



Fundamental of Electronic I

Second Class

Chapter 4 : DC Biasing – BJTs

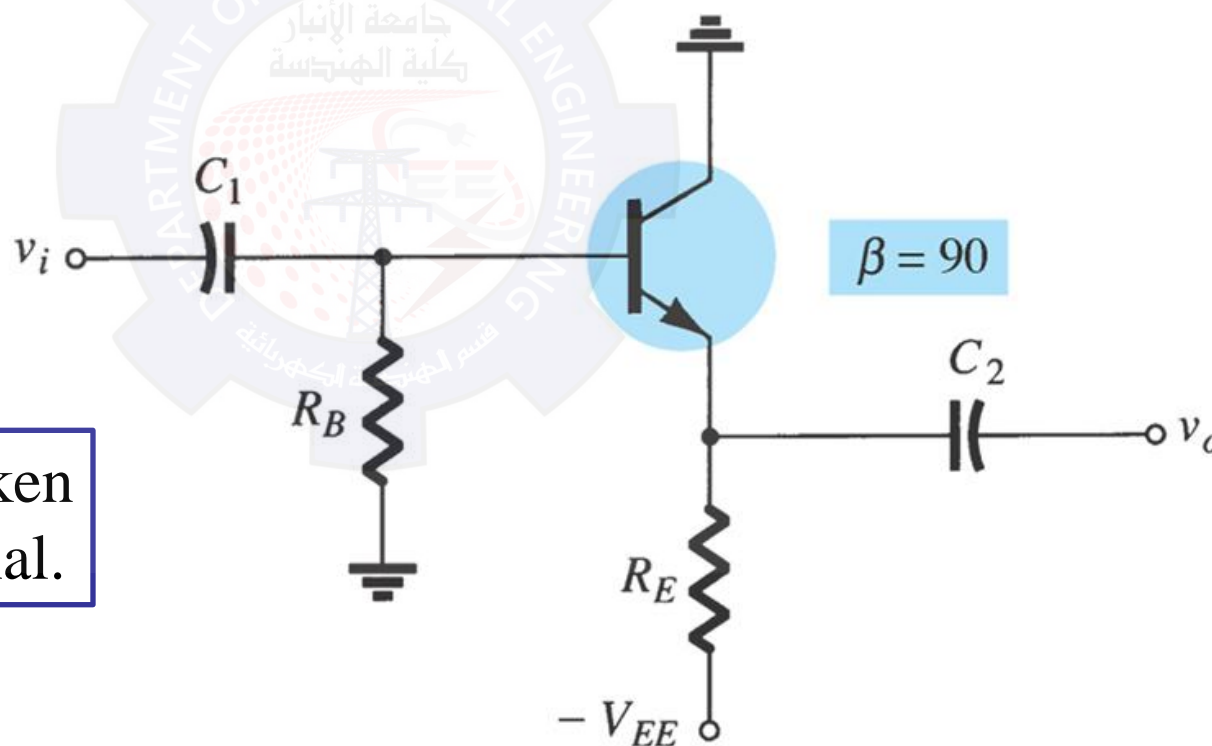
Lec04_p3

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Emitter Follower (Common Collector) Configuration



➤ The output is taken off the emitter terminal.



