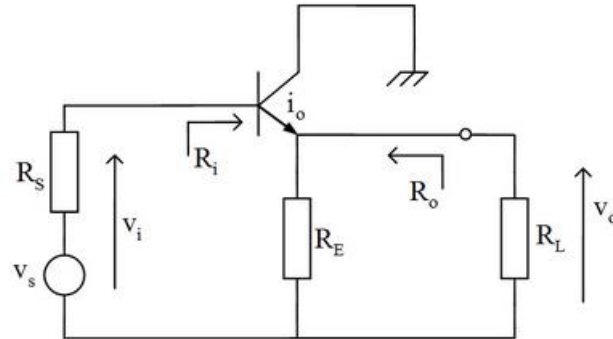
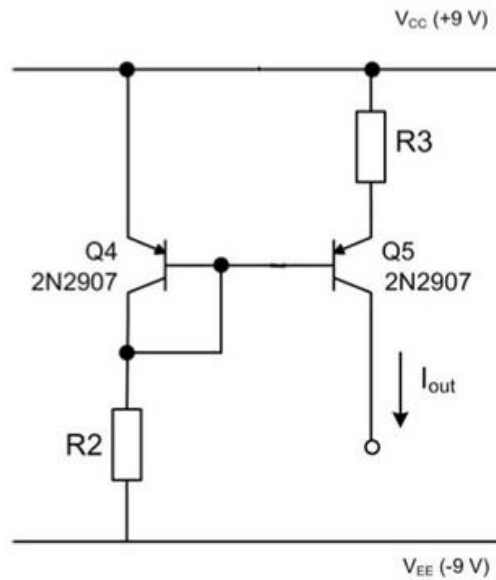


QUESTION 1**10 points**[Save Answer](#)

For the emitter follower circuit (EF) shown below, find the value for the input impedance $R_{i\eta}$ in ($M\Omega$) if current $I_C=1.4\text{mA}$, given that $R_E=10\text{k}\Omega$, $R_S=0$, $R_L=\infty$.

**QUESTION 2****10 points**[Save Answer](#)

For the Widlar current mirror circuit shown below, design the circuit to provide a current $I_{out}=100\mu\text{A}$, if $I_{R2}=612\mu\text{A}$. Hence, find the value of R_2 (in $\text{k}\Omega$).

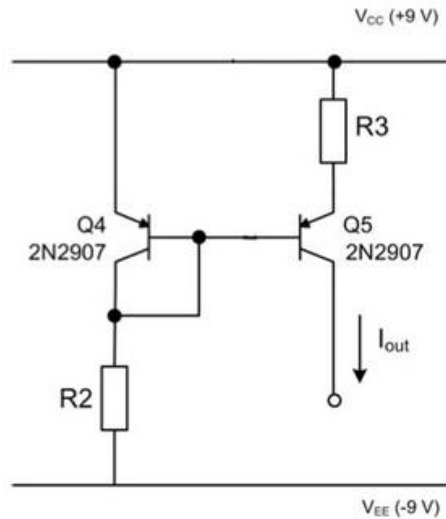


QUESTION 3

10 points

[Save Answer](#)

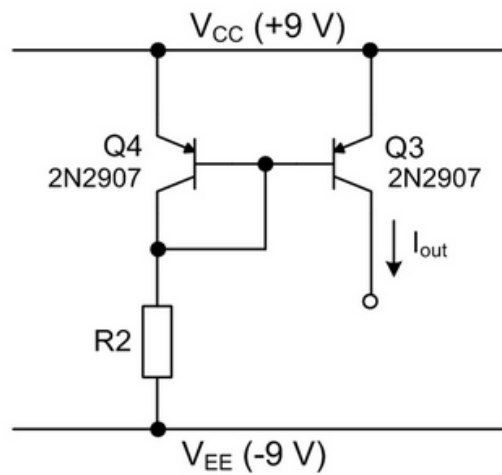
For the Widlar current mirror circuit shown below, design the circuit to provide a current $I_{out}=100\mu\text{A}$, if $I_{R2}=685\mu\text{A}$. Hence, find the value of R_3 (in Ω), given that $V_T=25\text{mV}$.

**QUESTION 4**

5 points

[Save Answer](#)

For the simple current mirror circuit shown below, find the value of R_2 in ($\text{k}\Omega$) to provide the current $I_{out}=3\text{mA}$.

