# 國立臺北科技大學 100 學年度碩士班招生考試

系所組別：1523 自動化科技研究所乙組
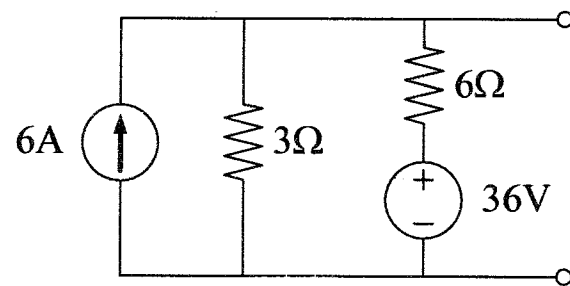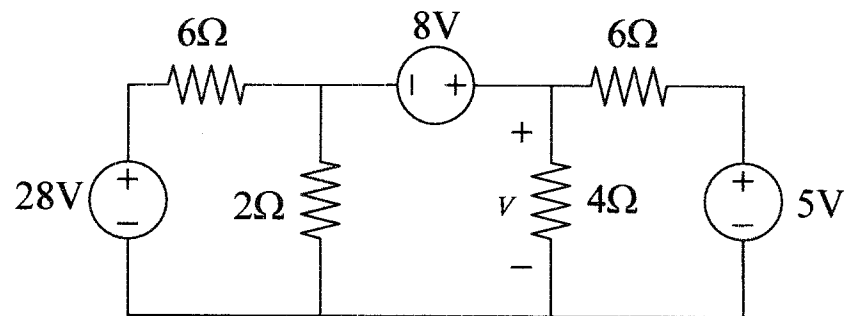
第二節　電路學　試題（選考）

**注意事項：**

1. 本試題共 7 題，配分共 100 分。
2. 請標明大題、子題編號作答，不必抄題。
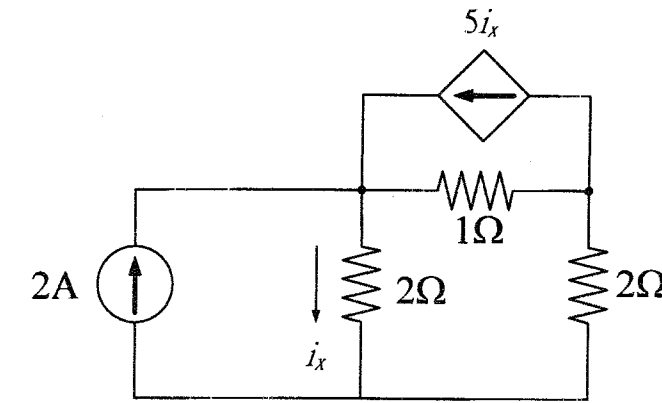3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

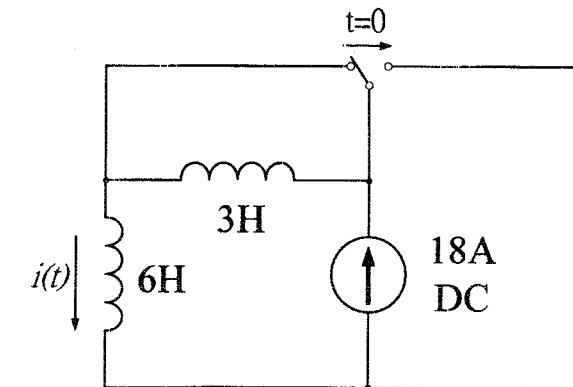1. For the circuit shown below, find the Thévenin and Norton equivalent circuits. (20%)

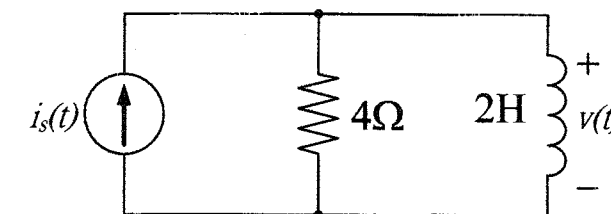2. Find the voltage v in the circuit shown below. (10%)

3. What is the equivalent impedance seen by the 2A current source? (15%)

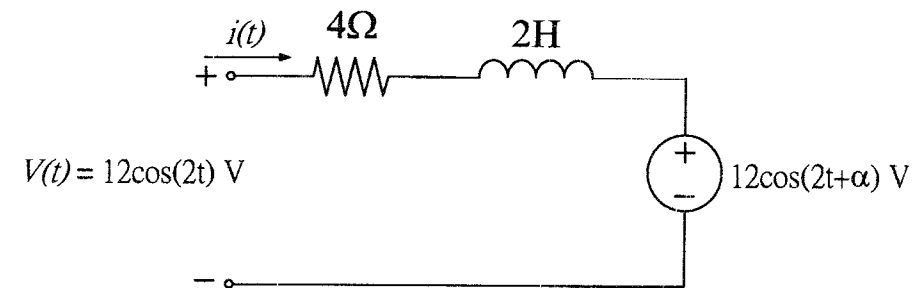4. Find the current i(t) for t > 0 in the following circuit. (10%)

5. For the circuit shown below, find the unit and step responses. (20%)

注意：背面尚有試題

6. Find the power absorbed by the circuit shown below for values of the voltage source phase angle $\alpha = 0°$, 90° and -90°. (15%)

$i(t)$　　$4\Omega$　　$2H$

$V(t) = 12\cos(2t)$ V

$12\cos(2t+\alpha)$ V

7. For the two-terminal circuit shown below, find the power factor and the average power absorbed by the circuit. (10%)

$i(t)$　　$3\Omega$

$v(t) = 157\cos(377t)$ V

$\dfrac{1}{1508}F$