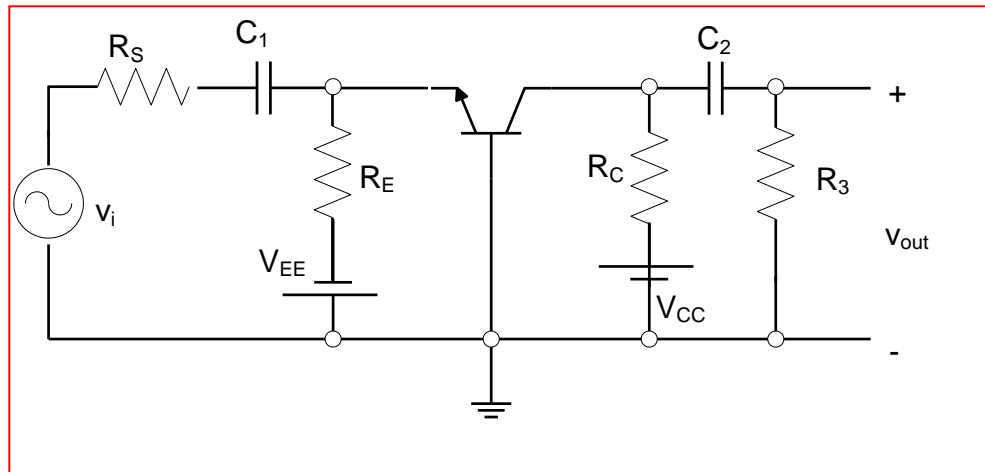


Sheet 5: BJT Amplifiers

Problem 1:

For the Common-Base (CB) amplifier shown, If $R_S = 100\Omega$, $R_E = 4.3K\Omega$, $R_C = 2.2K\Omega$, $R_3 = 51K\Omega$ and $\beta = 100$, answer the following questions:

- (a) What are the mid-band gain, input resistance and output resistance of the amplifier if the DC operating collector current ($I_C = 1mA$)?
- (b) What are the mid-band gain, input resistance and output resistance of the amplifier if $R_E = 430K\Omega$, $R_C = 220K\Omega$, $R_3 = 510K\Omega$ and the DC operating point ($I_C = 10\mu A$)?

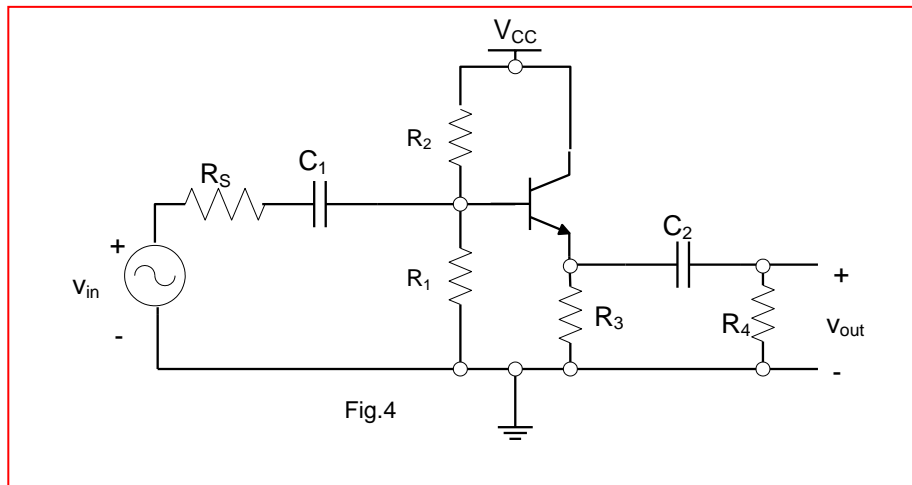


Problem 2:

For the Common-Collector amplifier shown:

