

國立臺北科技大學 110 學年度碩士班招生考試

系所組別：1111 機械工程系機電整合碩士班甲組

第二節 電子學 試題 (選考)

第 1 頁 共 1 頁

注意事項：

1. 本試題共 5 題，每題 20 分，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. The op-amp exhibits an open-loop gain of 100 dB and a unity-gain bandwidth of 3 MHz. Determine (a) the closed-loop gain A_{cl} (5%) (b) the bandwidth BW_{cl} (5%) (c) V_{out} (5%) (d) V_f (5%) in the Figure 1.

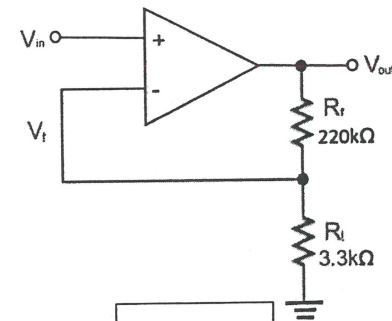


Figure 1.

2. For the amplifier in the Figure 2,

- (a) Determine the dc collector voltage. (5%)
- (b) Determine the ac collector voltage. (5%)
- (c) Draw the total collector voltage waveform and the total output voltage waveform. (10%)

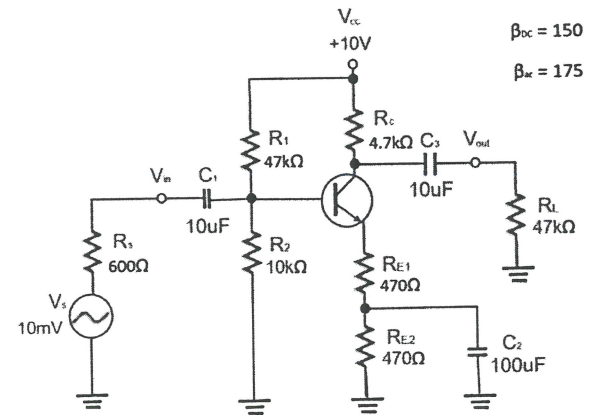


Figure 2.

3. For the circuit in Figure 3, determine the following:

- (a) Q_1 and Q_2 dc terminal voltages (5%)
- (b) overall β_{ac} (5%)
- (c) r'_e for each transistor (5%)
- (d) total input resistance (5%)

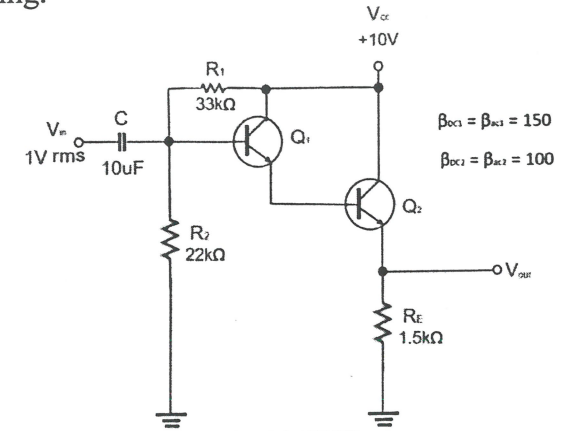


Figure 3.

4. Determine the peak-to-peak ripple, dc output voltages and ripple factor for the filtered bridge rectifier with a load as indicated in Figure 4. (20%)

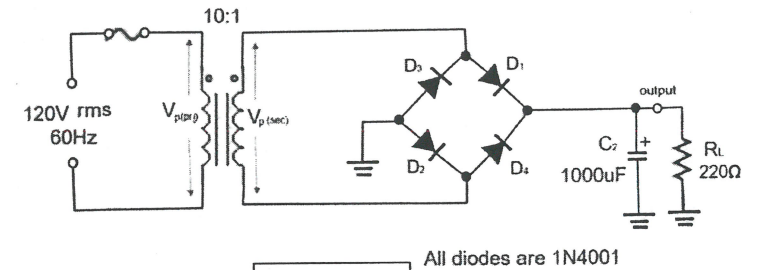


Figure 4.

5. Consider the circuit in Figure 5.

- (a) What is the total peak secondary voltage? (4%)
- (b) Find the peak voltage across each half of the secondary. (4%)
- (c) Sketch the voltage waveform across R_L . (4%)
- (d) What is the peak current through each diode? (4%)
- (e) What is the PIV for each diode? (4%)

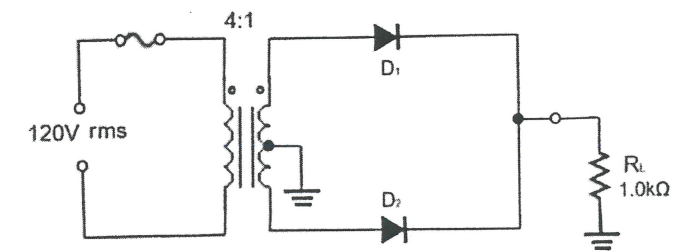


Figure 5.