\#
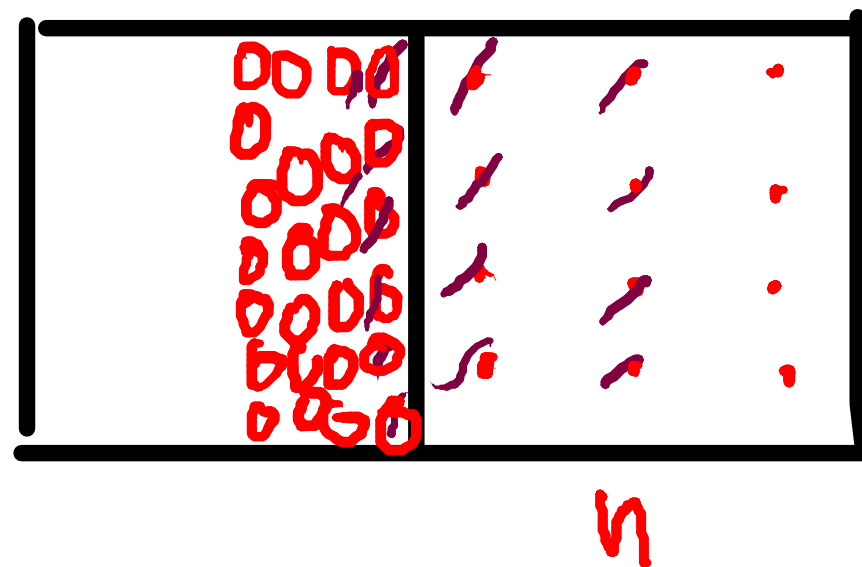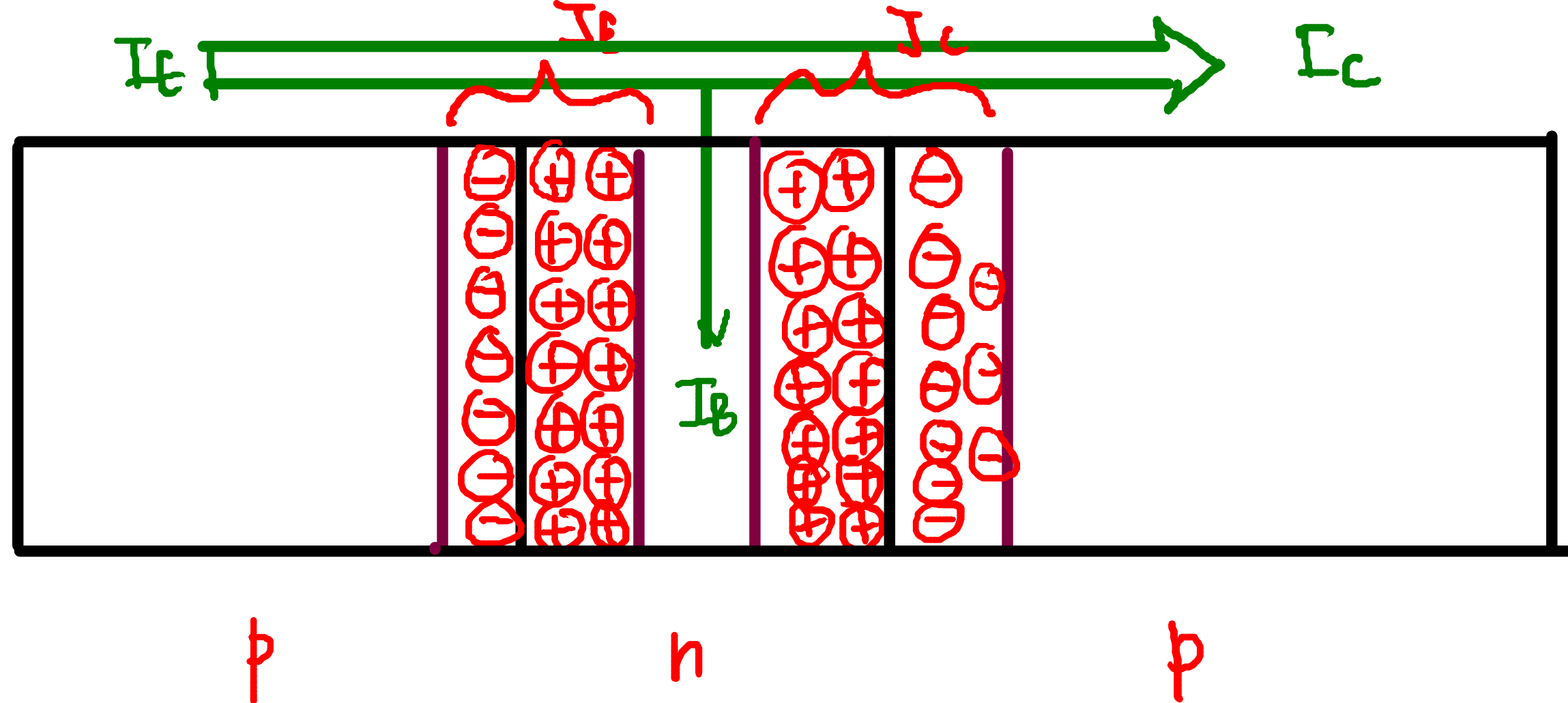

