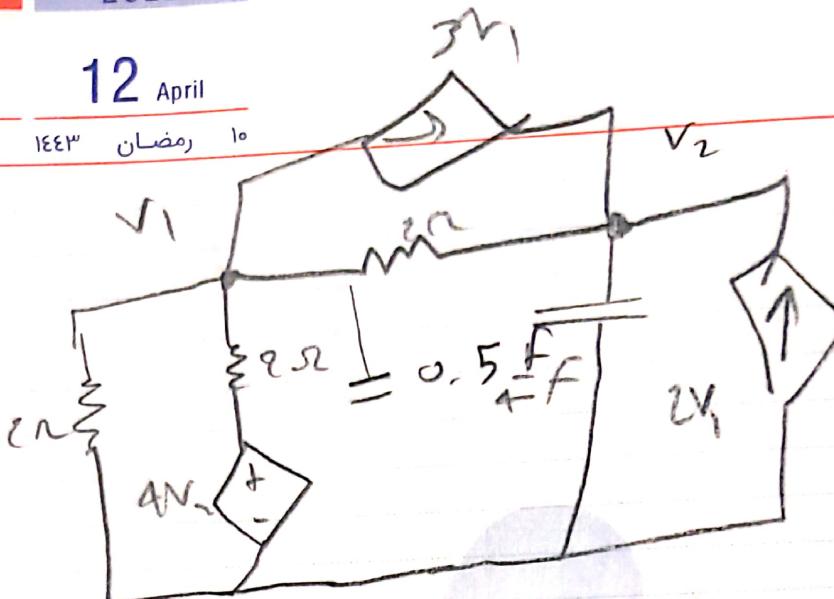
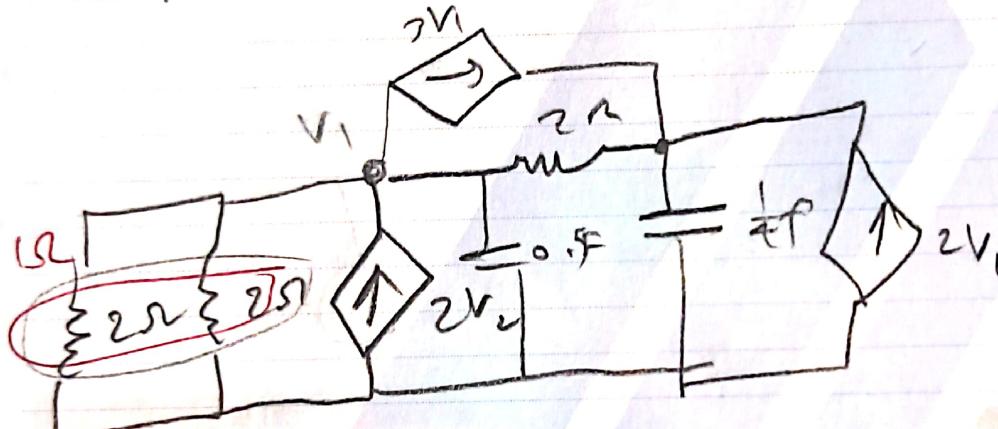


۱) صنایع نفت  
۱۰



تبديل سیم و لامپ: ۲V



$$\begin{bmatrix} 1 + \frac{1}{2} + 0.5S & \frac{-1}{2} \\ -\frac{1}{2} & \frac{1}{4}S + \frac{1}{2} \end{bmatrix} \begin{bmatrix} V_1 \\ V_2 \end{bmatrix} = \begin{bmatrix} 2V_2 - 3V_1 \\ 2V_1 + 2V_2 \end{bmatrix}$$

$$\begin{bmatrix} \frac{3}{2} + \frac{S}{2} + 3 & -\frac{1}{2} - 2 \\ -\frac{1}{2} - 5 & \frac{1}{4}S + \frac{1}{2} \end{bmatrix} \begin{bmatrix} V_1 \\ V_2 \end{bmatrix} =$$