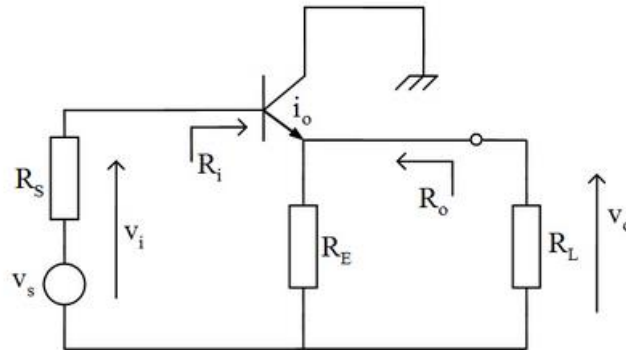


QUESTION 5

10 points

[Save Answer](#)

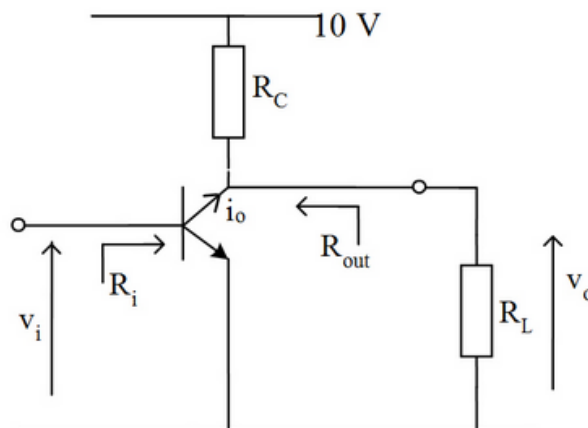
For the emitter follower circuit (EF) shown below, find the value for the output impedance R_{out} in (Ω) if current $I_C=7.8\text{mA}$, given that $R_E=10\text{k}\Omega$, $R_S=0$, $R_L=\infty$.

**QUESTION 6**

10 points

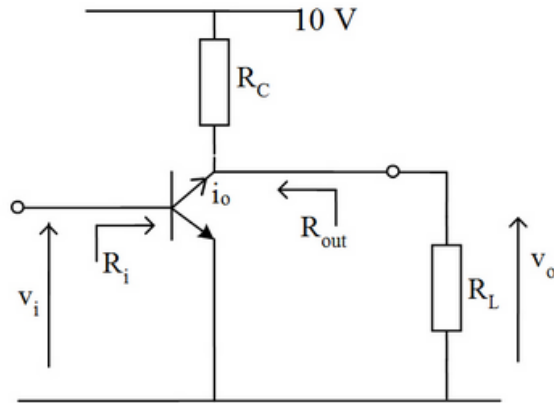
[Save Answer](#)

For the common emitter (CE) circuit shown below, find the value for the output impedance R_{out} in ($\text{k}\Omega$) if current $I_C=4\text{mA}$, given that $R_C=10\text{k}\Omega$, $V_A=150\text{V}$, $R_L=\infty$.

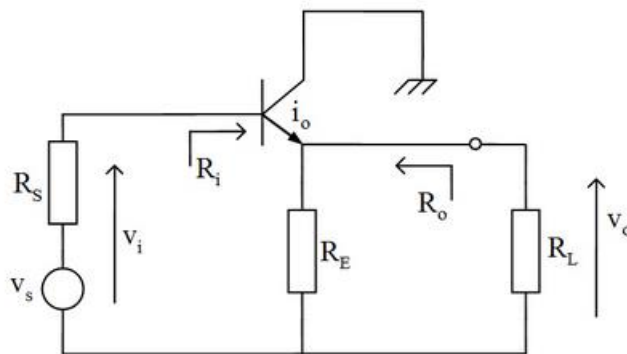


QUESTION 7**10 points**[Save Answer](#)

For the common emitter circuit (CE) shown below, find the value for the voltage gain A_V if the current $I_C=4.6\text{mA}$, given that $R_C=10\text{k}\Omega$, $V_A=150\text{V}$, $R_L=\infty$.

**QUESTION 8****5 points**[Save Answer](#)

For the emitter follower circuit (EF) shown below, find the value for voltage gain (A_V) if current $I_C=2.7\text{mA}$, given that $R_E=10\text{k}\Omega$, $R_S=0$, $R_L=\infty$.

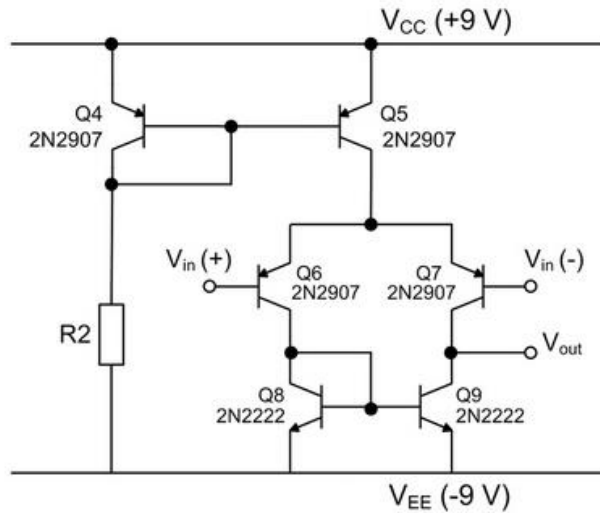


QUESTION 9

5 points

Save Answer

For the differential input stage shown below, the differential input impedance is required to be $100\text{k}\Omega$. Estimate the bias current in the differential amplifier to meet this specification. Hence calculate the value of R_2 (in $\text{k}\Omega$) required to set this bias current. The Early voltage of the NPN transistor is 150 V and that for the PNP is 50 V .

