CHAPTER 4: BIPOLAR JUNCTION TRANSISTOR

ASSIGNMENT - 4

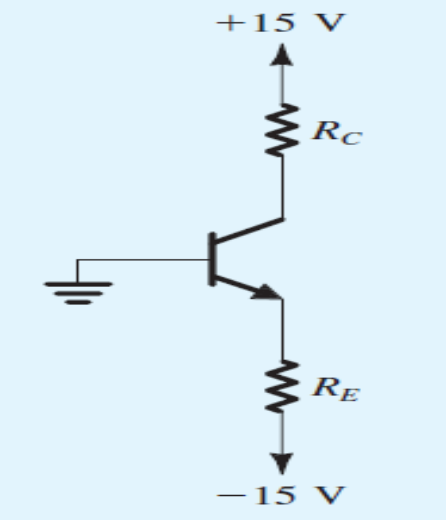
1)Explain the operation of NPN transistor in active mode with neat diagram?

2) What is early effect? How does it modify the V-I characteristics of a BJT?

3) Explain the amplification action of BJT ?Derive the relation between α and β Of a transistor.

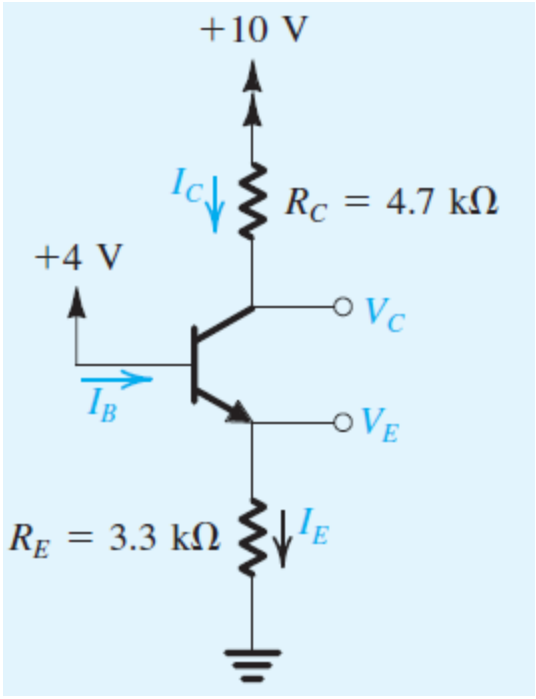
4) Explain the various biasing methods in BJT.

5)The transistor in the circuit of figure shown has β =100 and exhibits a V_{BE} of 0.7V at i_C =1mA.Design the circuit so that a current of 2 mA flows through the collector and a voltage of +5V appears at the collector.

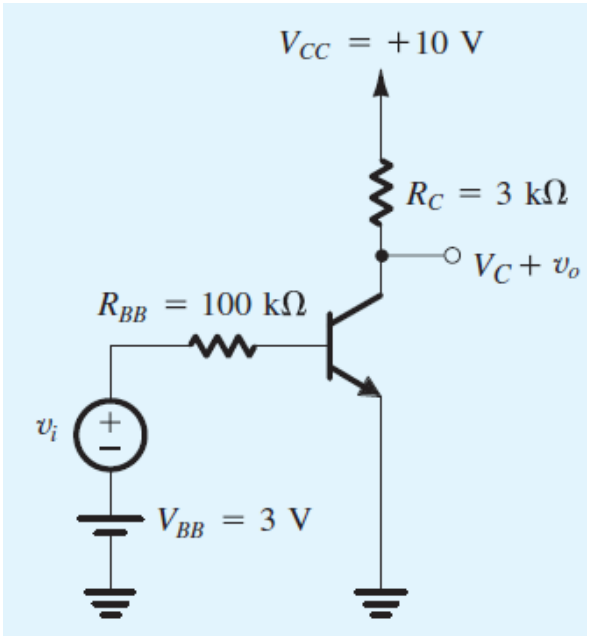


6)Compare CE,CB,CC configuration in BJT.

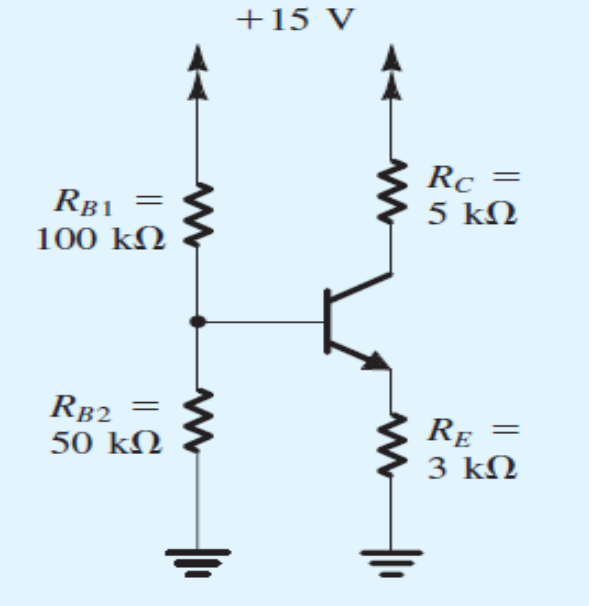
7)Analyze the circuit shown in the figure to determine the voltages at all nodes and the currents through all branches. Assume β = 100.



8)Analyze the transistor shown in figure .Determine its voltage gain (V_0/V_i)Assume β =100.



9)Analyze the circuit shown in the figure to determine the voltages at all nodes and the currents through all branches. Assume β = 100.



10)Draw the high-frequency hybrid-π model of CE amplifier including capacitive effects and also state the significance of the parameter f_T

11)Draw the small-signal equivalent circuit of the emitter follower and derive the expression for overall voltage gain?

12)Draw and explain the common emitter (CE) amplifier with and without source resistance. Also derive the expressions for voltage gain, overall voltage gain and output resistance?