Emitter Follower (Common Collector) Configuration

$$-I_B R_B - V_{BE} - I_E R_E + V_{EE} = 0$$

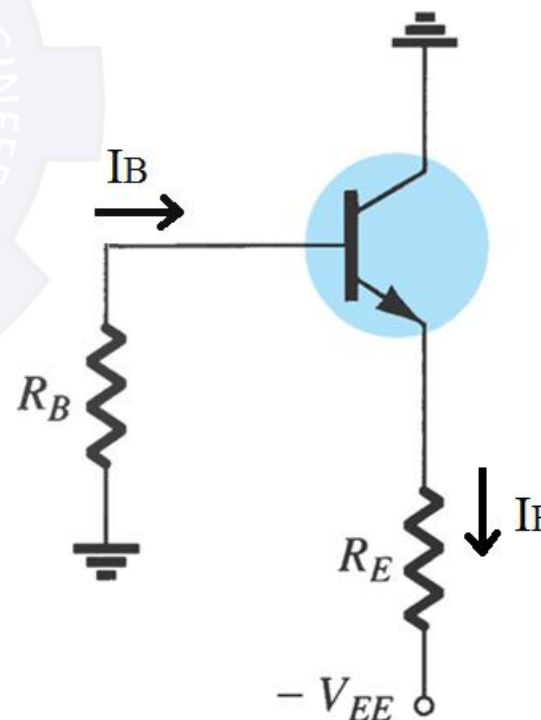
and using $I_E = (\beta + 1)I_B$

$$\rightarrow I_B R_B - (\beta + 1)I_B R_E = V_{EE} - V_{BE}$$

$$I_B = \frac{V_{EE} - V_{BE}}{R_B + (\beta + 1)R_E}$$

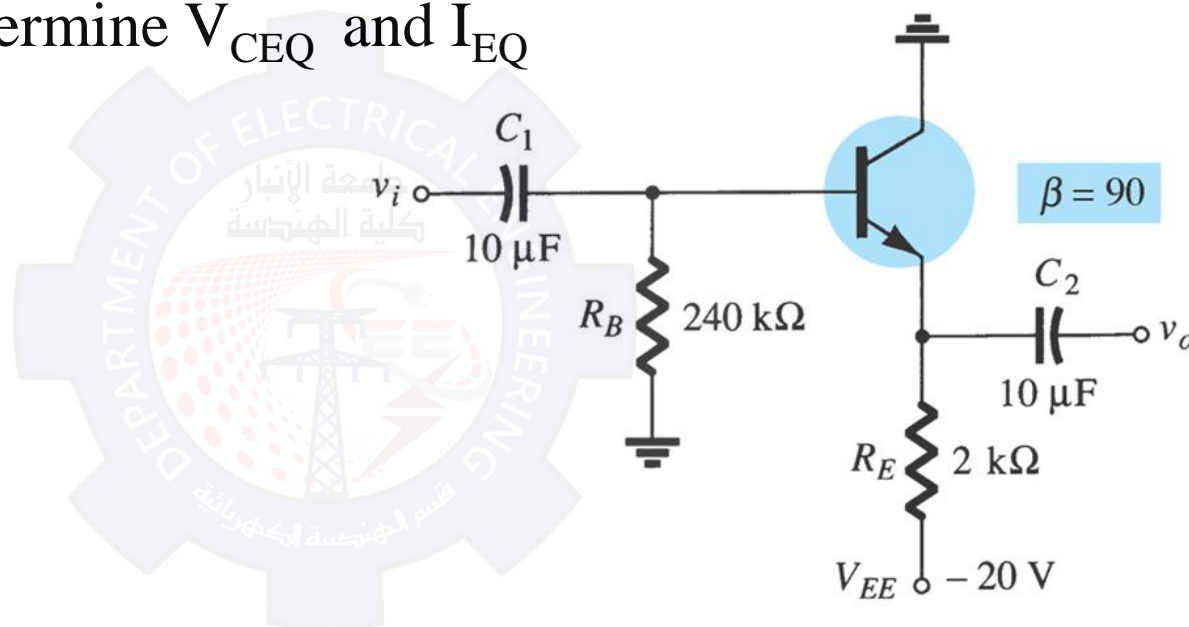
$$-V_{CE} - I_E R_E + V_{EE} = 0$$

$$V_{CE} = V_{EE} - I_E R_E$$



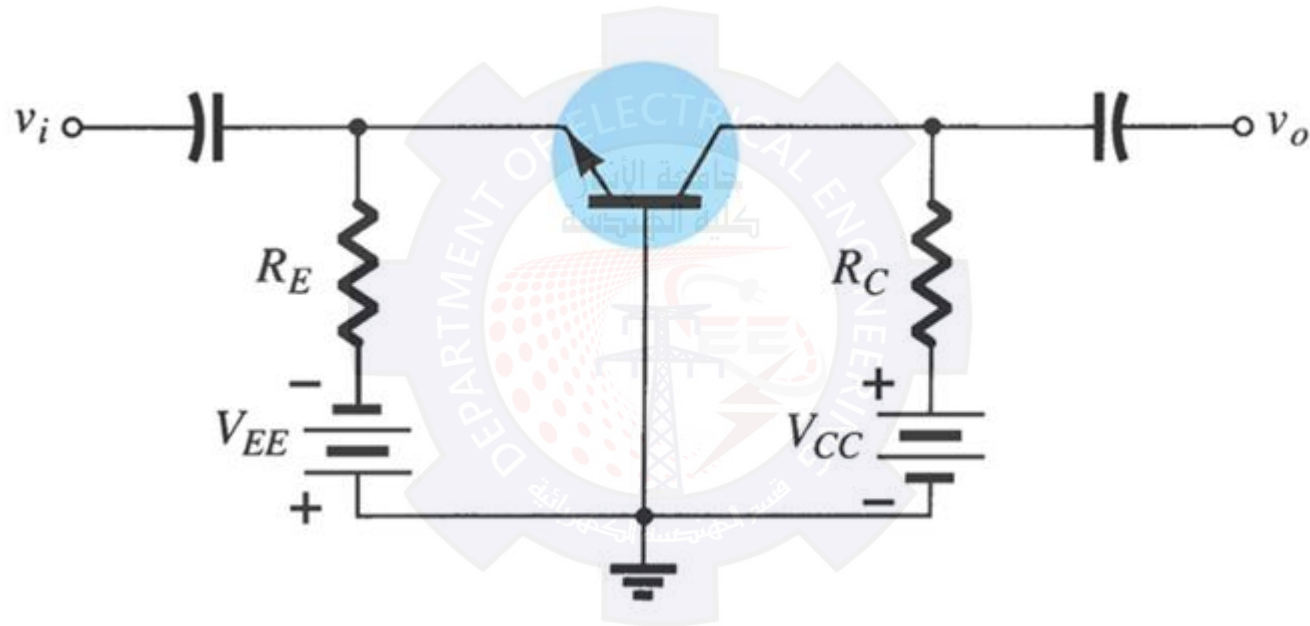


Example 4.16 Determine V_{CEQ} and I_{EQ}





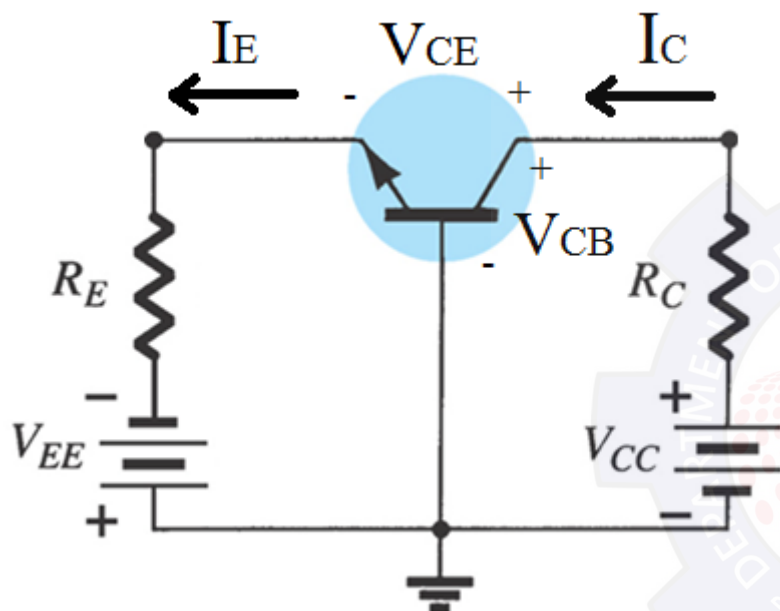
Common Base Configuration



