

www.FirstRanker.com

SEMICONDUCTOR ELECTRONICS

- Intrinsic semiconductors $n_i = 1.5 \times 10^{10} \text{ cm}^{-3}$

Extrinsic semiconductors: $n_i n_h = n_i^2$

- Transistors: $I_A = I_B + I_C$ $\beta_{DC} = I_C / I_B$

- Common emitter amplifier

$$\frac{1}{\beta_{DC}} = 1 - \beta_{AC}$$

(ii) Transconductance

A_{Vi}

(iii) AC voltage gain = $\frac{V_o}{V_i}$ $\text{Voltage gain} = \text{Voltage gain} \times \text{Current gain}$

- Logic Gates

For input X and Y, output Z is given by

$$Z = X$$

OR gate $Z = X + Y$

AND gate $Z = XY$

NOR gate $Z = (X + Y)'$

NAND gate $Z = (XY)'$

NOT Gate $Z = X \text{ or } Z = X'$

www.FirstRanker.com

when either X or Y is present.

uo'ss!ulpy mos1i2y