Quiz2(沒寫單位一律扣 1 分!!!!沒寫算式，答案又錯者，該題一律 0 分!!)

1.

The power dissipated in the 10-Ohm resistor :

After t = 0 ,

$R_{eq} = 2 + (40||10) = 10\Omega$

$\tau = \frac{L}{R_{eq}} = \frac{2}{10} = 0.2$

$i_L(t) = 20e^{\frac{-1}{0.2}t}A = 20e^{-5t}A\,, t \geq 0$(5%)

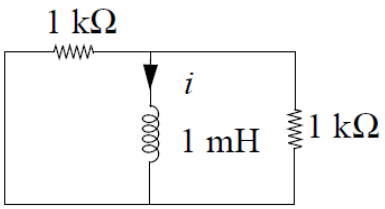
$i_{10\Omega}(t) = -i_L\frac{40}{10+40} = -16e^{-5t}A\,, t \geq 0$(5%)

$p_{10\Omega}(t) = {i_{10\Omega}}^2 * 10 = 2560e^{-10t}W\,, t \geq 0$(5%)(寫 2560 : -2)

Initial energy stored in the 2-H inductor at t = 0 : (5%)

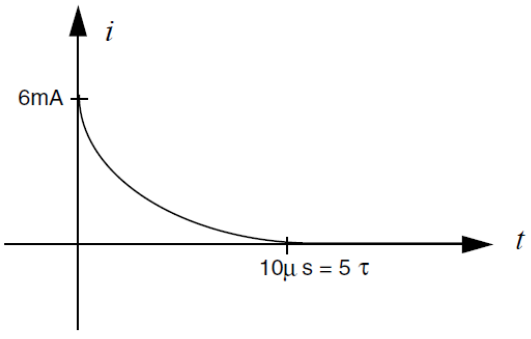
$w_L(0) = \frac{1}{2}L * i_L(0)^2 = 0.5 * 2 * 20^2 = 400J$

2.



$i(0) = 6$ mA

$$i = (6 \times 10^{-3})e^{-t/\tau},\ \tau = 2\mu s$$ **(15%)**



(15%)

圖或是算式其中一項對，就給滿分

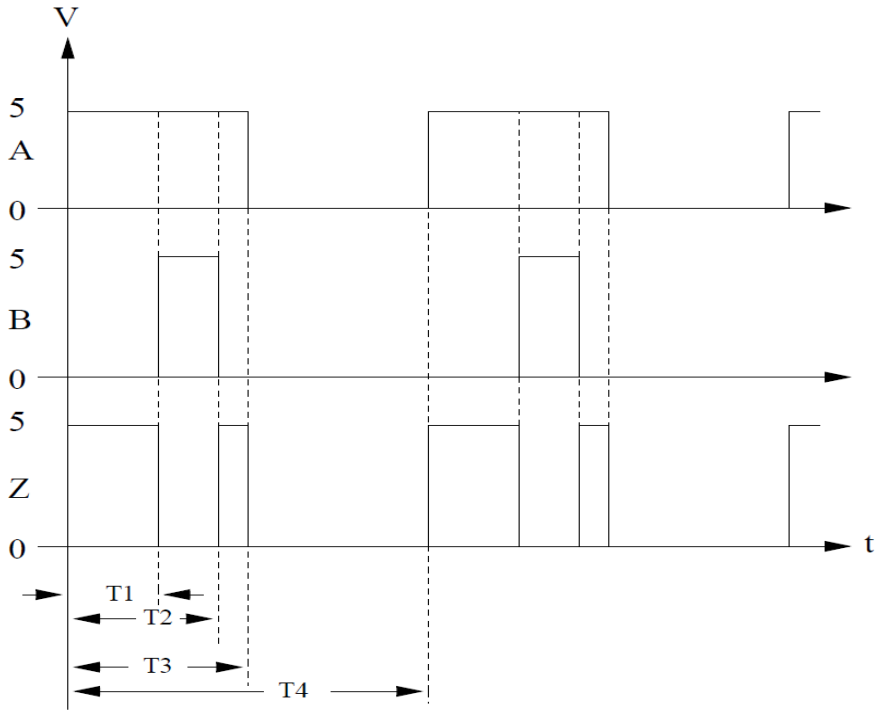
3.

a) The waveform for the output Z for $0 \leq t \leq T_4$ is given .

The truth table:

A	B	Z
0	0	0
0	1	0
1	0	1
1	1	1

真值表錯了不扣分



若把電容考慮進去部份給分(5~10%)

畫錯太多=0 分

b) Assuming $R_{ON} = 0$,

For $T_1 \leq t \leq T_2$ the first and the third MOSFET's are on, i.e.

$$P_{\text{static}} = 2\frac{V_S^2}{R_L}$$

求成 Energy 者依情況部分給分，答案差太多=0 分

4.

(a)

$$\frac{d^2 v_c(t)}{dt^2} + \frac{1}{LC} v_c(t) = 0$$

(正負號寫錯給一半分數)

(b)

$$\omega_o = \frac{1}{\sqrt{LC}} = 10^5 \text{ rad/s}$$

(少寫單位扣一分，式子列錯一半分數)

(c)

$$v_c(t) = v_c(0)\cos(\omega_o t) = \cos(10^5 t)$$

(式子列對但沒求出ω_o 扣一分；有寫算式但錯的不離譜只給一半分數)