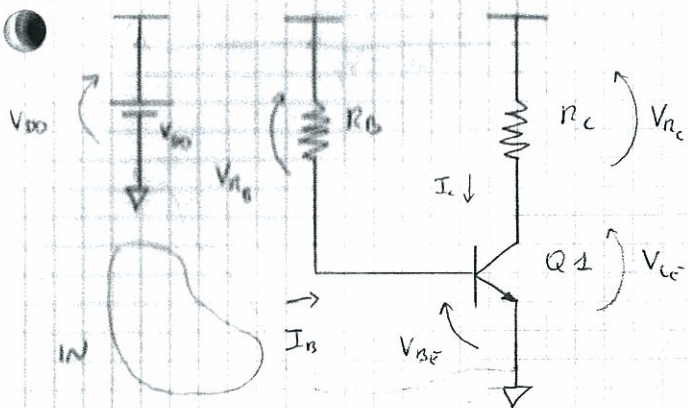


Ex. 1.2.2



$$V_{DD} = 5 \text{ V}$$

$$R_C = 2 \text{ k}\Omega$$

$$I_C = 1 \text{ mA}$$

$$R_B ?$$

Usiamo 2 diversi metodi di risoluzione.

$$1) I_{E0} = 10^{-14} \text{ A}$$

$$T = 27^\circ \text{ C}$$

$$I_C \cong I_{E0} e^{\frac{V_{BE}}{V_{th}}}$$

$$V_{BE} = V_{th} \ln \frac{I_C}{I_{E0}}$$

$$V_{CE} > V_{CE_{SAT}} = 0.2 \text{ V?}$$

$$\text{A.F.} \rightarrow V_{DD} = V_{CE} + V_{RC}$$

$$V_{RC} = R_C I_C = 2 \text{ V}$$

$$V_{CE} = V_{DD} - V_{RC} = 3 \text{ V} \quad \text{A.F.!!!}$$

$$I_C = \beta_F I_B$$

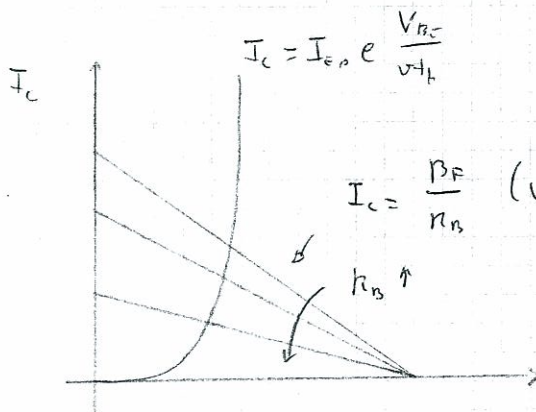
$$V_{DD} = V_{BE} + V_{RB}$$

$$V_{RB} = R_B I_B$$

$$\Rightarrow V_{RB} = V_{DD} - V_{BE}$$

$$R_B = \frac{1}{I_B} (V_{DD} - V_{BE}) =$$

$$V_{BE} \cong V_{th} \ln \frac{I_C}{I_{E0}}$$



$$I_C = \frac{\beta_F}{R_B} (V_{DD} - V_{BE})$$

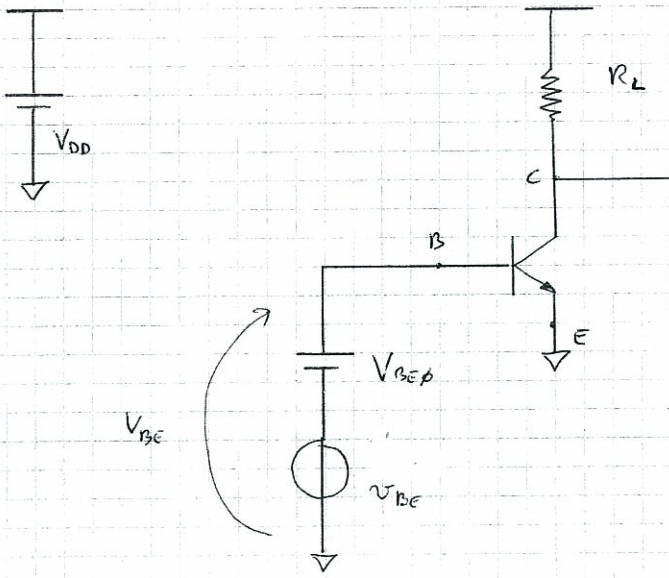
$$= \frac{\beta_F}{I_C} \left(V_{DD} - V_{th} \ln \frac{I_C}{I_{E0}} \right)$$

Supponiamo di non conoscere I_E .

