

國立臺灣科技大學 111 年度產業碩士專班招生(秋)試題

專班別：電力電子
科目：電路學

(總分為 100 分；所有試題務必於答案卷內頁依序作答，否則不予計分) 不得使用計算器

1. What value of R in the circuit of Fig. P1 would cause the current source to deliver 1800 mW to the resistors (15%)

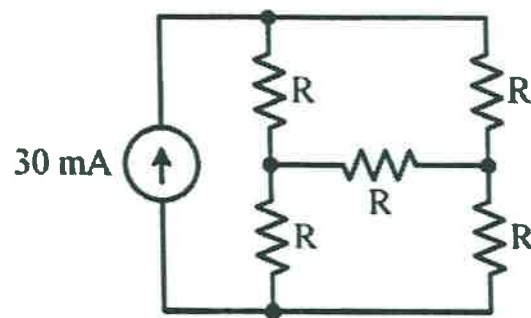


Fig. P1

2. Determine the Thevenin equivalent of the circuit shown in Fig. P2. (15%)

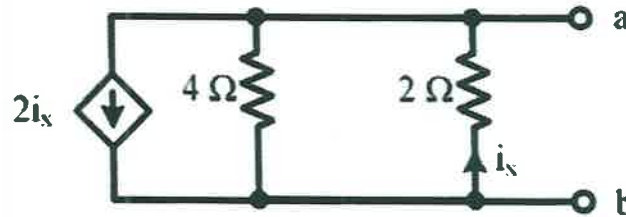


Fig. P2

3. Find the Thevenin equivalent circuit of the circuit shown in Fig. P3, to the left of the terminals $a-b$. Then find the current through $R_L=4, 13$ and 31Ω . (20%)

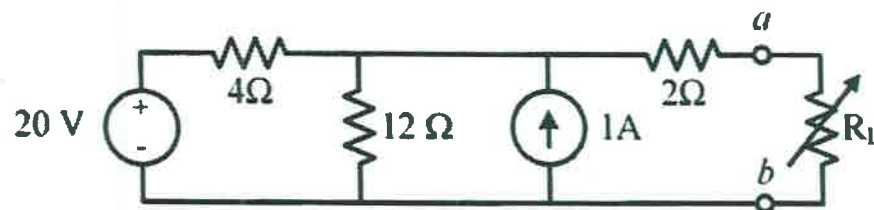
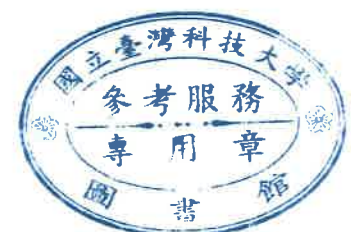


Fig. P3



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4. Simply explain the operating principle and the application of the OP AMP circuits shown in Fig. P4 (Assuming the OP AMP is ideal) (15 %)

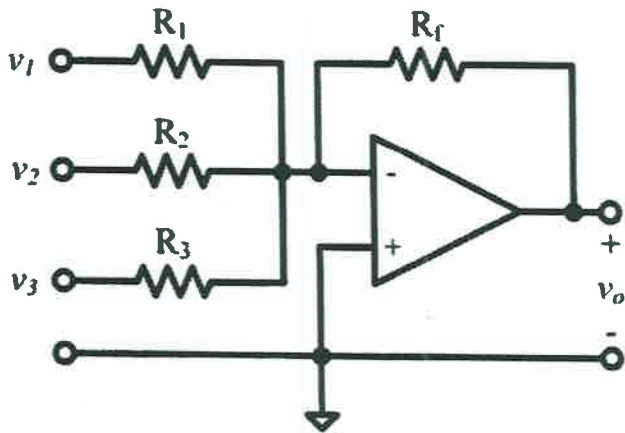


Fig. P4

5. Refer to the circuit shown in Fig. P5. (Total 20 %)
- (a) What is the power factor? (6 %)
 - (b) What is the average power dissipated? (6 %)
 - (c) What is the value of the capacitance that will give a unity power factor when connected to the load? (8 %)

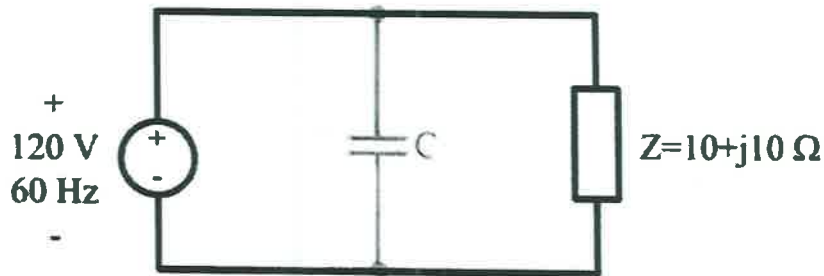


Fig. P5

6. For the circuit shown in Fig. P6, assume $v(0)=4$ V, find $v_o(t)$ for $t>0$ (15 %)

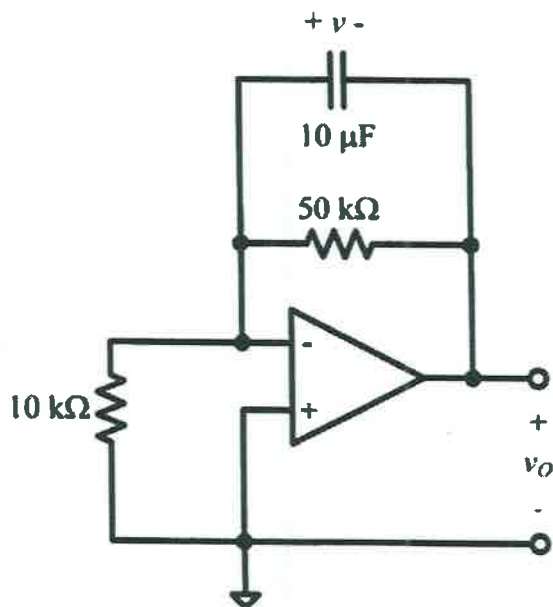


Fig. P6

