台灣科技大學一百零八學年度下學期作業（二）

科目名稱：電路學(二)　開課系所：電子系 ET2104301

繳交期限：即日起至 109.5.17

1. (15%) The switch in Fig. 1 has been closed for a long time and is opened at $t = 0$. Please use Laplace transform to find $i(t)$ for $t > 0$.

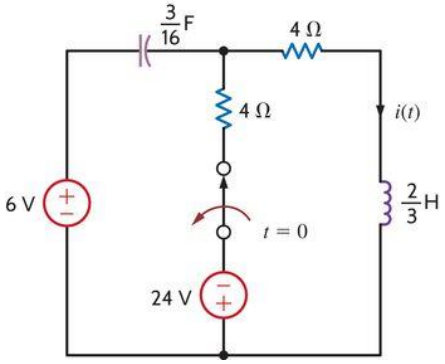

Fig. 1.

2. (15%) Please use loop analysis to find $v_o(t)$ for $t > 0$ in Fig. 2.

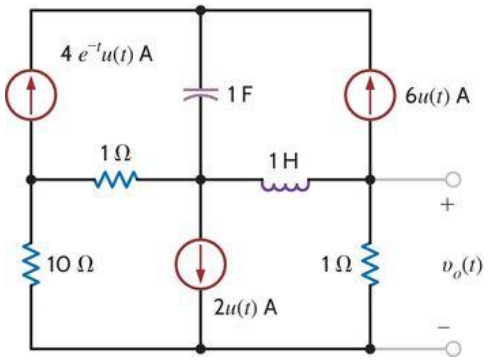

Fig. 2.

3. (15%) The switch shown in Fig. 3 moves from position 1 to position 2 at $t = 0$. Please use Laplace transforms to find $v(t)$ for $t > 0$

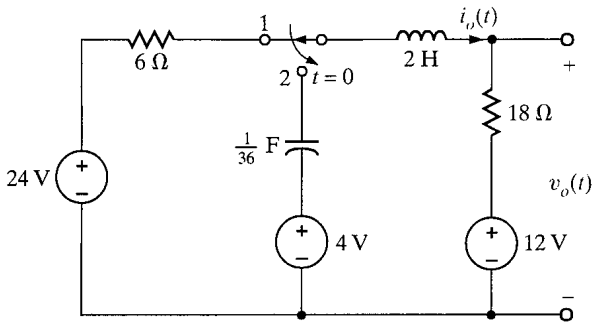

Fig. 3.

4. (15%) In Fig. 4, the switch moves from the position 1 to the position 2 at $t = 0$. Please use Laplace transform to find $v(t)$ for $t > 0$.

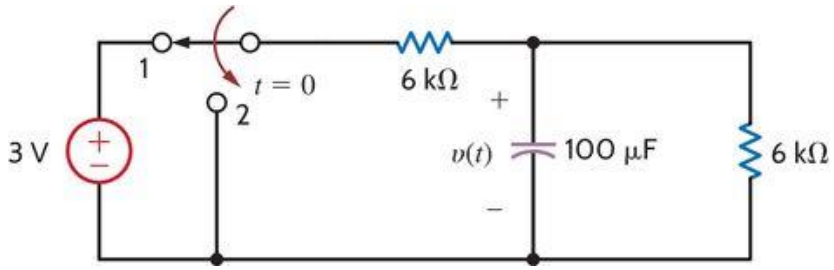

Fig. 4.

5. (20%) Please sketch the magnitude characteristic of the Bode plot(10%) and use Matlab to prove(10%), labeling all critical slopes and points for the function below:

$$G(j\omega) = \frac{10^4(j\omega+2)}{(j\omega+10)(j\omega+100)}$$

6. (20%) Please find $f(t)$ by given the following functions $\mathbf{F}(s)$.

(a) (5%) $F(s) = \dfrac{(s^2+5s+4)}{(s+2)(s+4)(s+8)}$

(b) (5%) $F(s) = \dfrac{s(s+6)}{(s+3)(s^2+6s+18)}$

(c) (5%) $F(s) = \dfrac{(s+4)(s+8)}{s(s^2+8s+32)}$

(d) (5%) $F(s) = e^{-3s}\dfrac{(95s+100)}{s(s^2+2s+2)}$