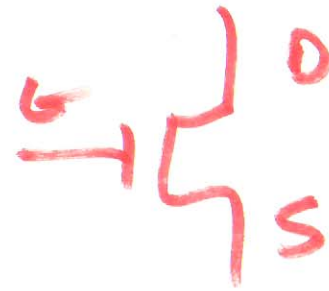
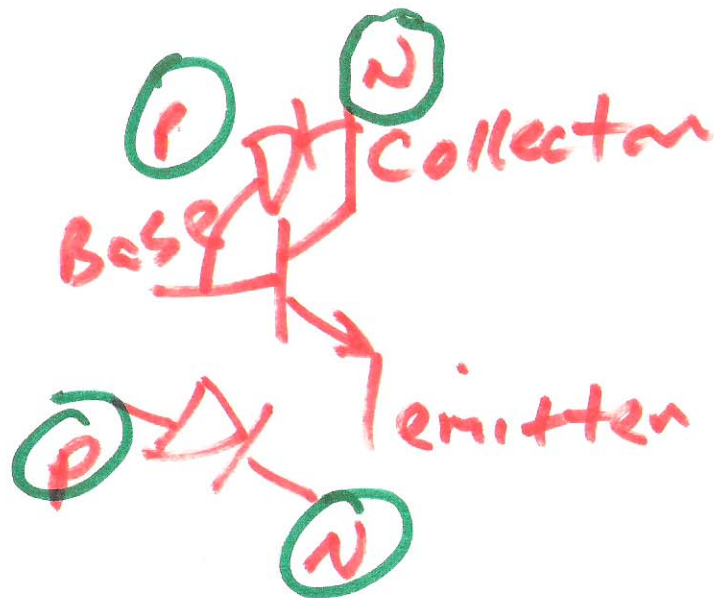