$$I_E = I_B + I_C$$

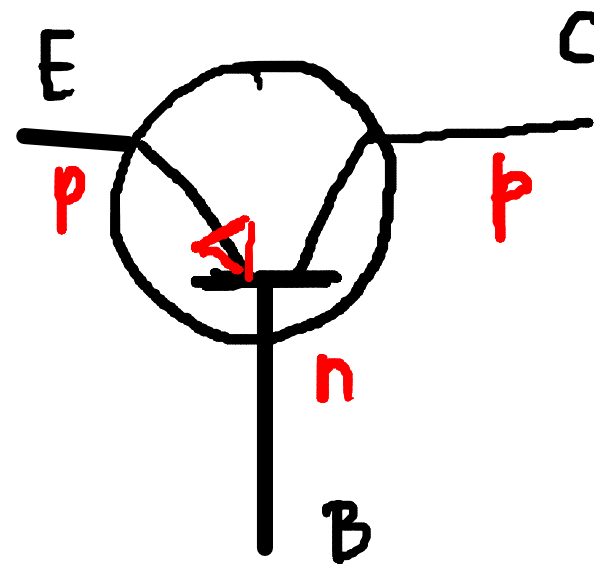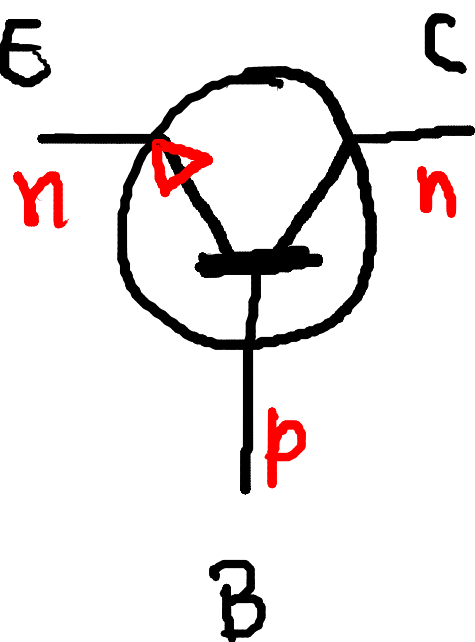$$\frac{I_C}{I_B} = \beta \qquad (\text{d.c current gain})$$
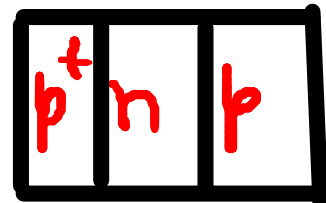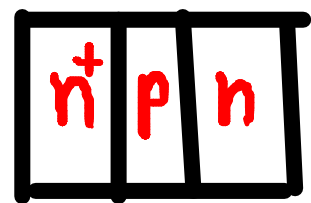
$$\frac{I_C}{I_E} = \alpha$$

$$\alpha = \frac{\beta}{1+\beta}$$

$$\beta = \frac{\alpha}{1-\alpha}$$

$$I_E = I_C + I_B \quad \Rightarrow \quad I_E \approx I_C$$

$$I_C = \beta I_B$$

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

n^+	p	n

p^+	n	p

E $\qquad$ C

n $\qquad$ n

p

B

E $\qquad$ C

p $\qquad$ p

n

B