本試題是否可以使用計算機：　☑可使用　，　□不可使用　（請命題老師勾選）

1. (20%) (a) Obtain a Thevenin equivalent at terminals *ab* for the circuit shown in Fig. 1.

    (b) Find the equivalent resistance for the 11mV source in (a).
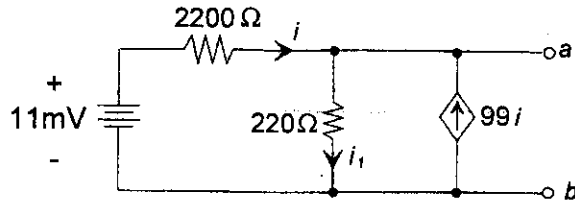

Fig. 1

2. (20%) Determine and draw the voltage $v_o(t)$ in the circuit of Fig. 2 when

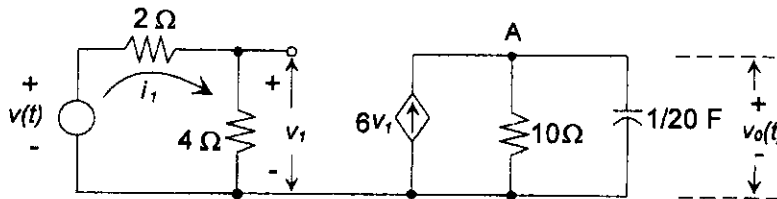   (a) $v(t) = 0.25u(t)$

    (b) $v(t) = 0.25u(t-1)$

Fig. 2

3. (20%) For the circuit shown in Fig. 3, use nodal analysis to find V as a function of ω.
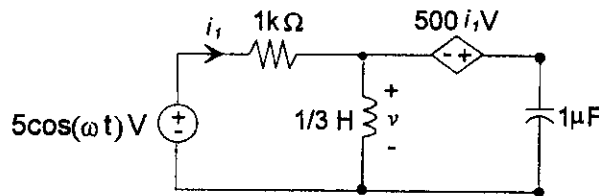

Fig. 3

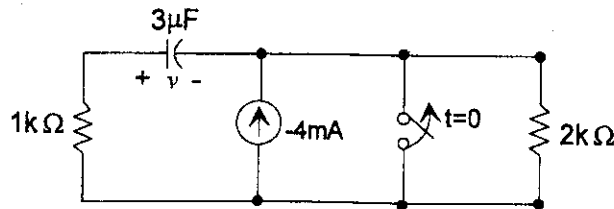4. (20%) If the circuit shown in Fig. 4 is in steady state at $t = 0^-$, find $v(t)$ for $t > 0$.

Fig. 4

5. (20%) In the circuit shown in Fig. 5, the element U is unknown, but it is known that the current through it is 10mA, in the direction shown. Find whether the element U is delivering or absorbing power, and how much power it is absorbing or delivering.
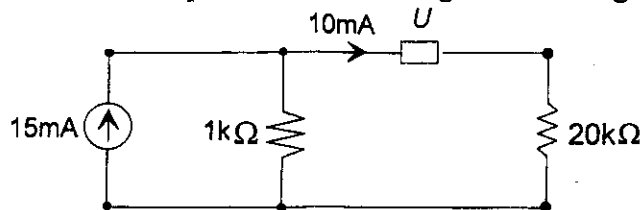

Fig. 5