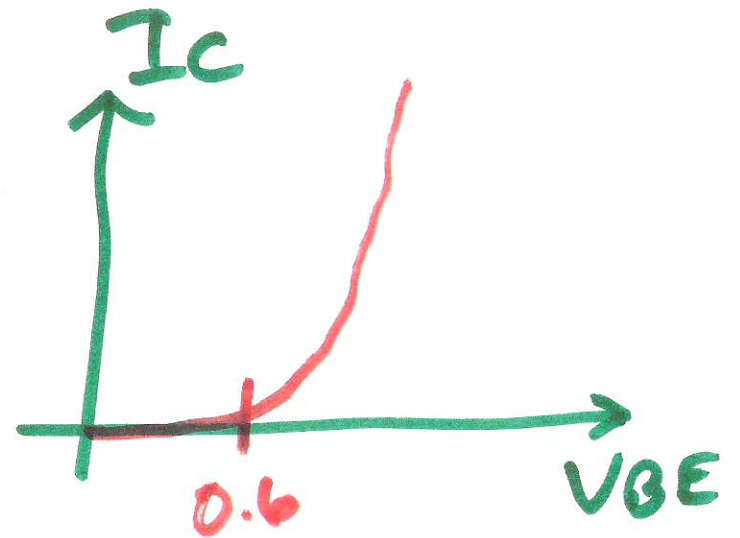
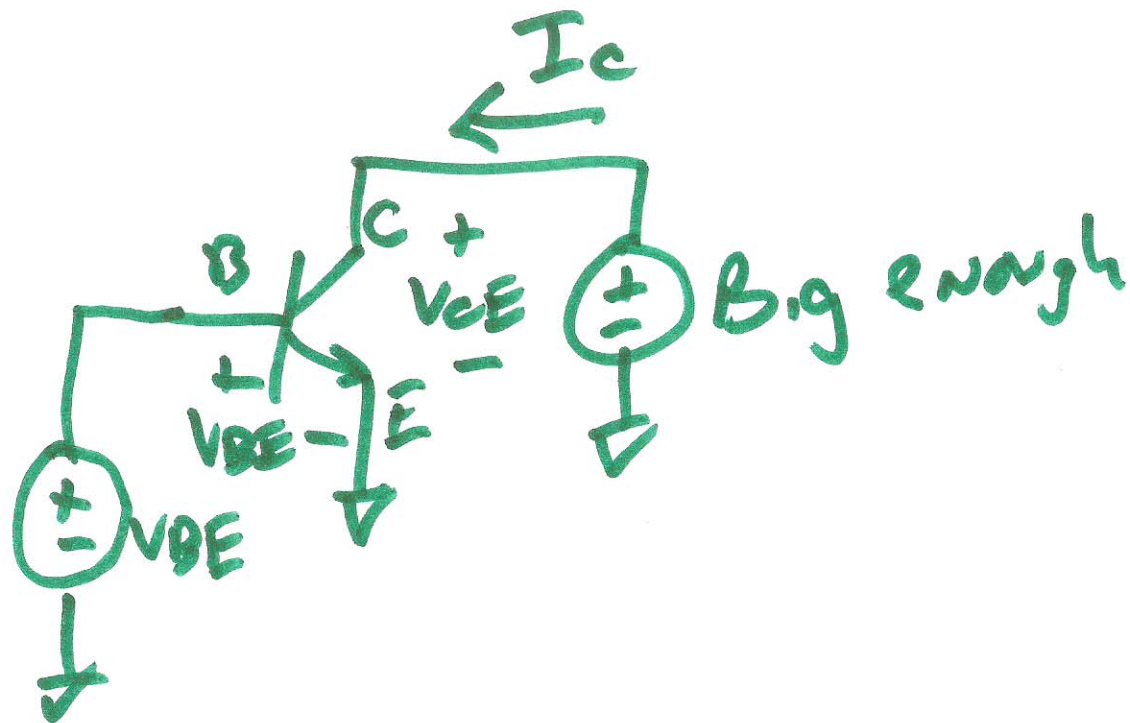
