

$$\downarrow \begin{array}{c} | \\ \downarrow \\ \downarrow \\ \downarrow \\ | \\ - \end{array} + \quad v = L \frac{di(t)}{dt}$$

$$i(t) = 8e^{-300t} - 8e^{-1200t} \quad \text{A}$$

$$v(t) = 4 \times 10^{-3} \cdot \frac{d(8e^{-300t} - 8e^{-1200t})}{dt}$$

time 0

$$v(t) = 4 \times 10^{-3} \cdot (-2400e^{-300t} + 9600e^{-1200t})$$

$$v(0^+) = 4 \times 10^{-3} \cdot (-2400 + 9600)$$

$$= 4 \times 10^{-3} \cdot 7200 = 4 \times 7.2 = 28.8 \text{ V}$$

$$P(t) = i(t) \cdot v(t)$$

$$\frac{dP(t)}{dt} = 0$$

$t = ?$

①

$$-2400 \cdot e^{-300t} + 9600 e^{-1200t} = 0$$

$$9600 e^{-1200t} = 2400 e^{300t}$$

$$\ln \frac{96}{24} = \frac{e^{-300t}}{e^{-1200t}} \cdot 900t$$

$$= 900t$$

$$t = \frac{\ln \frac{96}{24}}{900}$$

(2)

Maximum power, t ?

$$\frac{dP(t)}{dt} = 0 \Rightarrow t = \underline{\quad}$$

Maximum power delivered to the inductor.

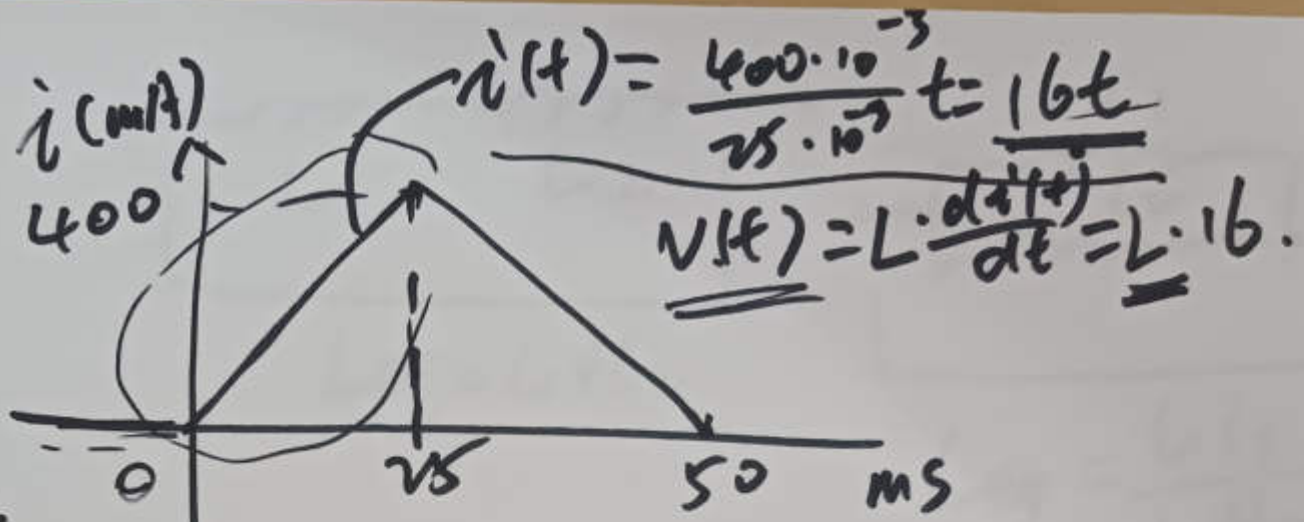
$$P(t) = \underline{\quad}$$

Maximum energy stored in the inductor?

$$w_{\max} = \frac{1}{2} L \cdot \underline{\underline{i^2}}$$

$$\underline{\underline{\frac{di(t)}{dt} = 0}} \Rightarrow \underline{\underline{t = ?}} \quad i \text{ becomes max}$$

