國立高雄應用科技大學
101 學年度碩士班招生考試
電機工程系

准考證號碼☐☐☐☐☐☐☐☐☐☐☐ （考生必須填寫）

電路學（甲組）

注意：a. 本試題共 5 題，每題 20 分，共 100 分。
　　　b. 作答時不必抄題。
　　　c. 考生作答前請詳閱答案卷之考生注意事項。

1. A circuit is shown in Fig. 1, determine (1) i_s and (2) the power of the dependent current source. (20%)
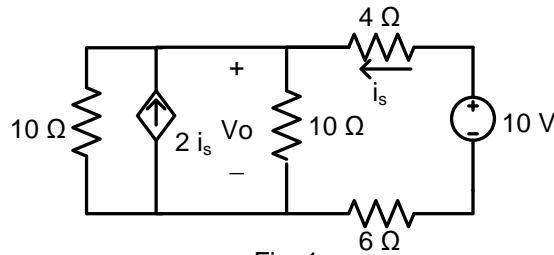

Fig. 1

2. A circuit is shown in Fig.2, use Node-Voltage-Method to calculate i_o and the power of the dependent voltage source. (20%)
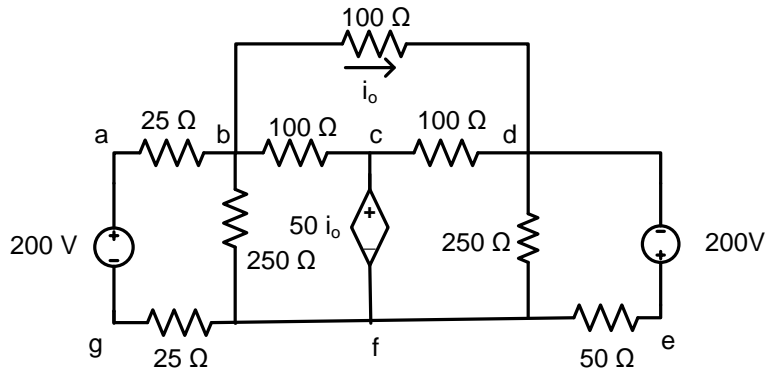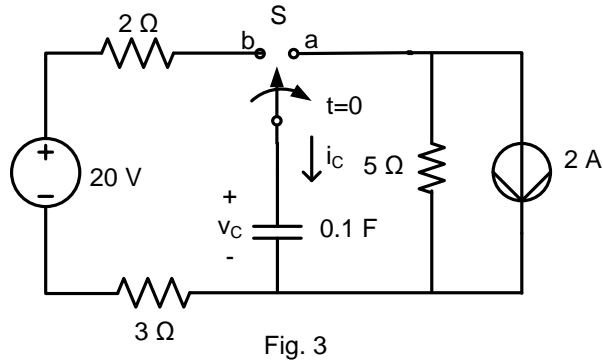

Fig. 2

3. A circuit is shown in Fig.3, the switch S has been in position b for a long time. At t=0, S is moved to position a. Find (1) $v_c(t)$ t>0，(2) $v_c(t)=0$, t=? (20%)

Fig. 3

4. The voltage and current functions of an electrical load are as follows：

$$v=110\sqrt{2}\cos(377t) \text{ V} \quad i= 10\sqrt{2}\sin(377t+37°) \text{ A}$$

Calculate average power (P), reactive power (Q), apparent power (S), and power factor (PF) of the load. (20%)

5. A circuit is shown in Fig.4, find (1) the transfer function (V_o/V_i), (2) the output steady-state response ($v_o(t)$) as w=10M rad/s. (20%)

Fig. 4