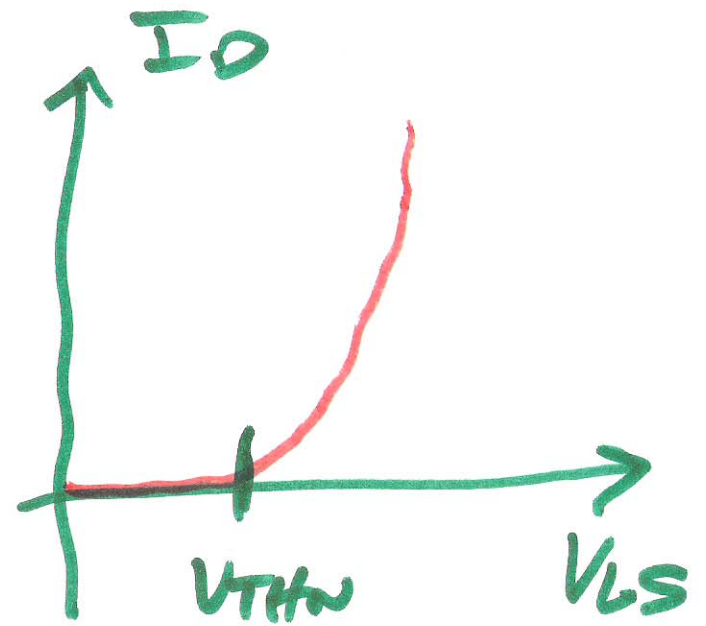
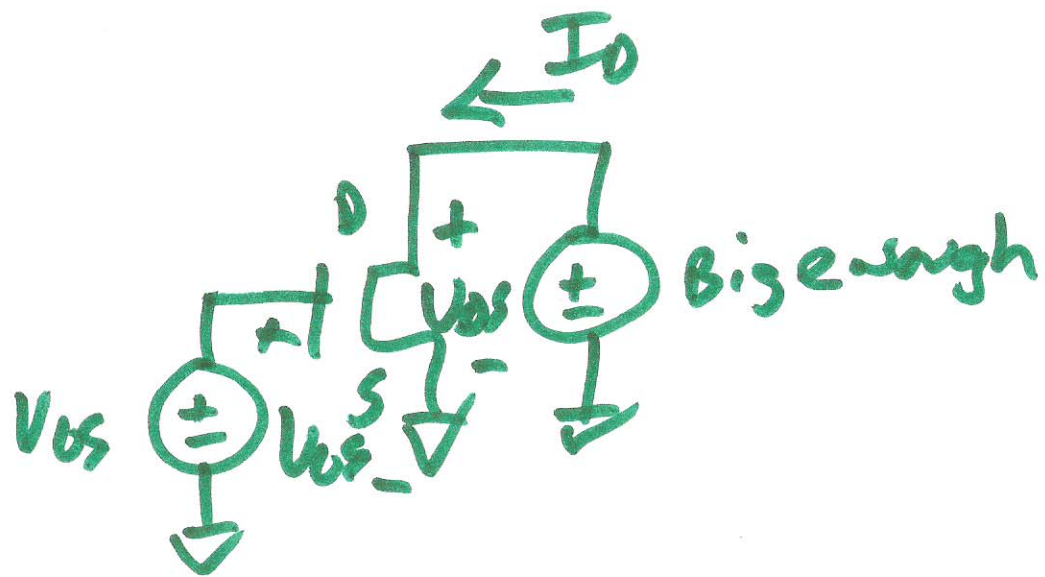
Lecture 24

