

招生學年度	102	招生類別	碩士班
系所班別	光電電子碩士班聯合招生 (光電工程學系碩士班、電機工程學系 電子工程碩士班)		
科目	電子學		
注意事項	本考科可使用掌上型計算機		

5. (20%) Design the KHN high-pass filter in Fig.4, with $f_0=10\text{kHz}$ and $Q=2$. Choose $C=1\text{nF}$ and $R_1=R_2=R_f=10\text{k}\Omega$.

- What are the values of R and R_3 ?
- What is the value of high-frequency gain obtained?

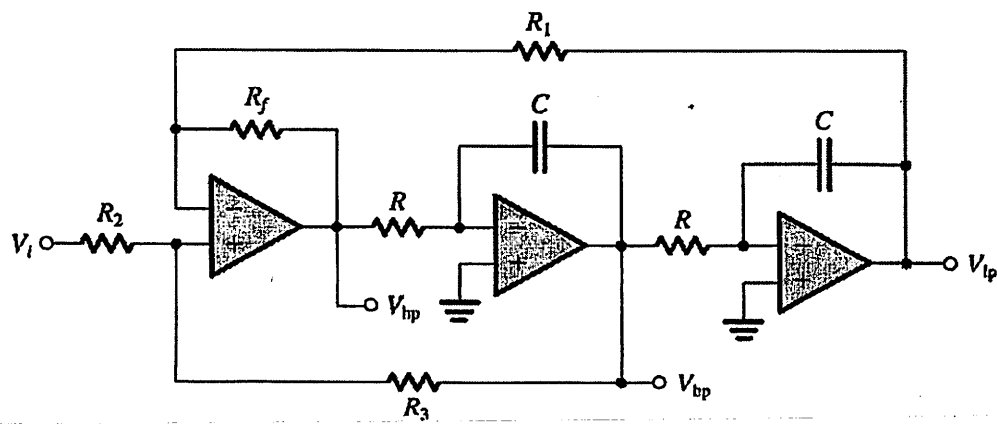


Fig.4

6. (5%) Design a CMOS logic gate circuit which performs the function of $Y = \overline{A(B + CD)}$.

7. (15%) The cascode amplifier in Fig.5 is operated at a current of 0.2mA with all devices operating at $|V_{ov}| = 0.2\text{V}$. All devices have $|V_A| = 2\text{V}$.

- Find g_{m1} and r_{o1} .
- Find the overall output resistance and the voltage gain realized.

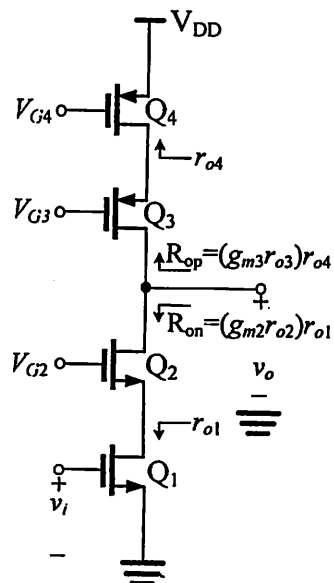


Fig.5