وفات حضرت خدیجه سلام الله علیها (۳ سال قبل از هجرت)

$$\begin{bmatrix} \cancel{\frac{3}{2}} + \cancel{\frac{S}{2}} + \frac{1}{2} & -\frac{5}{2} \\ -\frac{11}{2} & \frac{1}{4}S + \frac{1}{2} \end{bmatrix} \begin{bmatrix} V_1 \\ V_2 \end{bmatrix} =$$

ملاحظات

$$\xrightarrow{!2} \begin{bmatrix} 9+s & -5 \\ -11 & \frac{s}{2} + 1 \end{bmatrix}$$

ret

$$\Rightarrow \frac{25}{2} + 9 + \frac{s^2}{2} + s - 55 = 0$$

$$\frac{s^2}{2} + \frac{11s}{2} - 46 = 0$$

$$s^2 + 11s - 92 = 0$$

$$\left\{ \begin{array}{l} \frac{\sqrt{489}}{2} - \frac{11}{2} \approx 5.5 \\ -\frac{\sqrt{489}}{2} - \frac{11}{2} \approx -16.5 \end{array} \right.$$

۲۱

10 April

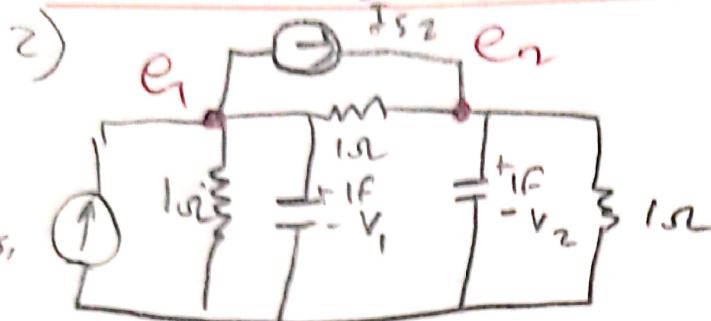


پیشنهاد

۱۴۴۳ هـ

رمضان

۸



$$s e_1 - V_o(0)$$

$$s e_2 - V_o(0)$$

$$\begin{bmatrix} 2+s & -1 \\ -1 & 2+s \end{bmatrix} \begin{bmatrix} e_1 \\ e_2 \end{bmatrix} = \begin{bmatrix} V_{o1}(0) \\ V_{o2}(0) \end{bmatrix}$$

~~$$4 + s^2 + 4s - 1 = \det[A]$$~~

$$s^2 + 4s + 3$$

$$\begin{bmatrix} e_1 \\ e_2 \end{bmatrix} = \frac{1}{s^2 + 4s + 3} \begin{bmatrix} 2+s & 1 \\ 1 & 2+s \end{bmatrix} \begin{bmatrix} V_1 \\ V_2 \end{bmatrix}$$

$$e_1 = \frac{V_2 + (s+2)V_1}{(s+1)(s+3)} \quad \textcircled{1}$$

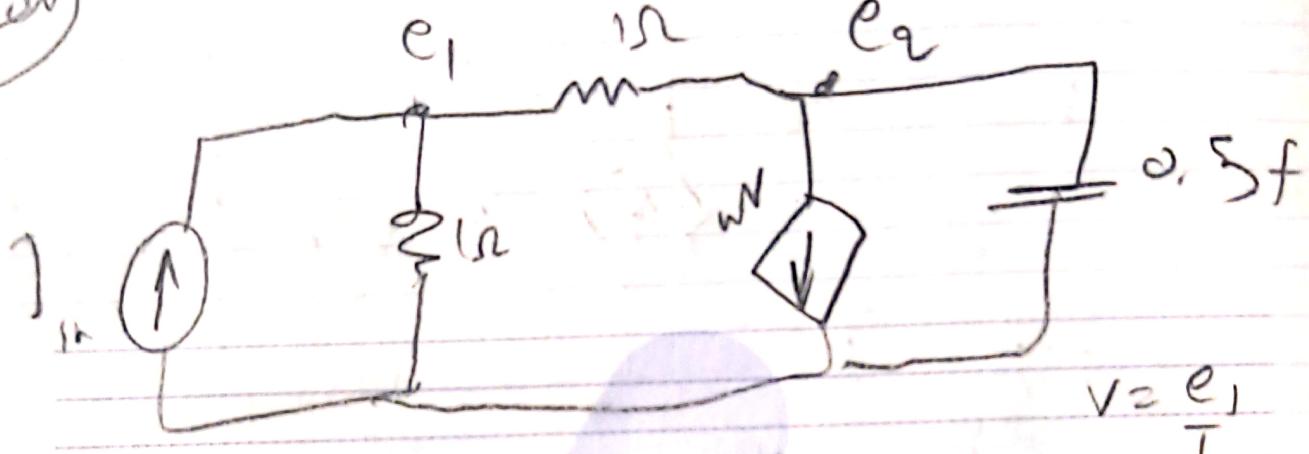
$$e_2 = \frac{V_1 + (s+2)V_2}{(s+1)(s+3)} \quad \textcircled{2}$$

