112ME03

# 國立臺北科技大學 112 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）



**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. Determine the peak output voltage and current in the 3.3 kΩ load resistor shown in Fig.1 if $V_{\text{sec}} = 24V_{rms}$. Use the practical diode model.

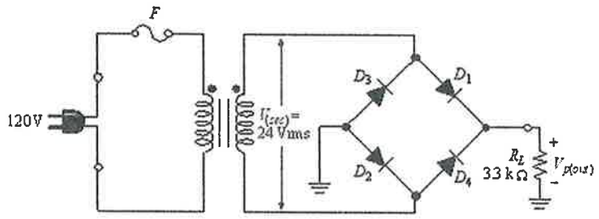


Fig.1

2. What are the saturation current and the cutoff voltage for the circuit shown in the Fig.2? Assume $V_{CE} = 0.2\text{V}$ in saturation.

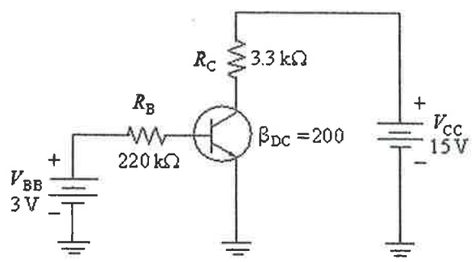


Fig.2

3. In the following Fig.3, what is the emitter voltage, $V_E$ and current, $I_E$? (Assume no loading effect)

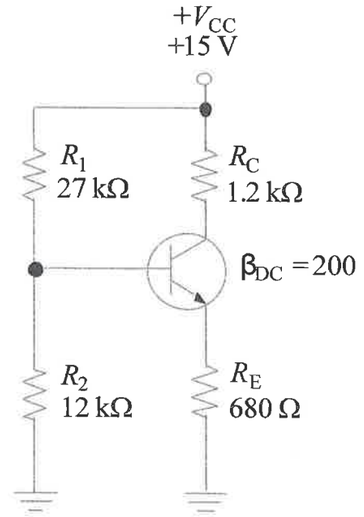


Fig.3

4. What is $V_{out}$ if three input voltages are respectively +5.0V, -3.5V and +4.2V in the Fig. 4? Assume $R_1 = R_2 = R_3 = 10\text{k}\Omega$ and $R_f = 3.3\text{k}\Omega$.

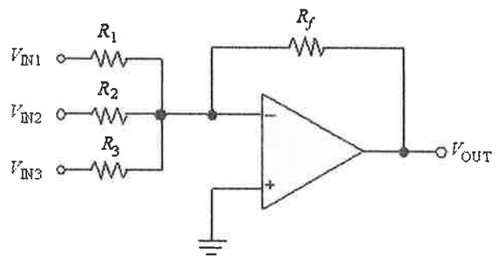


Fig.4

注意：背面尚有試題

5. The unit-gain bandwidth $f_T$ for a 741C op-ampl is 1 MHZ. What is the $BW_{cl}$ for the amplifier in the Fig. 5?

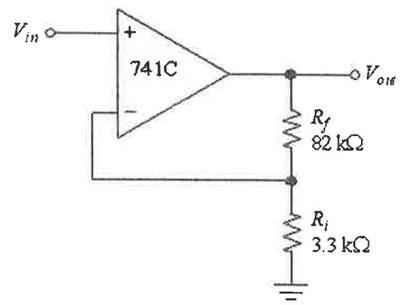


Fig. 5