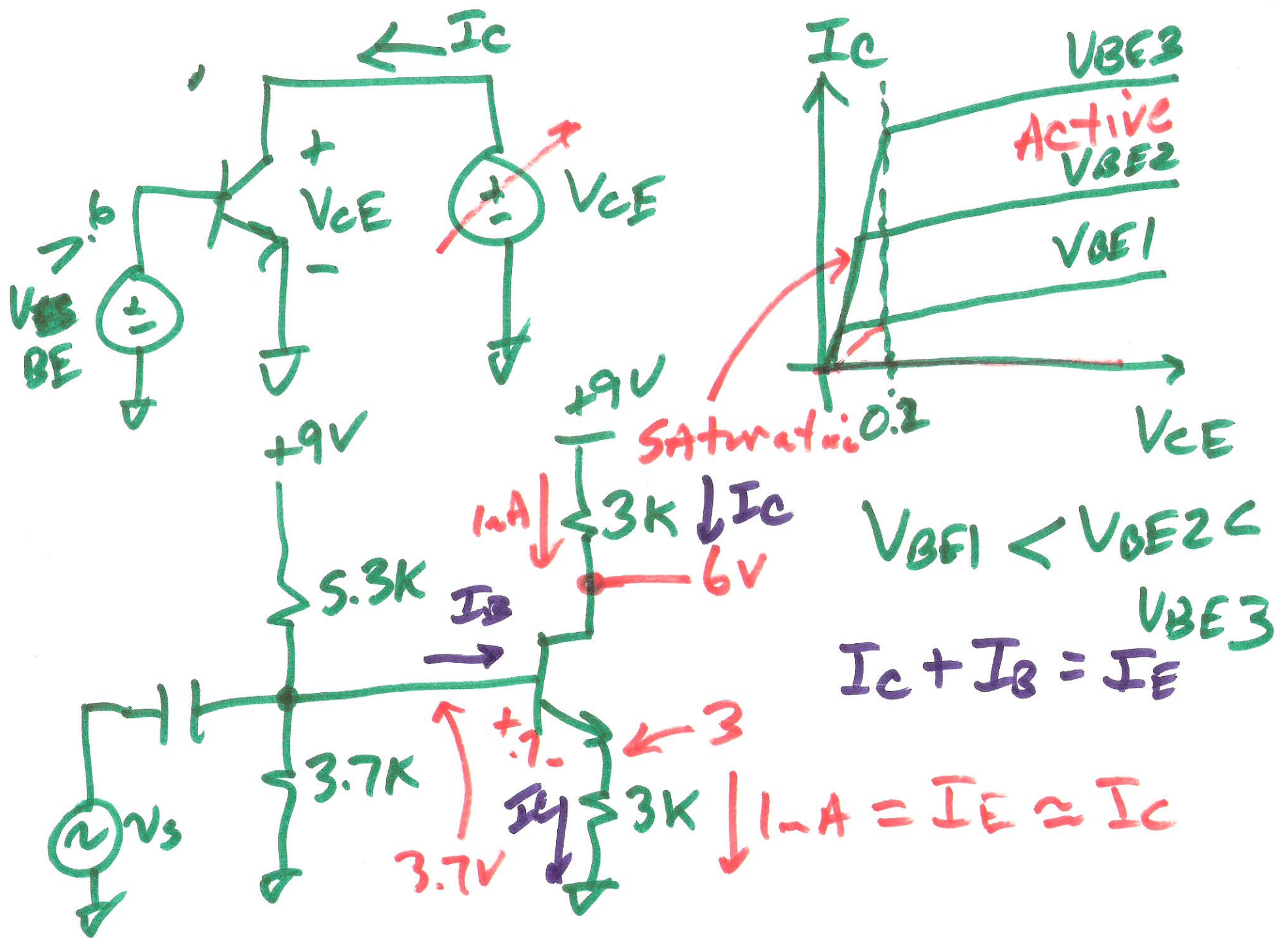
EE 320 Intro. to Electronics

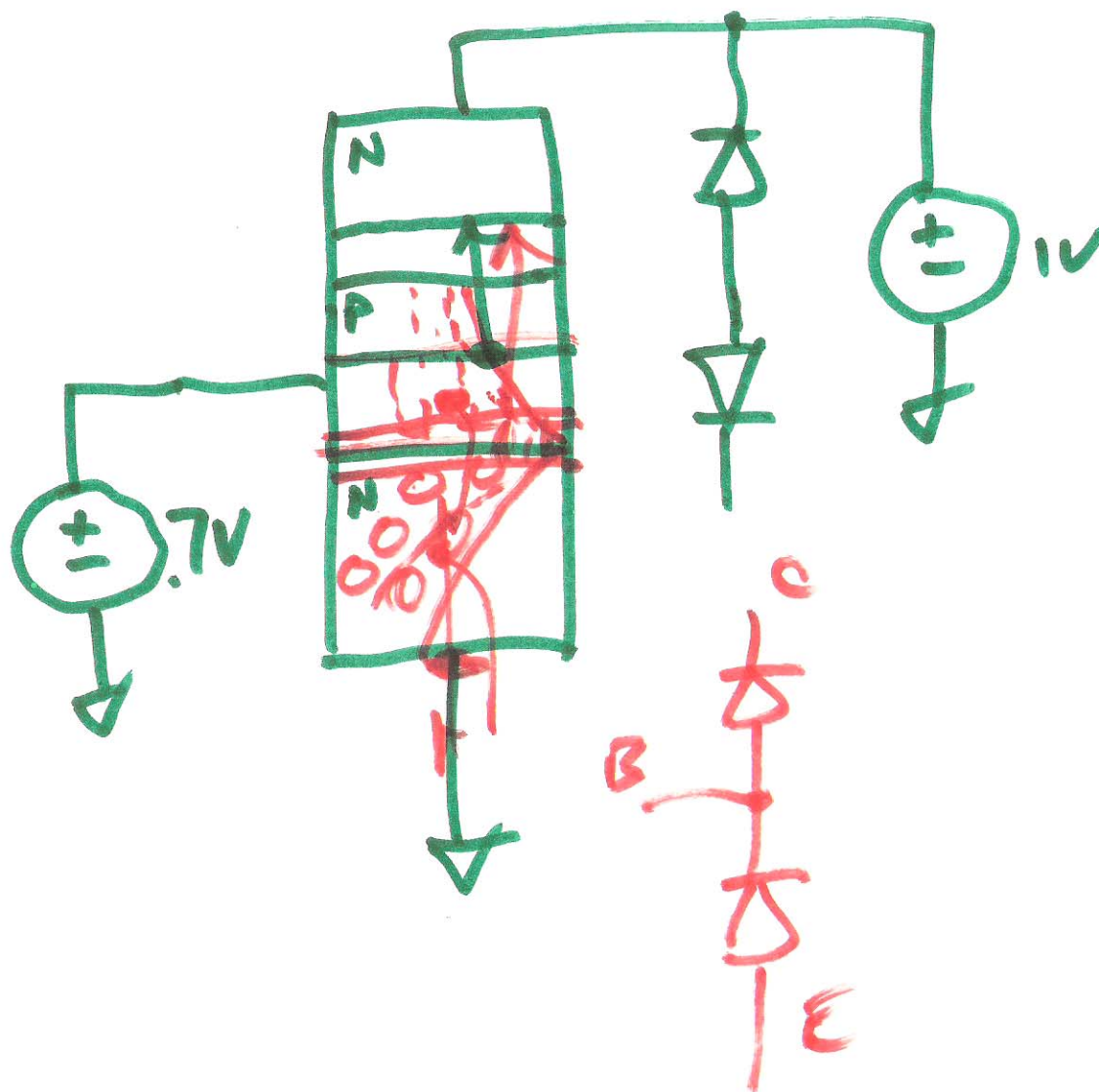