لذت  $s = -3$  با صورت کسرهای صولت معنی:

شہادت امیر سپہبد علی صیداد شیرازی (۱۳۷۸ هـ) - سالروز افتتاح حساب شماره ۱۰۰ ابہ فرمان حضرت امام (رحمۃ اللہ علیہ) و تأسیس بنیاد  
سكن انقلاب اسلامی (۱۳۵۸ هـ)  
ملاحظات

$$\left. \begin{array}{l} V_2 - V_1 = 0 \\ -V_2 + V_1 = 0 \end{array} \right\} \Rightarrow V_1 = V_2 \text{ اول خواهد بود}$$

۳) (iii)



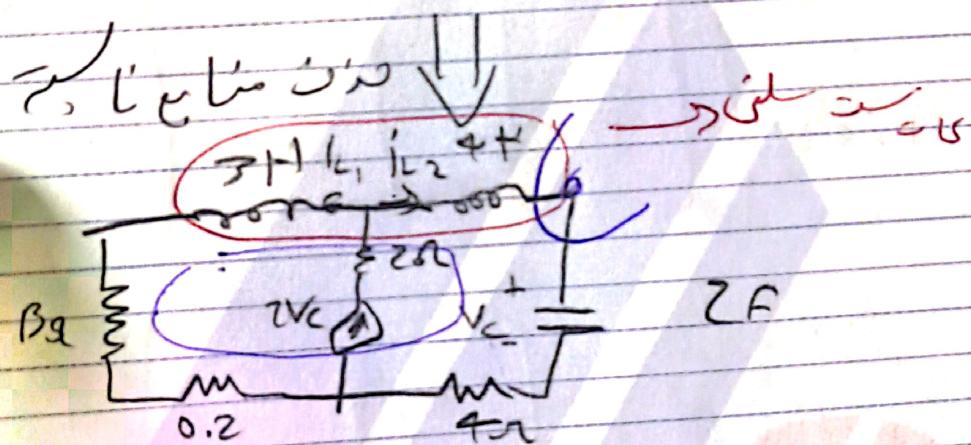
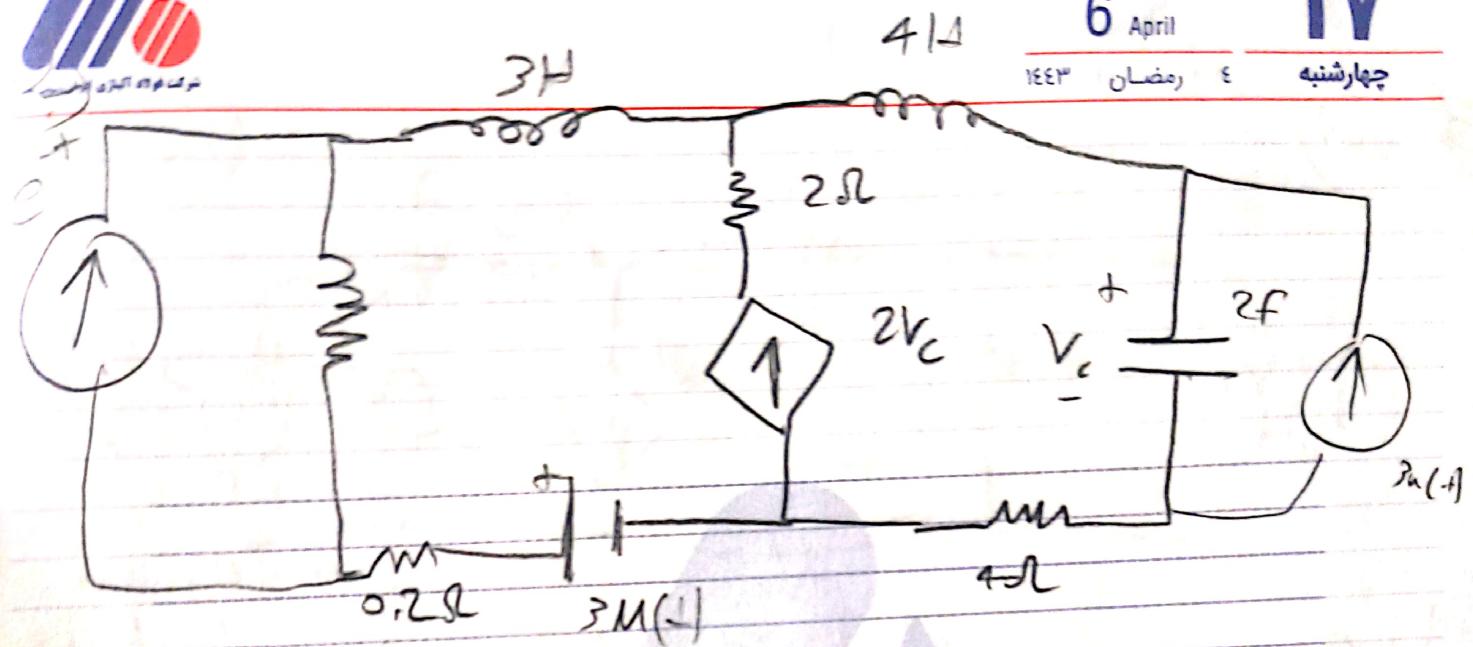
$$\begin{bmatrix} e_2 & -1 \\ -1 & 1+0.5s \end{bmatrix} \begin{bmatrix} e_1 \\ e_2 \end{bmatrix} = \begin{bmatrix} -i_{Rn} \\ +a e_1 \end{bmatrix}$$

$$\begin{bmatrix} 2 & -1 \\ -1 & 1+0.5s \end{bmatrix} \begin{bmatrix} e_1 \\ e_2 \end{bmatrix} = \begin{bmatrix} -i_{Rn} \\ 0 \end{bmatrix}$$

$$2 + s - 1 + a \geq s = -(a + 1)$$

$$\text{so } \text{Re}\{s\} < 0 \Rightarrow -1 - a < 0$$

$$\Rightarrow a > -1$$



$$\text{KCL} \Rightarrow i_2 - \frac{dV_c}{dt} = 0 \Rightarrow \frac{dV_c}{dt} = \frac{1}{2} i_2$$

$$\text{KVL} \Rightarrow 3 \frac{di_1}{dt} + 4 \frac{di_2}{dt} + V_c + 4i_2 + (\beta + 0.2)i_1 = 0$$

$$\frac{di_2}{dt} = -(+1.2 + \beta)i_{L2} + (\beta - 0.6)V_c$$

$$\begin{bmatrix} \frac{dV_c}{dt} \\ \frac{di_2}{dt} \end{bmatrix} = \begin{bmatrix} 0 & \frac{1}{2} \\ 2\beta - 0.6 & -1.2 - \beta \end{bmatrix} \begin{bmatrix} V_c \\ i_{L2} \end{bmatrix}$$

