

國立成功大學
110學年度碩士班招生考試試題

編 號： 202

系 所： 電機資訊學院-資訊聯招

科 目： 應用電子學

日 期： 0202

節 次： 第 2 節

備 註： 不可使用計算機

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. (40%) Figure.1 shows a filter implemented with an operational amplifier. $c_1=c_2=200\text{nf}$, $r_1=r_2=4000\text{ Ohm}$, Load = 50K ohm. (a) Show the Bode plot of the circuit. (b) Find Q factor of the filter. (c) If Q is to be changed to 1.0, please redesign and redraw the circuit.

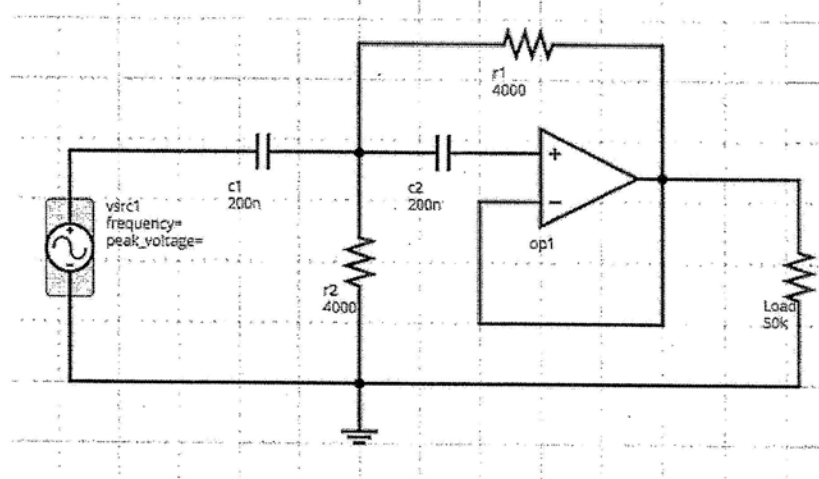


Figure.1 of problem 1.

2. (30%) In Figure 2, hfe of BC327 and BC337 are 100. hfe of TIP31 and TIP32 are 30. The resistors' values are shown in the figure. (a) Find the idle currents of r3 and r4. (b) Find the input impedance seen by signal source at the left. (c) Find the idle power consumption of TIP31 and TIP 32.

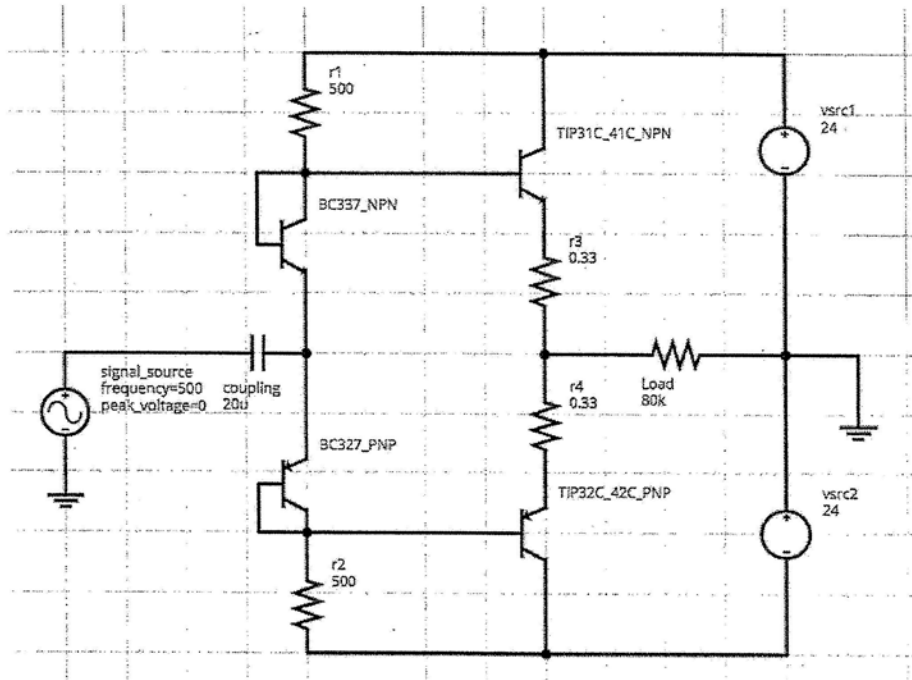


Figure.2 of problem 2.

3. (30%) In Figure 3, h_{fe} of $q1$, $q2$ and $q3$ are all 100. The resistors' values are shown in the figure. The power supply is $+28V$.
(a) Find the current of r_{29} (350 Ohm). (b) Find V_{ce} of $q2$ and $q3$. (c) Find the voltage at the collector of $q3$.

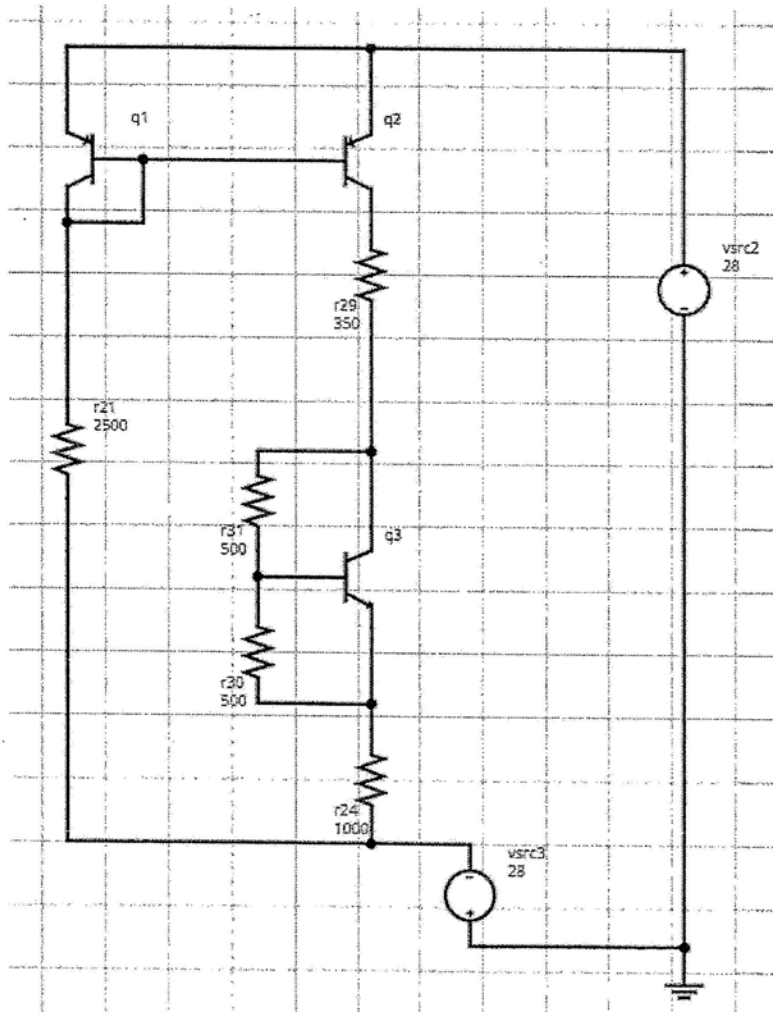


Figure.3 of problem 3.