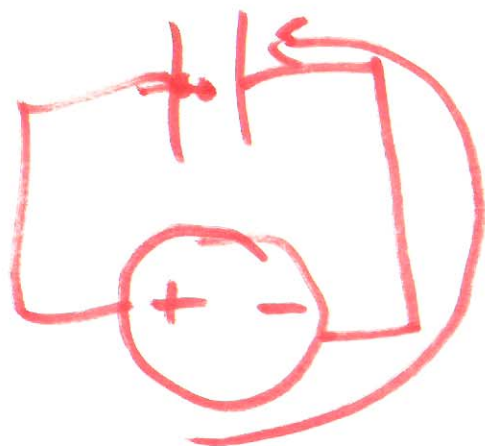
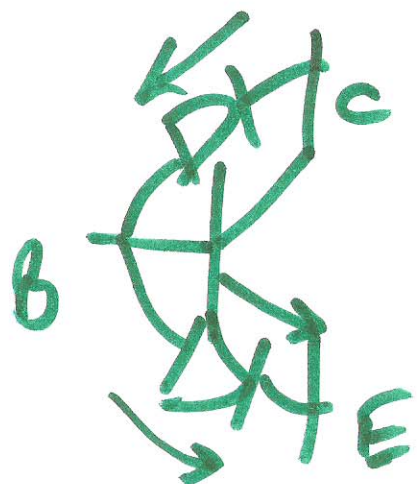
4/29/13