ملاحظات

فروردين

2022

۱۸

7 April

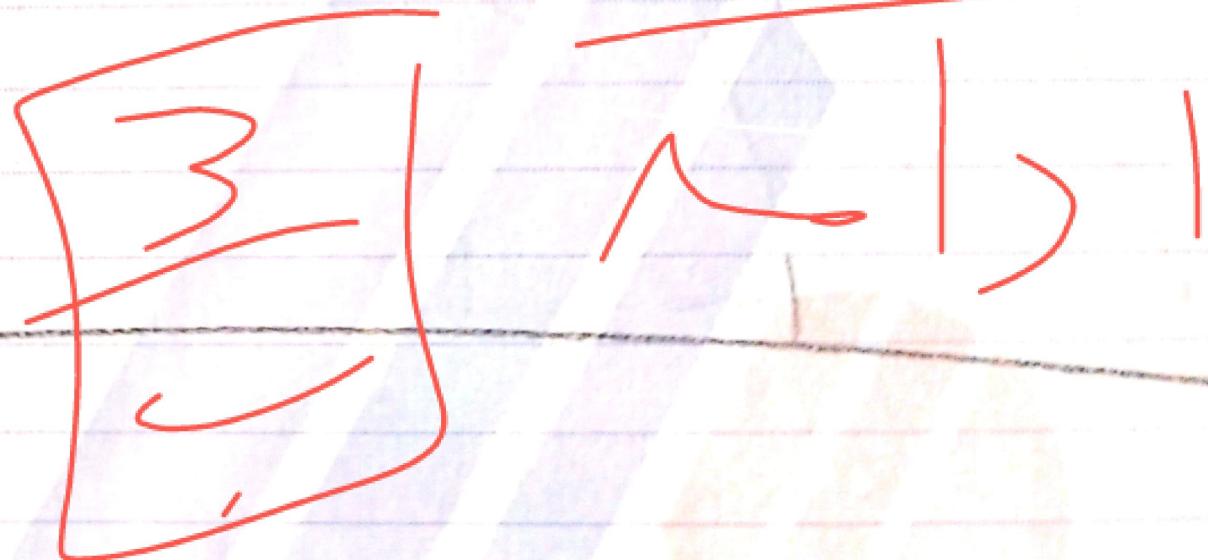
پنجشنبه

۱۴۴۳

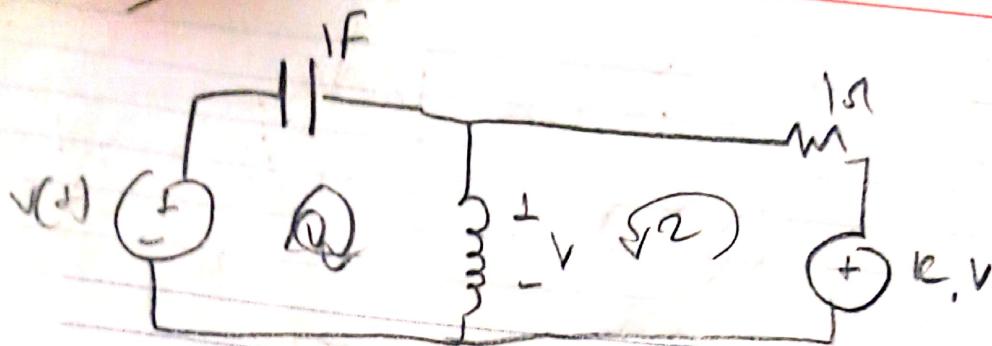
رمضان ۵

$$\Rightarrow |5I - A| = 0 \Rightarrow \lambda = 0$$

$$0 - \frac{3}{7} + \frac{0 \cdot 3}{7} = 0 \Rightarrow \beta = 0, 3$$



٧) (ج)



$$\begin{bmatrix} \frac{1}{s} + s & s \\ s & 1+s \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \end{bmatrix} = \begin{bmatrix} V(+ \\ SK(\frac{1}{s}I_1 + I_2) \end{bmatrix}$$

$$\begin{bmatrix} \frac{1}{s} + s & s \\ -SK & 1+s-SK \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \end{bmatrix} = \begin{bmatrix} V(+) \\ 0 \end{bmatrix}$$