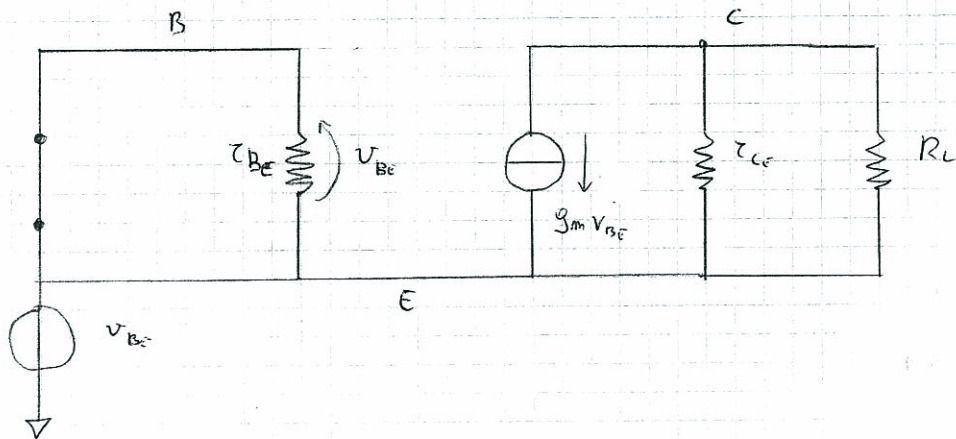
Facciamo l'ipotesi di approssimare $V_{BE} \cong 0.7 \text{ V} = V_f$

$$V_{BE} + R_B I_B = V_{DD} \Rightarrow R_B = \frac{V_{DD} - V_{BE}}{I_B} = \frac{\beta_F}{I_C} \cdot (V_{DD} - V_f)$$

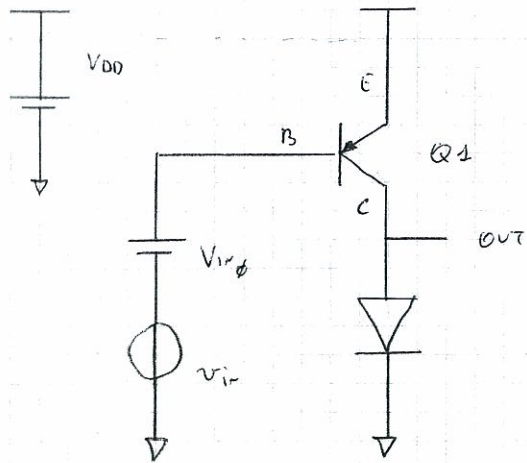
Esercizio - costruzione modello alle variazioni



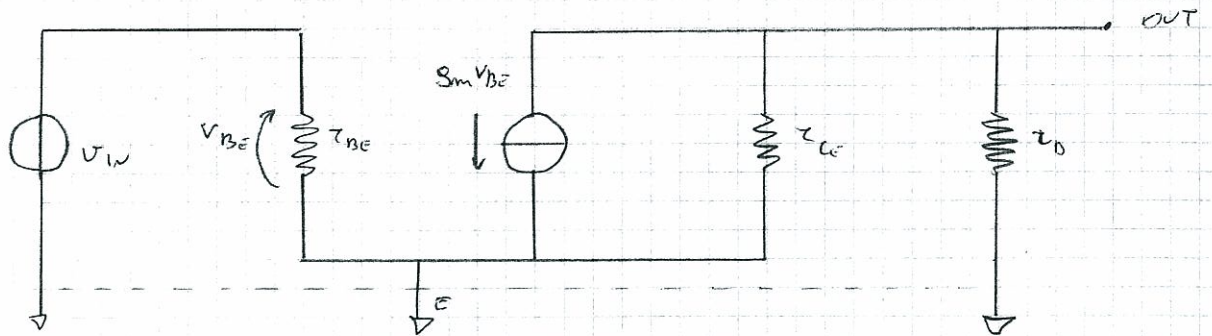
PS



esercizio - Costituzione modelli alle variazioni



base frequenza \Rightarrow NO capacità



esercizio - Costituzione del modello alle variazioni