NPN — Bipolar Junction transistor (BJT)

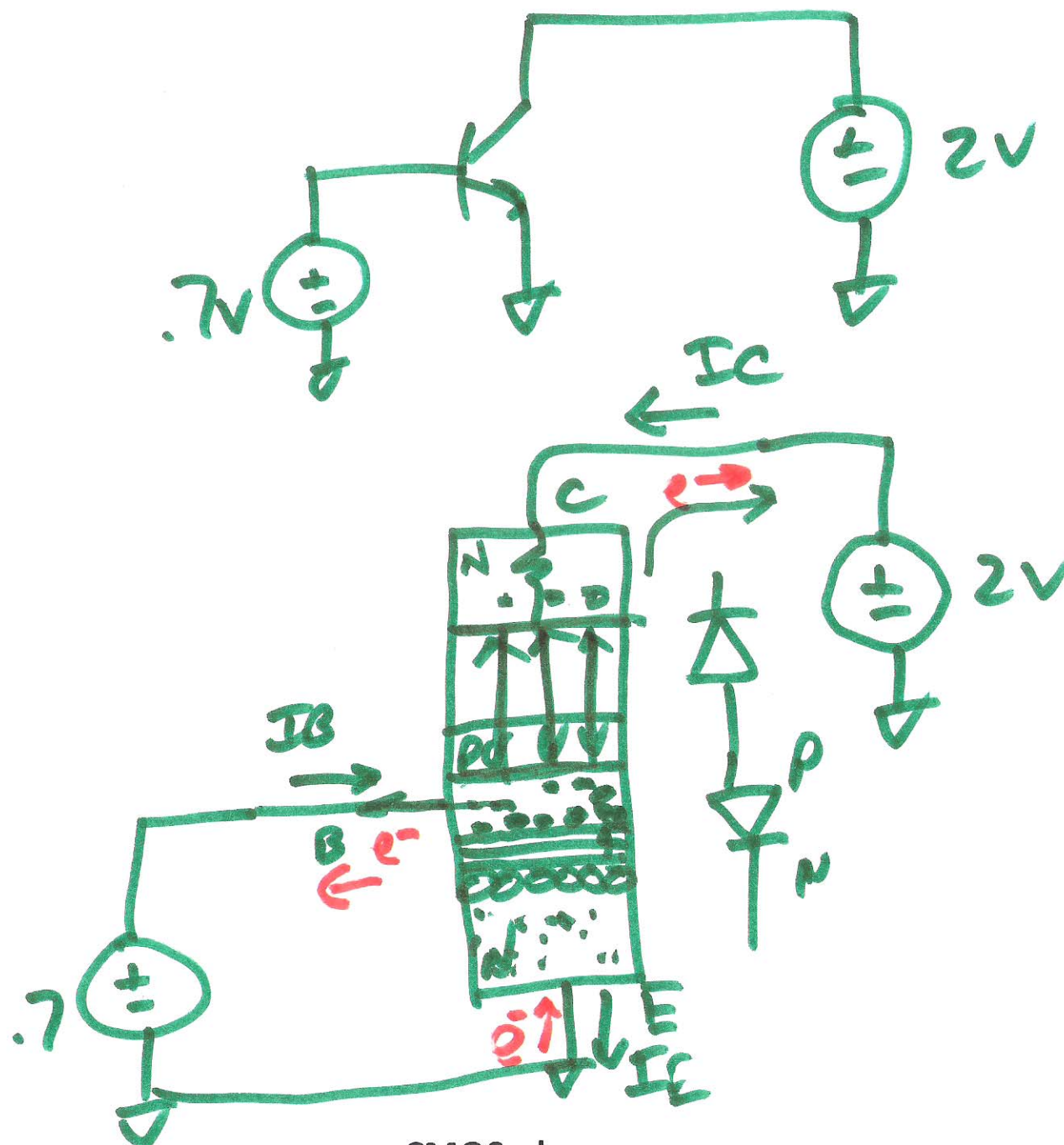






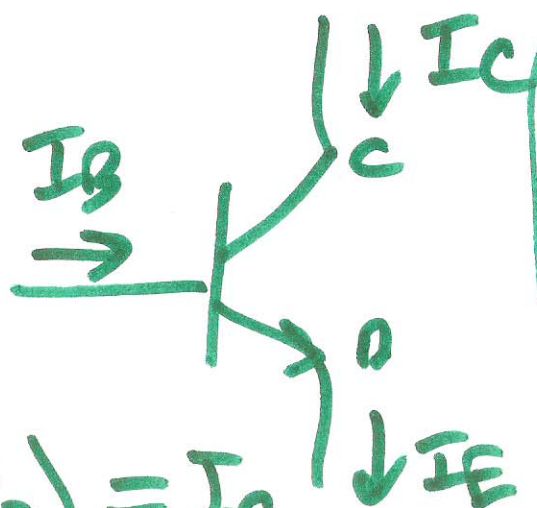


4)



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5)