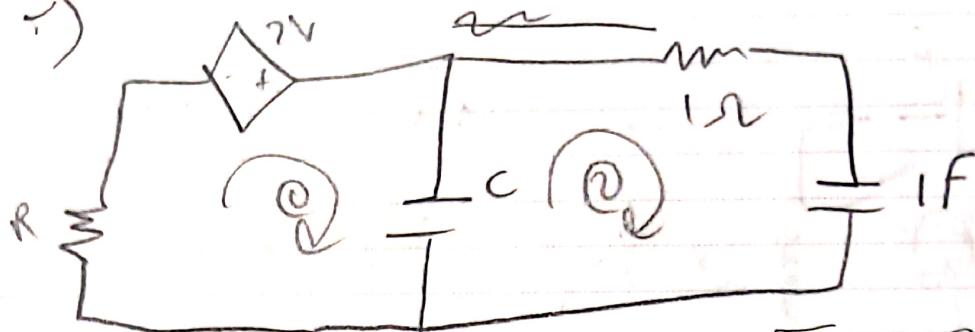
$$det \begin{bmatrix} 1+s & s \\ -SK & 1+s-SK \end{bmatrix} = 0$$

$$\frac{1}{s} + s + 1 + s^2 - 1C - s^2 K - s^2 + s^2 K = 0 \Rightarrow$$

$$s^2 + (1-K)s + 1 = 0 \quad \Delta < 0 \quad b = 0 \quad b^2 \text{ مدهون غالع}$$

$$\begin{cases} b=0 \quad 1C=1 \\ \Delta < 0 \quad (1-K)-4C < 0 \end{cases} \Rightarrow \boxed{K=1}$$

4)



$$\begin{bmatrix} R + \frac{1}{Cs} & -\frac{1}{Cs} \\ -\frac{1}{Cs} & \frac{1}{Cs} + L \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \end{bmatrix} = \begin{bmatrix} 2I_2 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} R + \frac{1}{Cs} & -2 - \frac{1}{Cs} \\ -\frac{1}{Cs} & \frac{1}{Cs} + L \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$\Rightarrow \begin{bmatrix} RCS + 1 & -2CS - 1 \\ -1 & 1 + CS + C \end{bmatrix}$$

