國立高雄應用科技大學
九十七學年度碩士班招生考試
電子工程系（乙組）

准考證號碼□□□□□□□□□□　（考生必須填寫）

電子學

試題　共 2 頁，第 1 頁

注意：a. 本試題共 5 題，每題 20 分，共 100 分。
b. 作答時不必抄題。
c. 考生作答前請詳閱答案卷之考生注意事項。

1. As shown in Figure 1, $V_{CC}=24\,(v)$, $R_C=10k\Omega$, $R_e=270\Omega$, $\beta=45$ for silicon transistor, $V_{CE}=5\,(v)$, $V_{BE}=0.6\,(v)$, ignore the inverses saturation current, find the value of R.

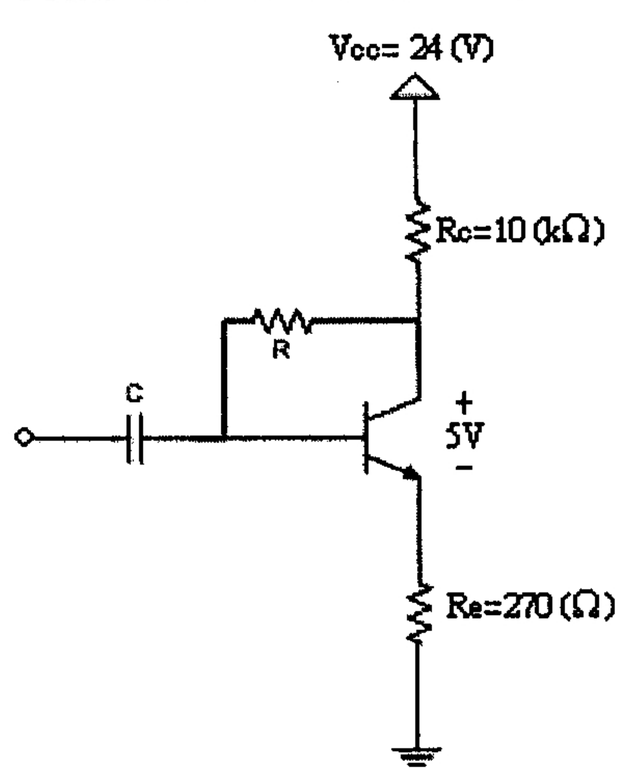

Figure 1

2. A three-pole feedback Amp has a dc gain without feedback of -10^3. All three open-loop poles are at $f=1MHz$.
<a> What is the maximum value of β for which amplifier is stable?
<b> Assume that one of the poles is shifted to $f_1=200kHz$, using the value of β found in part <a>, what is the gain margin of the modified circuit?

3. As shown in figure 3, $R=2(k\Omega)$, $R_2=2(k\Omega)$, $R_1=1(k\Omega)$, $V_2=1$ (V), $V_1=0.5$ (V), find the output voltage V_o.

