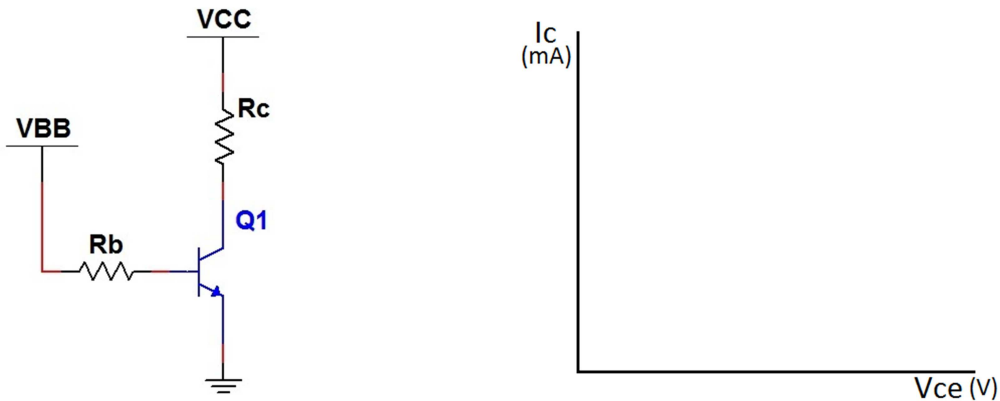


CECS 311 – BJT Homework 1

DC Analysis of BJT Circuits configured with a Base Bias

- 1) Determine the Operating Mode of the following transistor circuit. Cut-Off, Saturation, or Linear. You will need to find I_c and V_{ce} . Make sure that the answers for I_c and V_{ce} reflect the I_c and V_{ce} of the BJT in its Operating Mode, not just the intermediary steps that you use to help find the Operating Mode. Also draw the Load Line and Q point on the graph



β (Beta) of $Q1 = 50$, $V_{BB} = 10\text{v}$, $V_{CC} = 10\text{v}$, $R_b = 100\text{k}$, $R_c = 2\text{k}$.

$I_c =$ _____

$V_{ce} =$ _____

Operating Mode = _____

Load Line: Intersection of I_c Axis = _____ mA Intersection of V_{ce} Axis = _____ V

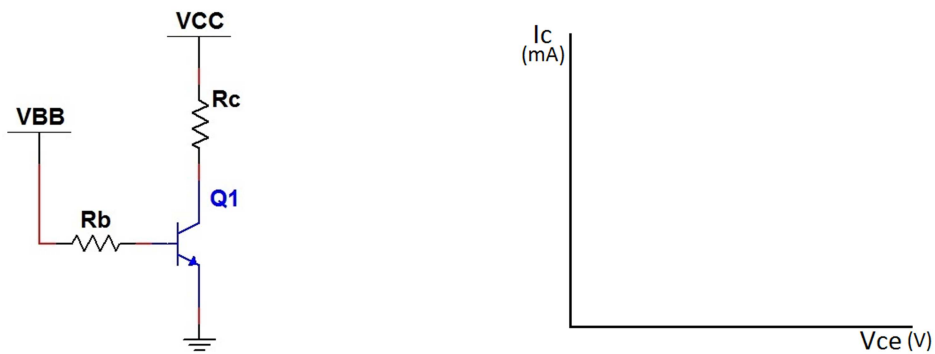
Q-point on Load Line: $I_c =$ _____ mA $V_{ce} =$ _____ V

Power Dissipated - $P_{BJT} =$ _____

CECS 311 – BJT Homework 1

DC Analysis of BJT Circuits configured with a Base Bias

2)



β (Beta) of Q1 = 100, $V_{BB} = 5\text{v}$, $V_{CC} = 9\text{v}$, $R_b = 50\text{k}$, $R_c = 20\text{k}$.

$I_c =$ _____ Operating Mode = _____

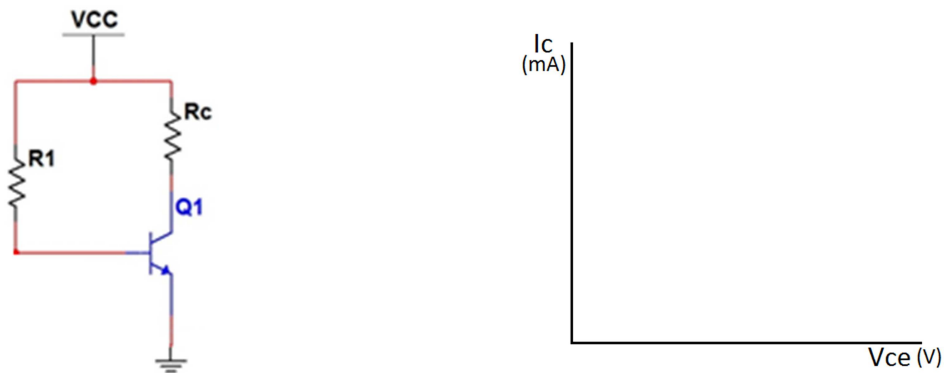
$V_{ce} =$ _____

Load Line: Intersection of I_c Axis = _____ mA Intersection of V_{ce} Axis = _____ V

Q-point on Load Line: $I_c =$ _____ mA $V_{ce} =$ _____ V

Power Dissipated - $P_{BJT} =$ _____

3)



β (Beta) of Q1 = 150, $V_{CC} = 5\text{v}$, $R_1 = 10\text{k}$, $R_c = 1\text{k}$.

$I_c =$ _____ Operating Mode = _____

$V_{ce} =$ _____

Load Line: Intersection of I_c Axis = _____ mA Intersection of V_{ce} Axis = _____ V

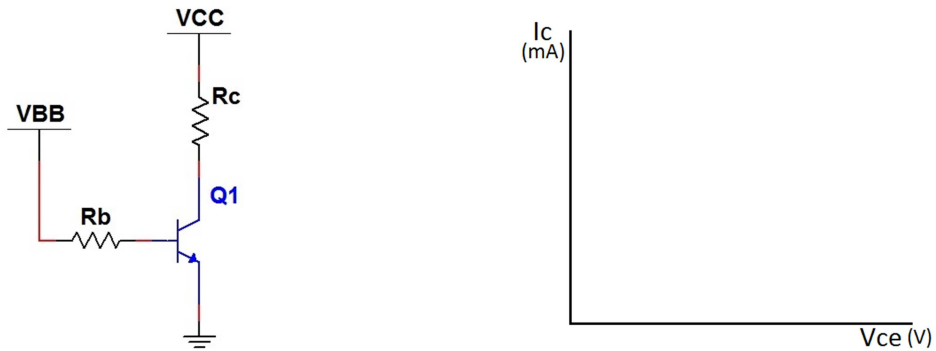
Q-point on Load Line: $I_c =$ _____ mA $V_{ce} =$ _____

Power Dissipated - $P_{BJT} =$ _____

CECS 311 – BJT Homework 1

DC Analysis of BJT Circuits configured with a Base Bias

4)



β (Beta) of $Q_1 = 100$, $V_{BB} = 0\text{v}$, $V_{CC} = 5\text{v}$, $R_b = 10\text{k}$, $R_c = 1\text{k}$.

$I_c =$ _____ Operating Mode = _____

$V_{ce} =$ _____

Load Line: Intersection of I_c Axis = _____ mA Intersection of V_{ce} Axis = _____ V

Q-point on Load Line: $I_c =$ _____ mA $V_{ce} =$ _____ V

Power Dissipated - $P_{BJT} =$ _____