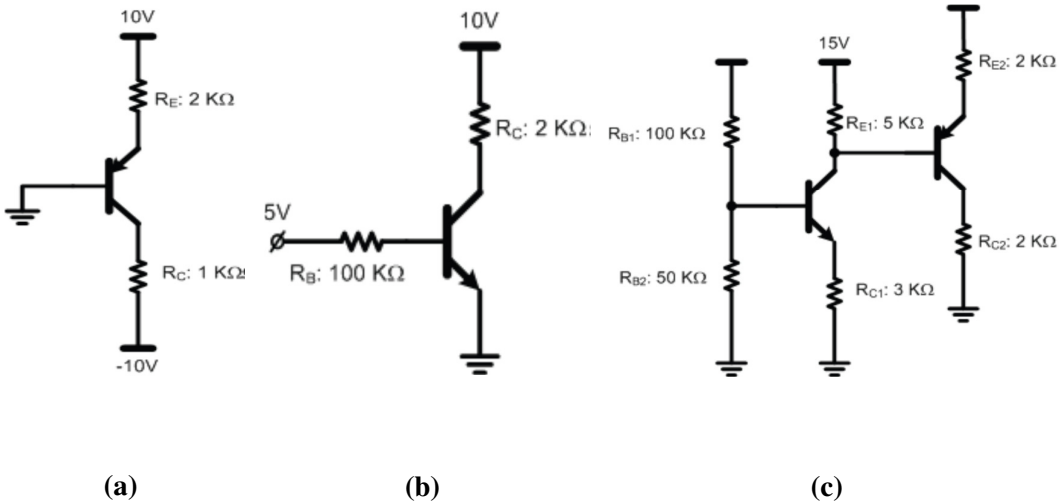




Sheet (3)
BJT DC Analysis

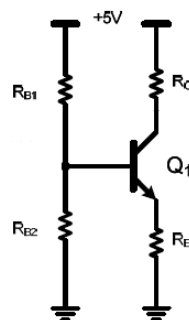
- 1- For the circuit shown below find all the node voltages and branch currents ($\beta=100$ and $V_{be} = 0.7\text{ V}$)



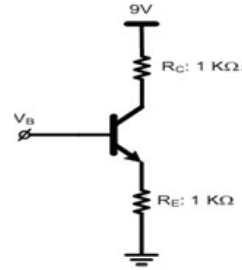
- 2- Graphically solve problem 1b to obtain the Q-point.

- 3- For the circuit shown aside find the value of R_C , R_E , R_{B1} , R_{B2} and all the voltages and currents. $I_E = 1\text{ mA}$, $V_{CE} = 2.5\text{ V}$, $R_E = R_C$.

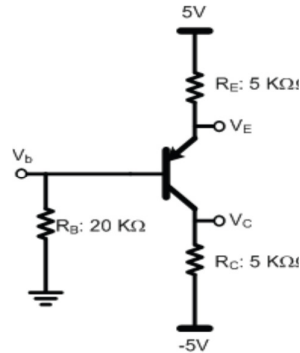
[Hint: take $R_{B2} = 10\text{ k}\Omega$]



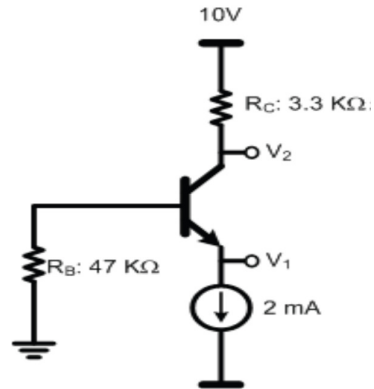
- 4- For the circuit shown aside, find the highest value of V_b which keeps the transistor in active mode.



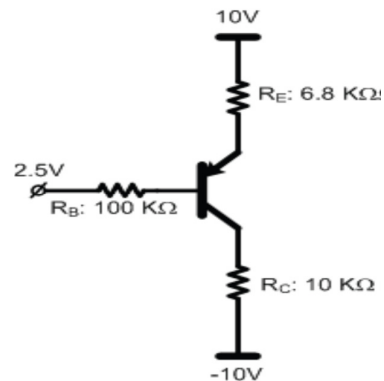
- 5- For the circuit shown aside if $V_E = 1V$, find: V_B, I_B, I_E, I_C, V_C and β .