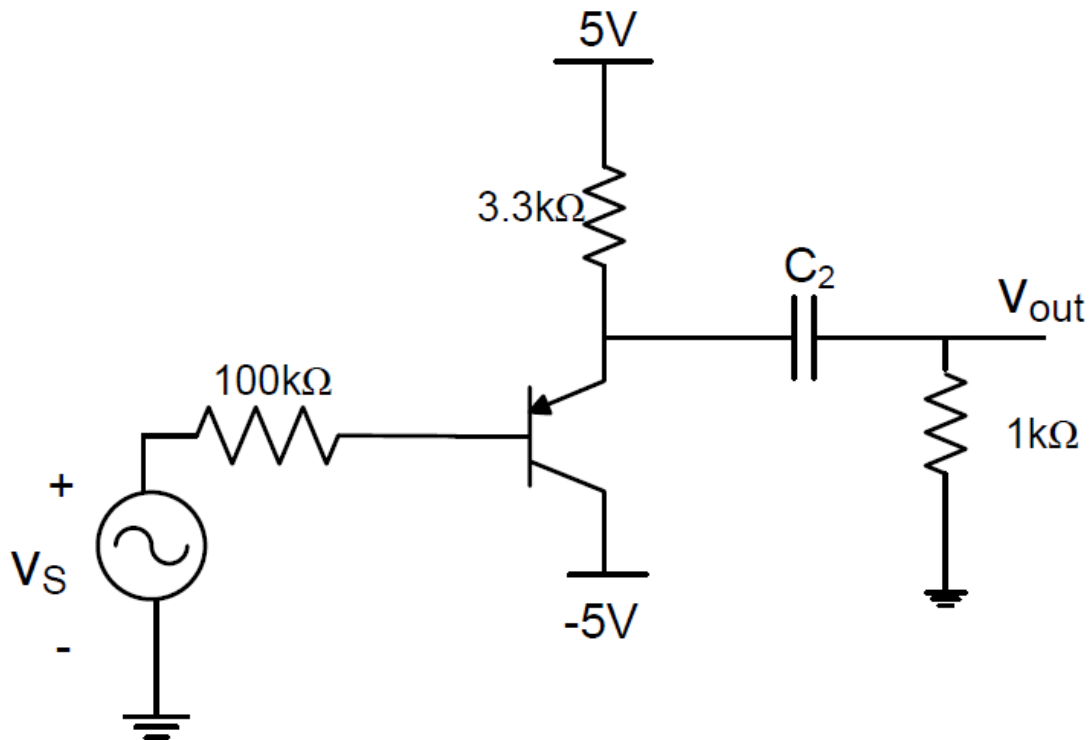
$$R_s = 2K\Omega \quad R_1 = 100K\Omega \quad R_2 = 300K\Omega \quad R_3 = 13K\Omega \quad R_4 = 100K\Omega \quad \beta = 100 \quad I_C = 0.25mA$$

Find the input resistance, output resistance and the voltage gain?



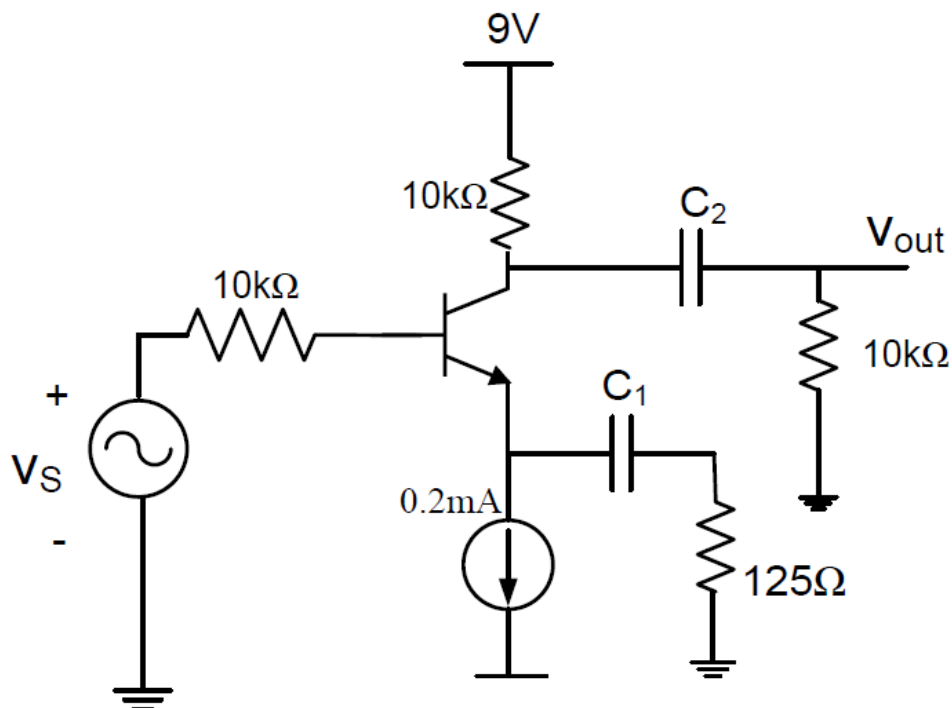
Problem 3:

For the Common-Collector amplifier shown in Figure, find the input resistance, output resistance and the voltage gain? ($V_{EB}=0.7V$, $\beta=120$)



Problem 4:

For the Common-Emitter amplifier with emitter resistance shown in Figure, find the input resistance, output resistance and the voltage gain? ($\beta=50$)



Problem 5:

For the amplifier circuit shown in Figure:

1. Find the DC collector current and voltage?
2. Find the input resistance, output resistance and the voltage gain?

($\beta=100$)