➤ The applied signal is connected to the emitter terminal.



Common Base Configuration



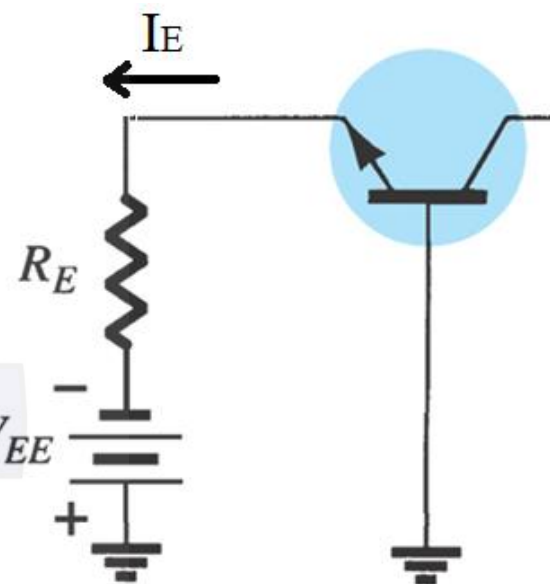
Determining V_{CE} and V_{CB}

$$-V_{EE} + I_E R_E + V_{CE} + I_C R_C - V_{CC} = 0$$

$$I_E \approx I_C \rightarrow V_{CE} = V_{EE} + V_{CC} - I_E (R_E + R_C)$$

$$V_{CB} + I_C R_C - V_{CC} = 0$$

$$I_E \approx I_C \rightarrow V_{CB} = V_{CC} - I_E R_C$$



Input DC equivalent

$$-V_{EE} + I_E R_E + V_{BE} = 0$$

$$I_E = \frac{V_{EE} - V_{BE}}{R_E}$$



Example 4.17

Determine I_E , I_B , V_{CE}
and V_{CB}