(3)

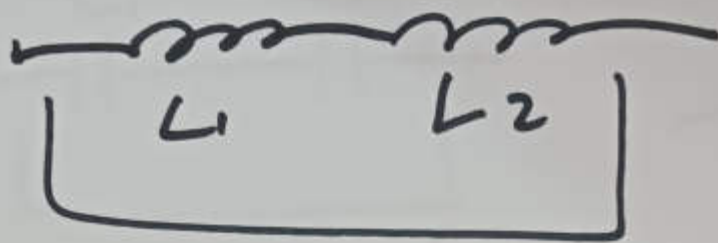


$\text{Energy} = \frac{1}{2} L \cdot i^2$
 $P = V(t) \cdot i(t)$

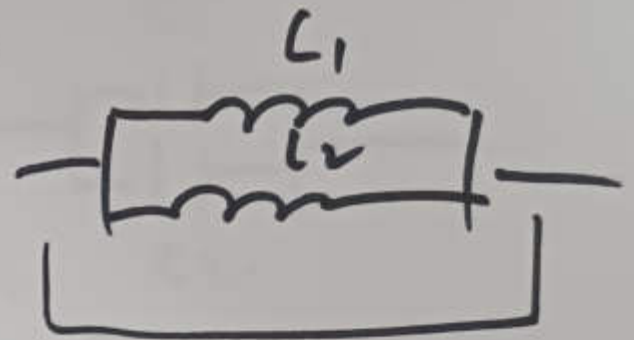
$\downarrow i = 0 \quad V = L \frac{di(t)}{dt} = 0 \checkmark$

$V(t) = 375 \times 10^{-3} \cdot \left(\frac{400 \cdot 10^{-3}}{25 \times 10^{-3}} \right) \text{ (V)}$

(4)



$$L_{eq} = L_1 + L_2$$

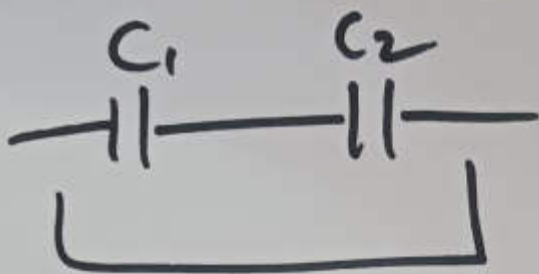


$$L_{eq} = \frac{L_1 L_2}{L_1 + L_2}$$

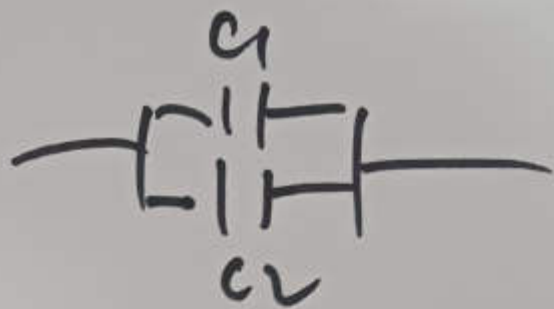
80
 L_1
 124

$$L_1 + \left(80 + \frac{60 + \left(\frac{6 \cdot 14}{6 + 14} + 15.8 \right) + 5}{60 + \left(\frac{6 \cdot 14}{6 + 14} + 15.8 \right) + 5} + 24 \right)$$

⑤



$$C_{eq} = \frac{C_1 \cdot C_2}{C_1 + C_2}$$



$$C_{eq} = C_1 + C_2$$

$$12.8n \cdot \left(\left(\frac{8n \cdot 32n}{8n + 32n} + 5.6n \right) + 18n \right)$$

$$C_x = \frac{12.8n \cdot \left(\left(\frac{8n \cdot 32n}{8n + 32n} + 5.6n \right) + 18n \right)}{12.8n + \left(\right)}$$

$$C_{eq} = \frac{1}{\frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_x}}$$

(b)