

中國文化大學 105 學年度碩士班考試入學招生考試試題

系所組：機械工程學系數位機電碩士班 節次：第 2 節

科目：應用電子學

1. Please draw the circuit symbols of
(1) *pnp* BJT (2) diode (3) *p* channel E-MOS (15%)
2. Please draw the collector characteristic curve of BJT and label the 3 operation regions. (20%)
3. Determine the voltages across each diode in Figs. 1 and 2, respectively. (20%)
4. What are the input and output resistances and the gain of the noninverting amplifier (Fig. 3)? Assume the op amp has $A_{ol} = 100,000$, $R_{in} = 2 \text{ M}\Omega$, and $R_{out} = 75 \Omega$. (20%)
5. Please find I_B , I_E , and I_C for the circuit shown in Fig. 4. ($\alpha_{DC} = 0.98$ and $\beta_{DC} = 49$) (25%)

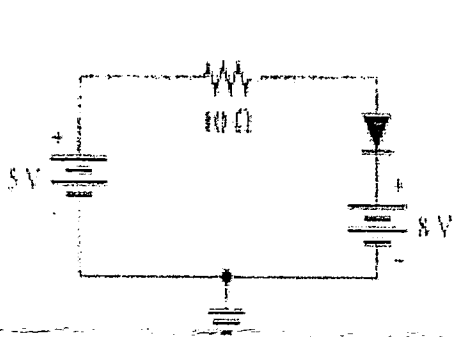


Fig. 1

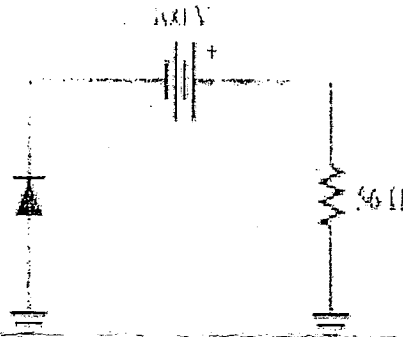


Fig. 2

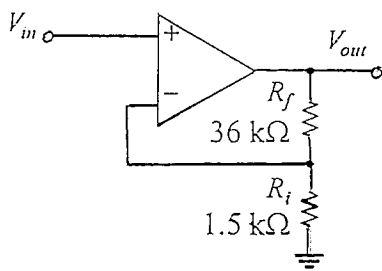


Fig. 3

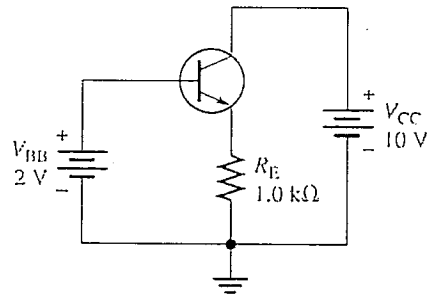


Fig. 4