

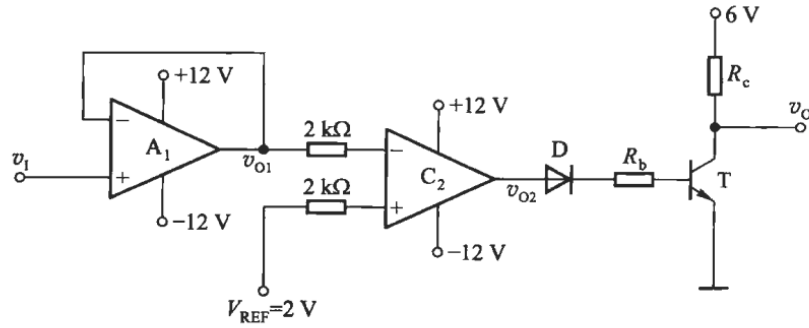
Homework for Chapter 10

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10.8.1 电路如图题 10.8.1 所示, A_1 为理想运放, C_2 为比较器, 二极管 D 也是理想器件, $R_b = 51 \text{ k}\Omega$, $R_c = 5.1 \text{ k}\Omega$, BJT 的 $\beta = 50$, $V_{CES} \approx 0$, $I_{CEO} \approx 0$, 试求: (1) 当 $v_i = 1 \text{ V}$ 时, $v_o = ?$ (2) 当 $v_i = 3 \text{ V}$ 时, $v_o = ?$ (3) 当 $v_i = 5 \sin \omega t \text{ V}$ 时, 试画出 v_i 、 v_{o2} 和 v_o 的波形。



图题 10.8.1

1 Problem 1

$$v_{o1} = 1 \text{ V} \quad v_{o2} = 12 \text{ V} \quad I_B = \frac{12 \text{ V}}{51 \text{ k}\Omega} = 235.3 \mu\text{A}$$

$$I_{BS} = \frac{6 \text{ V}}{R_c \beta} = 23.5 \mu\text{A} \ll I_B = 235.3 \mu\text{A} \Rightarrow v_o = 0 \text{ V}$$

2 Problem 2

$$v_i = 3 \text{ V} \quad v_{o1} = 3 \text{ V} \quad v_{o2} = -12 \text{ V} \quad v_o = 6 \text{ V}$$

3 Problem 3

