$$\gamma_o = \frac{\Delta V_{CE}}{\Delta I_C},$$

In active region I_C ↑ slightly as V_{CE} ↑ in (+ve) side slope of the curve is like common base configuration here R_o is ∠ R_o in Common base mode as I_C ↑ β also increase. When V_{CE} falls below V_{BE}, I_C ↓ rapidly in saturation region. I_C becomes independent of I_B. In active region. $I_C = \beta I_B$ when $I_B = 0$ I_C is not equal to zero. Its value is I_{CEO} and represent the cut off region.

R_o o/p resistance is the ratio of ΔV_{CE} to ΔI_C at constant I_B.

Q-3 Define I_{CBO} & I_{CEO}. How they are related.

Ans → I_{CBO} is collector base current with open base &

I_{CEO} is collector emitter current with open base.

Relation → $$I_{CEO} = \frac{1}{1-\alpha} I_{CBO}$$

$$I_{CEO} = (1+\beta) I_{CBO}$$

∴ I_{CEO} is equal to $(1-\beta) I_{CBO}$.

Que-4 Define β & show that $\beta = \frac{\alpha}{1-\alpha}$?

Ans-> β is called the base current amplification factor and it is defined as the change in collector current to the change in base current.

$$\beta = \frac{\Delta I_C}{\Delta I_B}$$

$$\Delta I_E = \Delta I_B + \Delta I_C$$

$$\Delta I_B = \Delta I_E - \Delta I_C$$