_C(t)$ معادله $t > 0$ $v_C(t) = Ae^{-\frac{t}{RC}} + B$ $t > 0$ $v_C(t)$ معادله
 در یک مدار شارژ یا دشارژ

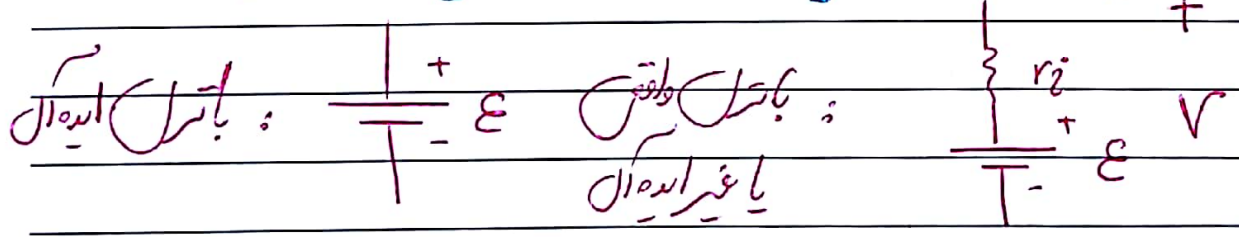
برای تعیین A و B : $v_C(t=0) = 0 \Rightarrow Ae^{-\frac{0}{RC}} + B = 0 \Rightarrow A + B = 0$

$(t=0) \rightarrow v_C(t=0) = 0 \rightarrow Ae^{-\frac{0}{RC}} + B = 0 \rightarrow A + B = 0$

$A + B \rightarrow A + B = 0 \rightarrow v_C(0) = 0$

$(t \rightarrow \infty) \rightarrow v_C(\infty) = Ae^{-\infty} + B = B$

$v_C(t) = [v_C(0) - v_C(\infty)]e^{-\frac{t}{RC}} + v_C(\infty)$



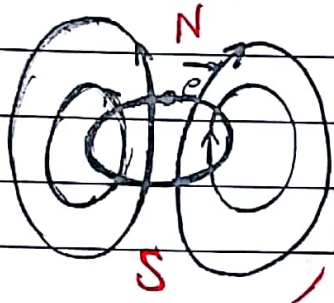
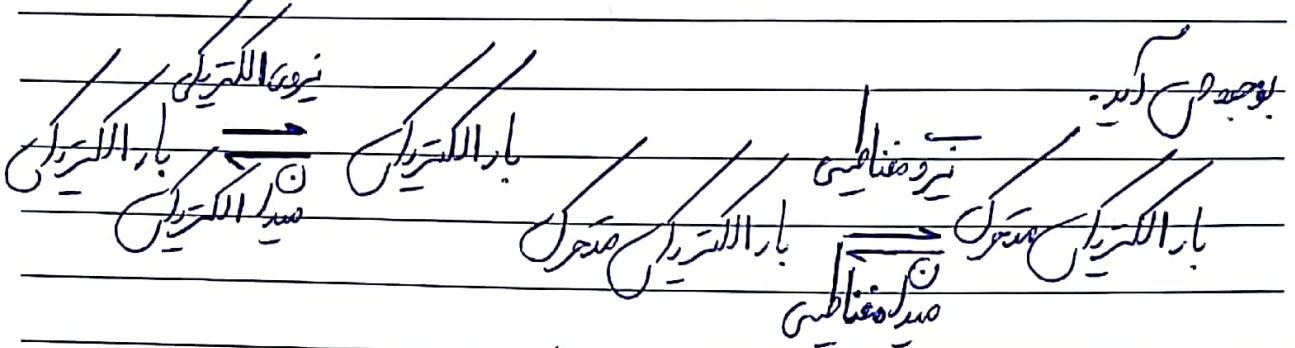
$P = \frac{dw}{dt} = \frac{v i dt}{dt} = v i$
 $dw = v e dq = v i dt \rightarrow P = R i^2 = \frac{v^2}{R}$

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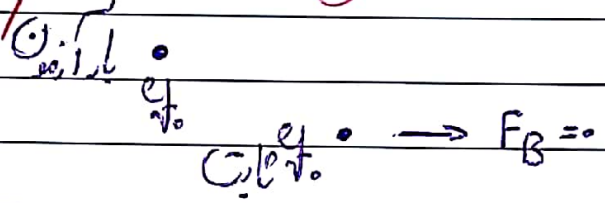
مغناطيس:

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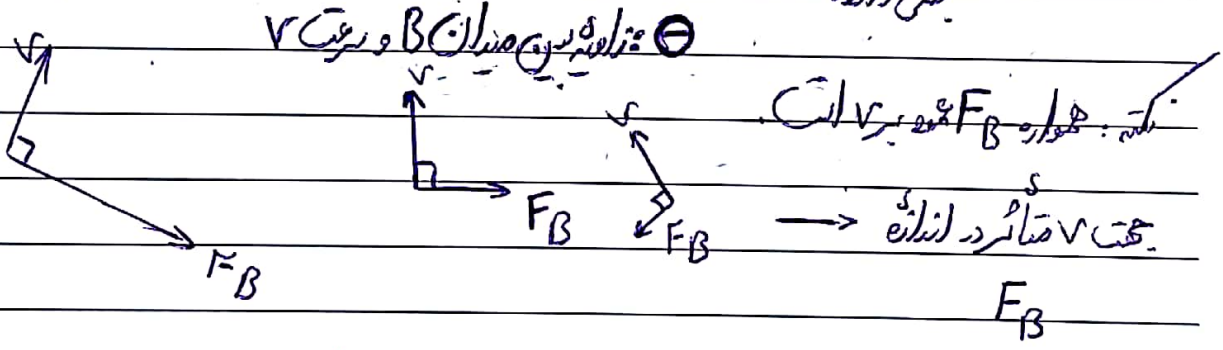
(خاصيت مغناطيس) بر اثر جايگزين بار الكترين (جولت دولتي و انتقال) خاصيت مغناطيس



تعريف ميدان مغناطيس



$F_B \propto |v| \sin \theta$ حيث θ و v و F_B متعامد
 $F_B = |v| \sin \theta$



ماتصال ميدان مغناطيس براتصال v و F زمانه F خاص
 $F_{B \max}$

$F_B = |v| \sin \theta |B| \rightarrow F_B = v \times B$