110A704

國立臺北科技大學 110 學年度碩士班招生考試

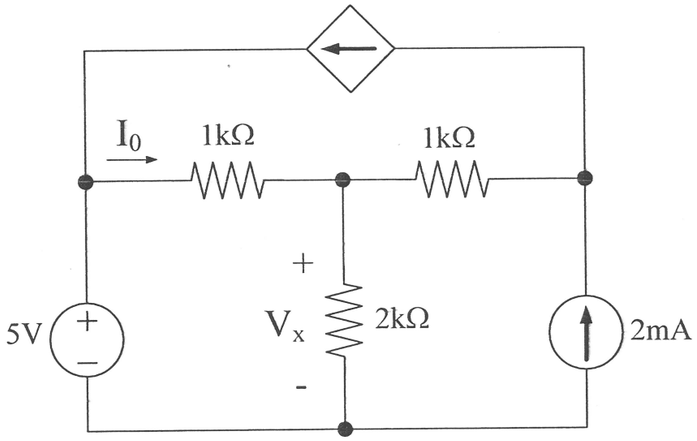
系所組別：1503 自動化科技研究所

第二節　電子學　試題（選考）

注意事項：

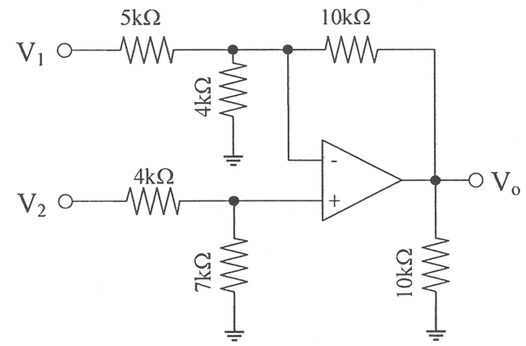
1. 本試題共 6 題，共 100 分。
2. 不必抄題，作答時請將試題題號及答案依照順序寫在答案卷上。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

1. Find I_o for the circuit shown below. (15%)

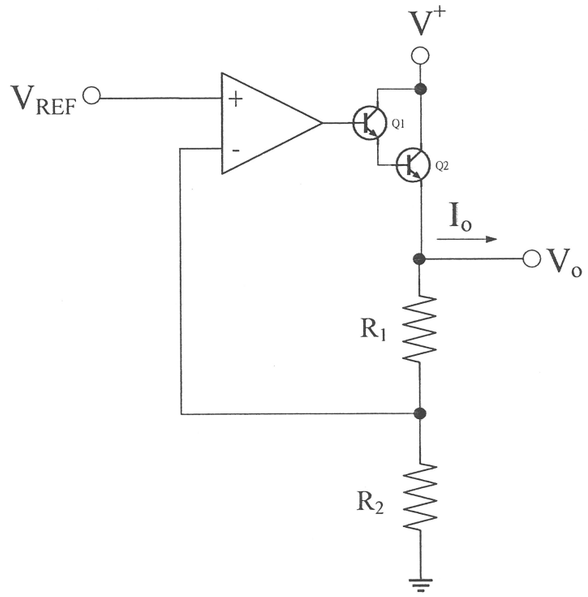


2. The output voltage of a three-terminal voltage regulator is 3.3 V at 5 mA load, and 3.25 V at 3 A load. Calculate the output resistance of the regulator. (15%)

3. Consider the circuit shown below. Assume the Op-Amp is ideal.
   1) If $V_1 = V_2 = 2V$, what is V_o? (10%)
   2) If the power supplies of the Op-Amp are ±15V, what is the allowable range of V_1 for linear operation when V_2=2V. (15%)

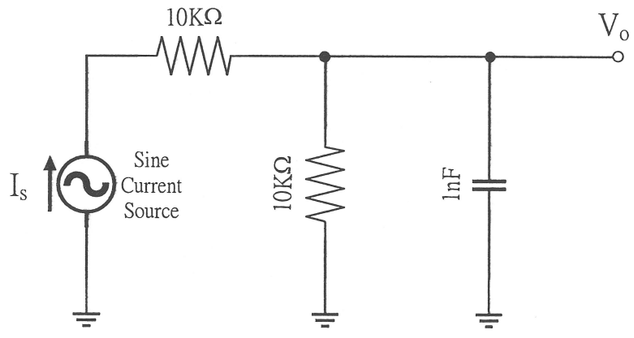


4. Assume the Op-Amp is ideal. Calculate V_o in the following circuit for V_{REF} =1.2V, R1=680Ω and R2=200Ω. (15%)



注意：背面尚有試題

5. For the circuit shown below, calculate the time constant and the 3-dB bandwidth. (10%)



6. An amplifier is designed to provide a 12 V peak-to-peak swing output at no load condition. Assume the input signal is sinusoidal. The amplifier has output resistance R_o = 0.4Ω. A load R_L=4Ω is connected to the output of the amplifier, how much power will R_L dissipate? (20%)