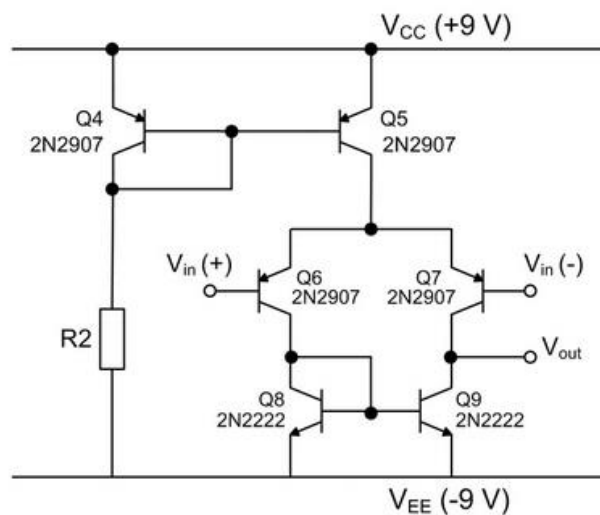


QUESTION 10

10 points

Save Answer

For the differential input stage shown below, the differential input impedance is required to be $100\text{k}\Omega$. Estimate the bias current in the differential amplifier to meet this specification. Hence calculate the value of the differential gain A_{vd} . The Early voltage of the NPN transistor is 150 V and that for the PNP is 50 V .

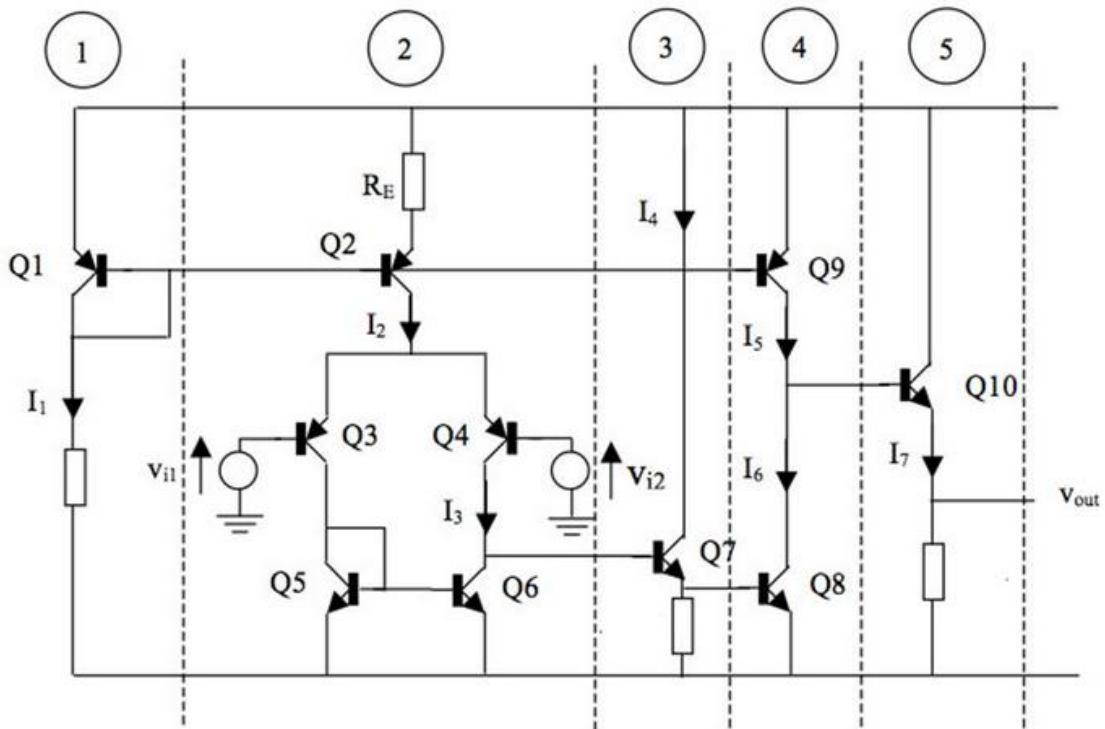


QUESTION 11

5 points

Save Answer

Match each of the stages shown in the circuit below with its purpose:



- Stage 1

- Stage 2/4

- Stage 3

- Stage 5

A. set the DC bias for all stages

B. 'match' the gain stages to avoid loading effects

C. provide high voltage gain

D. provide low output resistance

QUESTION 12

5 points

Save Answer

The emitter follower amplifier (EF) has input impedance, output impedance and voltage gain. (Hint: use 'high' and 'low' to fill in the blanks)

QUESTION 13

5 points

Save Answer

The common emitter amplifier (CE) has output impedance and voltage gain. (Hint: use 'high' and 'low' to fill in the blanks)