$$\alpha(I_C + I_B) = I_C$$

$$\alpha I_B = I_C \cdot (1 - \alpha)$$

$$I_C = \frac{\alpha}{1 - \alpha} \cdot I_B$$

$$\beta = \frac{0.99}{1 - 0.99} \approx 99 \approx 100$$

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$$I_C + I_B = I_E$$

α = % of electrons that make from the emitter to the collector

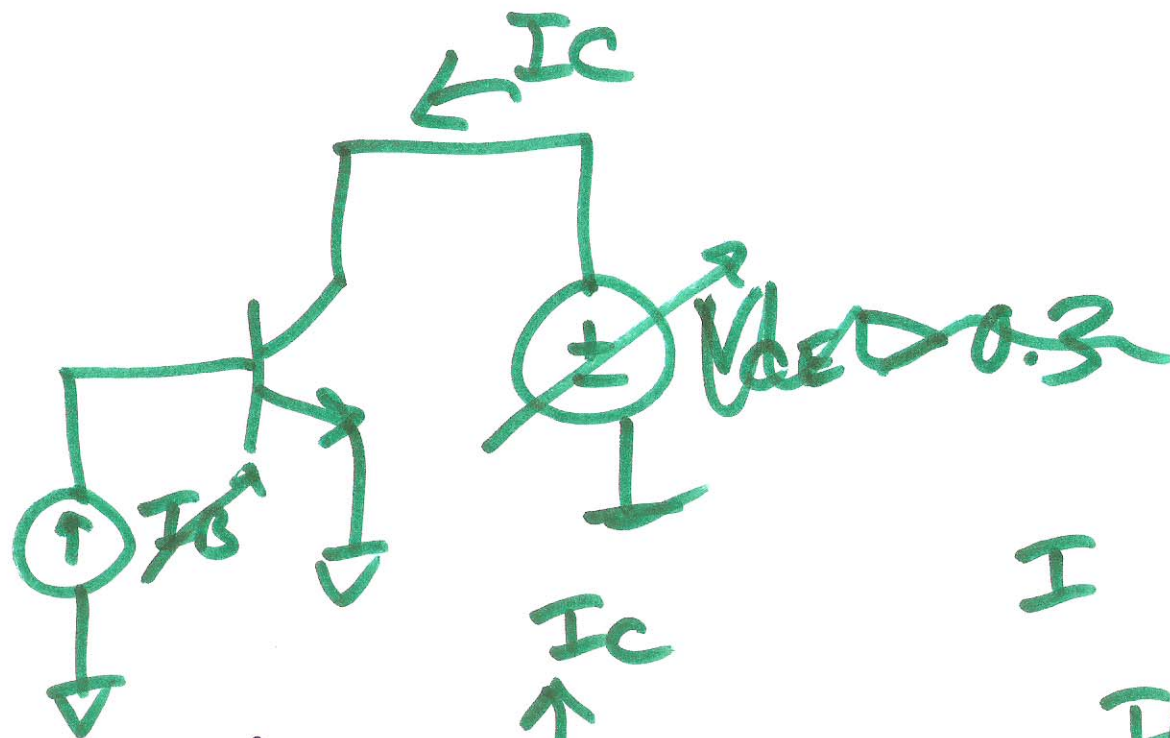
$$\alpha = 0.99$$

99%

$$\alpha I_E = I_C$$

$$\beta \cdot I_B = I_C$$

b)

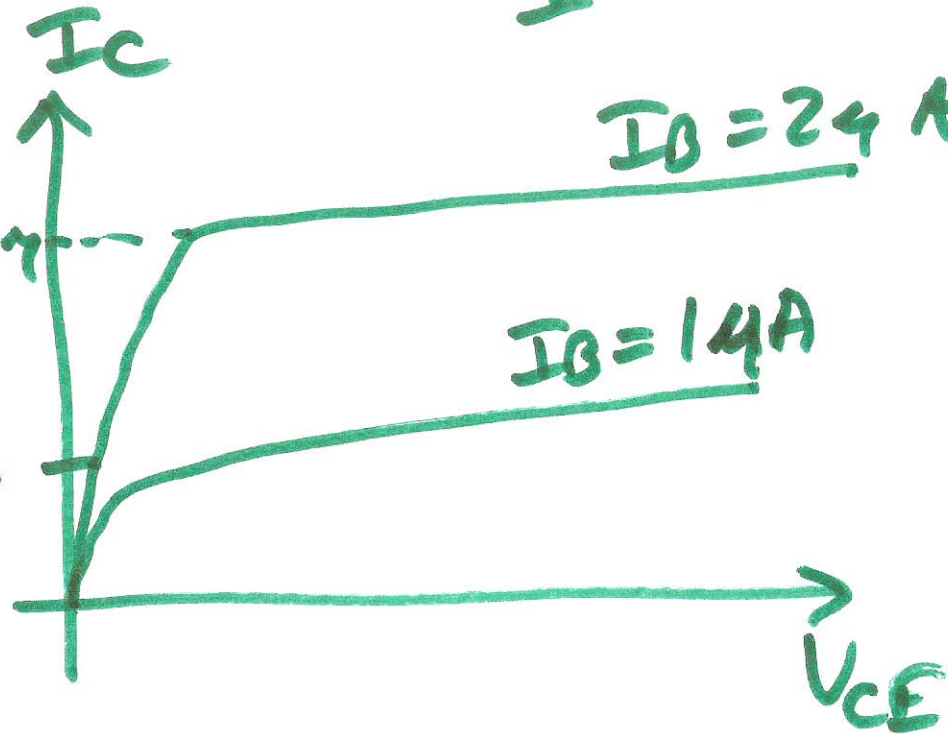


$$\beta I_B = I_C$$

$$\beta = 100$$

$$I_B = 24 \mu A$$

$$I_B = 14 \mu A$$



$$I_C = I_B \beta$$

forward
 Biased

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7)