- 6- For the circuit shown aside, find the labeled node voltages and all the branch currents.

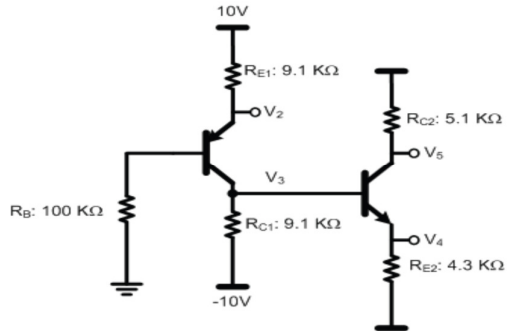


- 7- For the circuit shown aside, find all the voltages and currents.

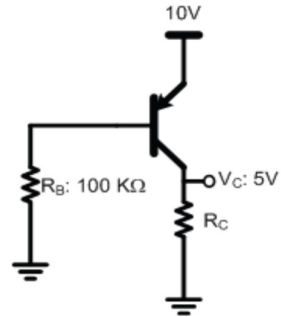


- 8- Solve problem 7 graphically to obtain the Q-point.

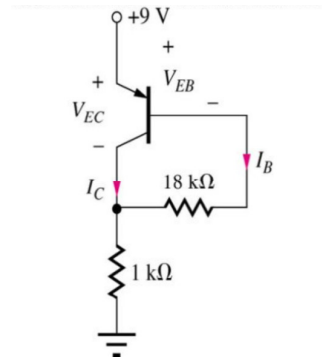
9- For the circuit shown aside find all the voltages and currents.



10- For the circuit shown aside, find the value of R_c which makes $V_c = 5V$.



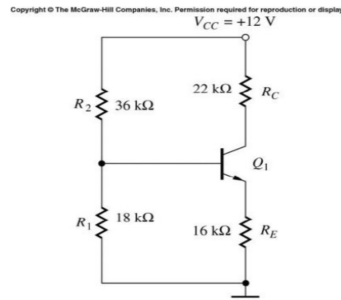
11- Find Q-point of the *npn* transistor in the 2-resistor bias circuit shown aside with given parameters $\beta=50$, $V_{CC} = 9$ V.



12- Solve problem 11 graphically to obtain the Q-point.

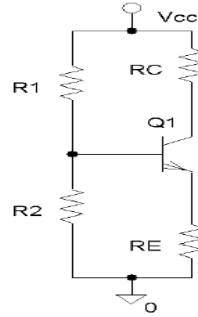
13- Design a 4-resistor bias circuit such that $I_C = 750 \mu A$, $\beta = 100$, $V_{CC}=15$ V, $V_{CE}=5$ V

14- Find Q-point for *npn* transistor in the 4-resistor bias circuit shown aside. ($\beta=75$)

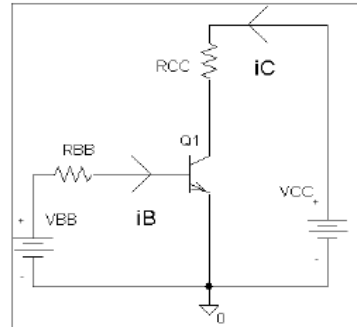


15- Solve problem 11 graphically to obtain the Q-point.

- 16- A 2N2222A is connected as shown in figure 13 with $R_1 = 6.8 \text{ k}\Omega$, $R_2 = 1 \text{ k}\Omega$, $R_C = 3.3 \text{ k}\Omega$, $R_E = 1 \text{ k}\Omega$ and $V_{CC} = 30\text{V}$. Assume $V_{BE} = 0.7\text{V}$. Compute V_{CE} and I_C for
- $\beta=100$
 - $\beta=300$



- 17- In the CE Transistor circuit shown in figure 14, $V_{BB} = 5\text{V}$, $R_{BB} = 107.5\text{k}\Omega$, $R_{CC} = 10 \text{ k}\Omega$, $\beta=100$, $V_{CC} = 10\text{V}$. Find I_B , I_C , V_{CE} and the transistor power dissipation



- 18- Find the Q-point for problem 19 graphically.