DC operation:

$$I_{BQ} = \frac{V_{CE} - V_{BE}}{R_b}$$

$$I_{BQ} = \frac{V_{CE} - 0.7}{R_b}$$

$$I_{CQ} = \beta I_{BQ} \Rightarrow \beta = \frac{I_{CQ}}{I_{BQ}}$$

$$\beta = I_{CQ}\left(\frac{R_b}{V_{CE} - 0.7}\right)$$

$$I_{CQ} = \beta\left(\frac{V_{CE} - 0.7}{R_b}\right)$$

$$V_{CEQ} = V_{CC} + I_C R_C$$

Hence Q is defined at point $Q(V_{CEQ}, I_{CQ})$

DC power input:

When AC input signal is applied, the base current varies sinosudially.

I_C current varies around its Quiscent point will the output voltage V_{CC} get varies. Varying current and output voltage delivers AC power to the load.