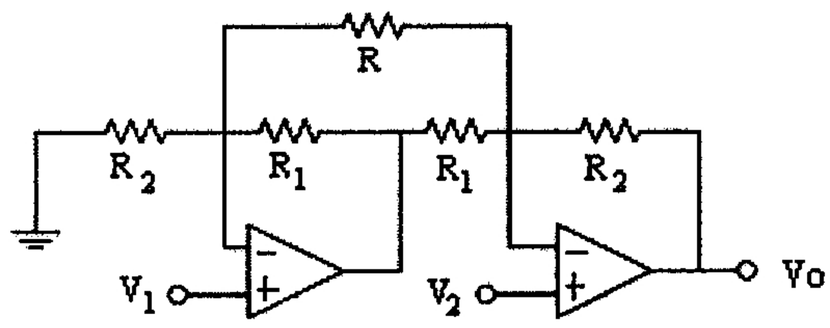

Figure 3

4. Given the Wien Bridge Oscillator in Figure 4, find the oscillating frequency and $\frac{R_1}{R_2}$.

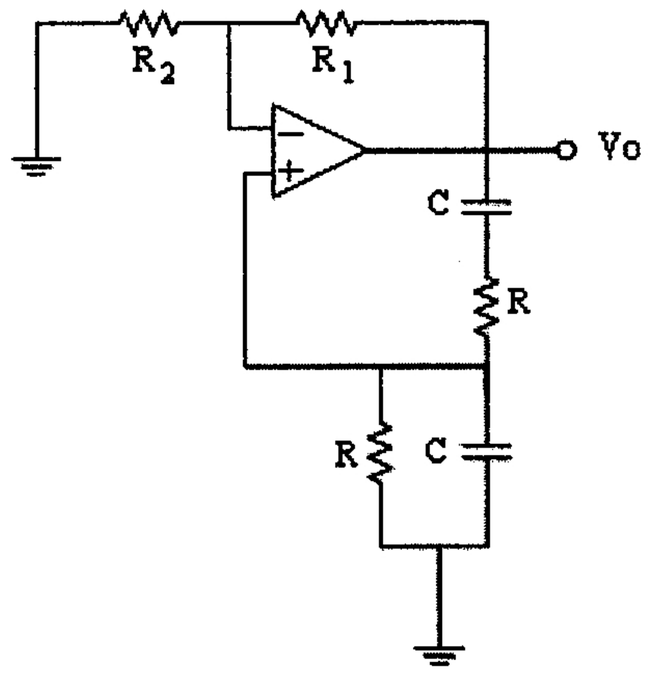

Figure 4

5. Given the circuits in Figure 5.1, Figure 5.2, and Figure 5.3, A, B, C, and D are inputs, and V_0 is the output. Find the truth tables of these three circuits.

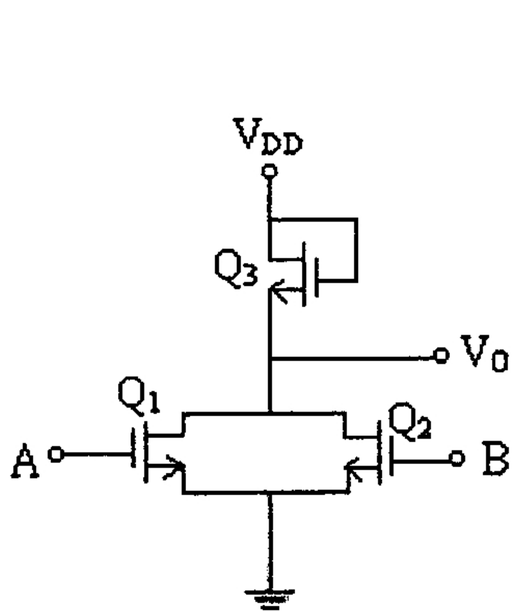

Figure 5.1

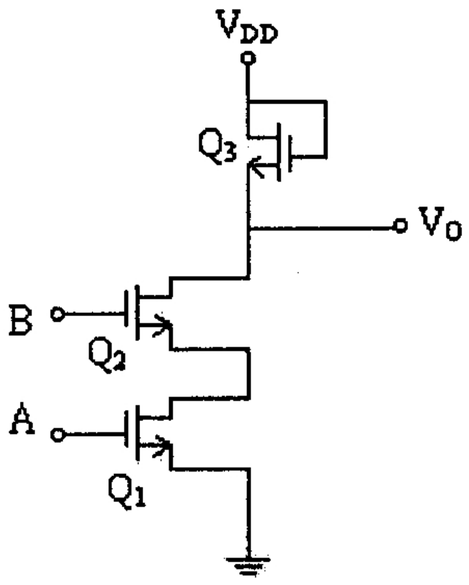

Figure 5.2

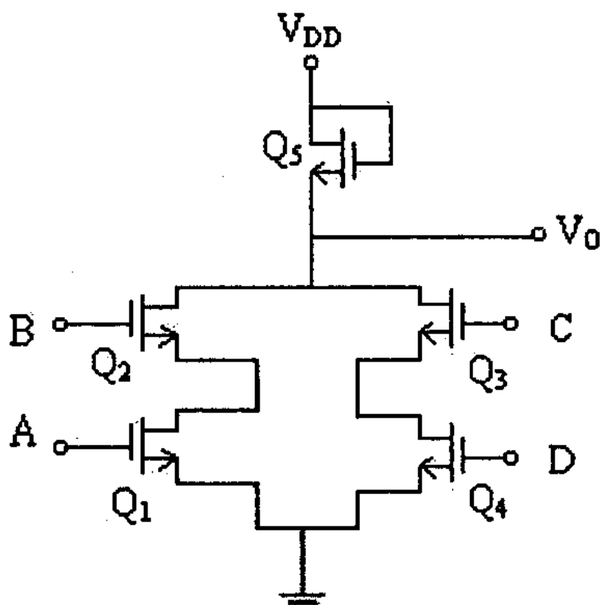

Figure 5.3