$$RCS + RC^2S^2 + RC^2S + 1 + CS + C + 2CS + 1 = 0$$

$$RC^2(S^2) + (RC^2 + RC - C)S + C = 0$$

$$RC^2(S^2) + (RC^2 + RC - C)S + C = 0 \xrightarrow{\times \frac{1}{C}}$$

$$RC(S^2) + (RCR - 1)S + 1 = 0$$

$$\Rightarrow -100RC + 10RCJ + 10RJ - 10J + 1 = 0$$

$$100RC = 1 / 2 [10RC + 10R - 10] \quad \text{ملاحظات} \quad \text{①}$$

فرویدین

2022

19

8 April

جمعه

١٤٤٣ رمضان ٦

4 →

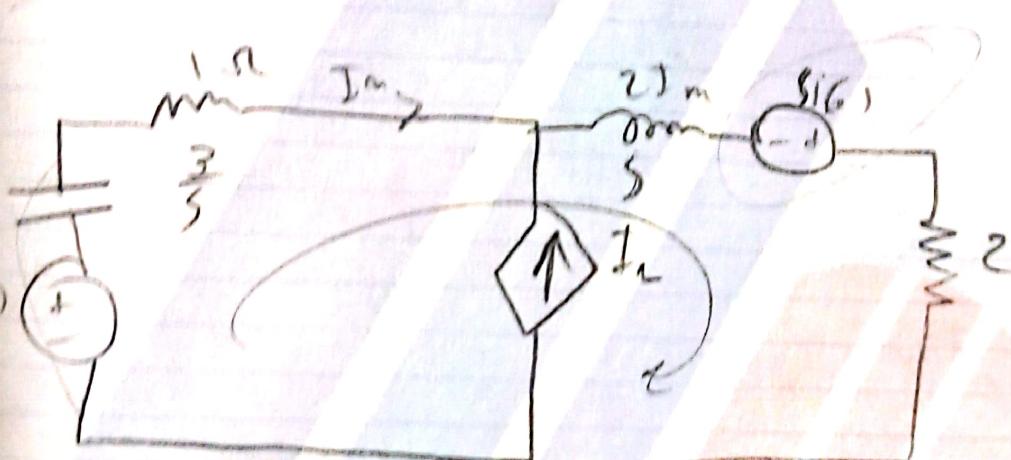
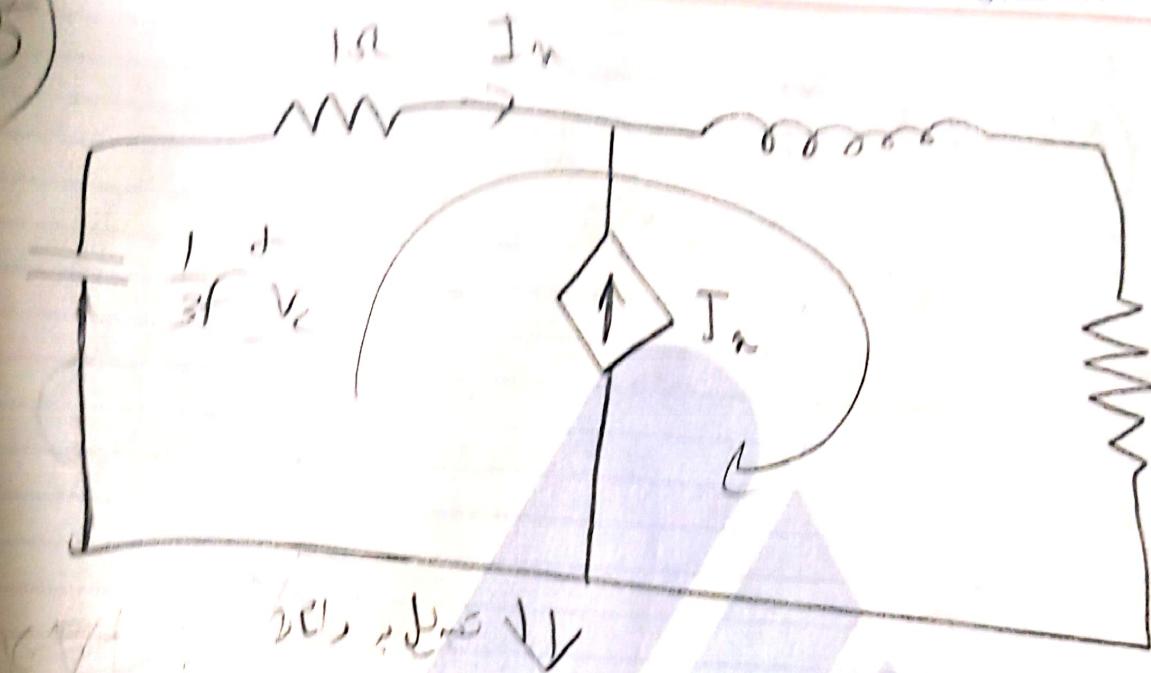
ارا

$$100R + C = 1 \quad | \cdot 3$$

$$10RC + 10R - 10 = 0 \quad | \cdot 3$$

$$\begin{cases} R = \frac{22}{100} \\ C = \frac{1}{99} \end{cases}$$

5)



$$\text{KVL} : \frac{V_c(s)}{s} + Si(0) = (\frac{3}{s} + 1)I_n + (s+2)(2I_n)$$

$$I_n = \frac{Si(0) + V_c(0)}{2s^2 + 5s + 3} = \frac{Si(0) + V_c(0)}{(s + \frac{3}{2})(2s + 2)}$$

$$| Si(0) + V_c(0) | = 0 \quad \Rightarrow \quad V_c(0) = -Si(0)$$

$$V_c(0+) \rightarrow i(0) = 1$$