

九十一學年度 工程與系統科學 系(所) 丁 組碩士班研究生招生考試

科目 電子學 科號 3902 共 2 頁第 1 頁 *請在試卷【答案卷】內作答

1. **For the devices in the circuit A, assume $|V_t| = 1V$, $\lambda = 0$, $\gamma = 0$, $\mu_n C_{ox} = 20\mu A/V^2$, $L = 1\mu m$, and $W = 20\mu m$. Find **V** and **I** (15%)**
2. **For the devices in the circuit B, assume $\beta = 100$, $C_\mu = 2pf$, $C_\pi = 14pf$. Find the upper 3-dB frequency. (15%)**
3. **For the devices in the circuit C, assume $\beta = 100$, $|V_{BE}| = 0.7V$, and neglect the Early effect.**
 - (a) **Find the DC bias current in each of the three transistors (8%)**
 - (b) **Find input resistance, output resistance, and voltage gain (12%)**

