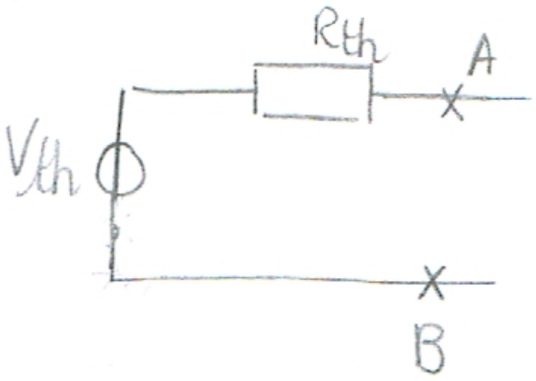
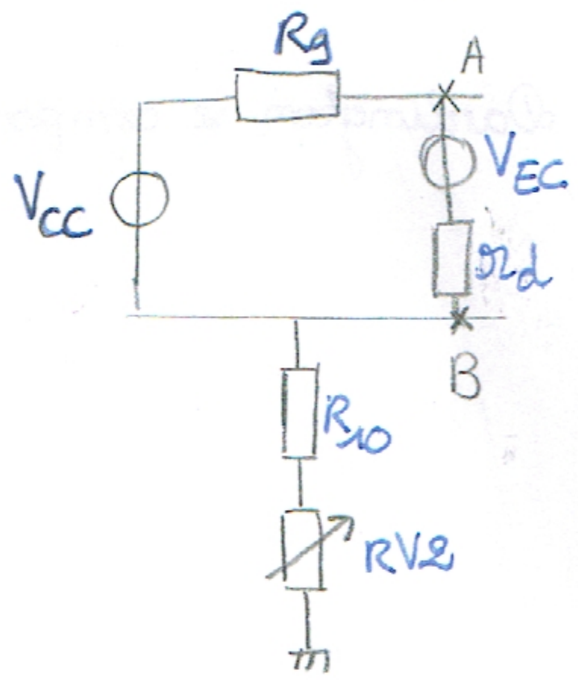
* on applique le théorème de Thévenin entre A et B :



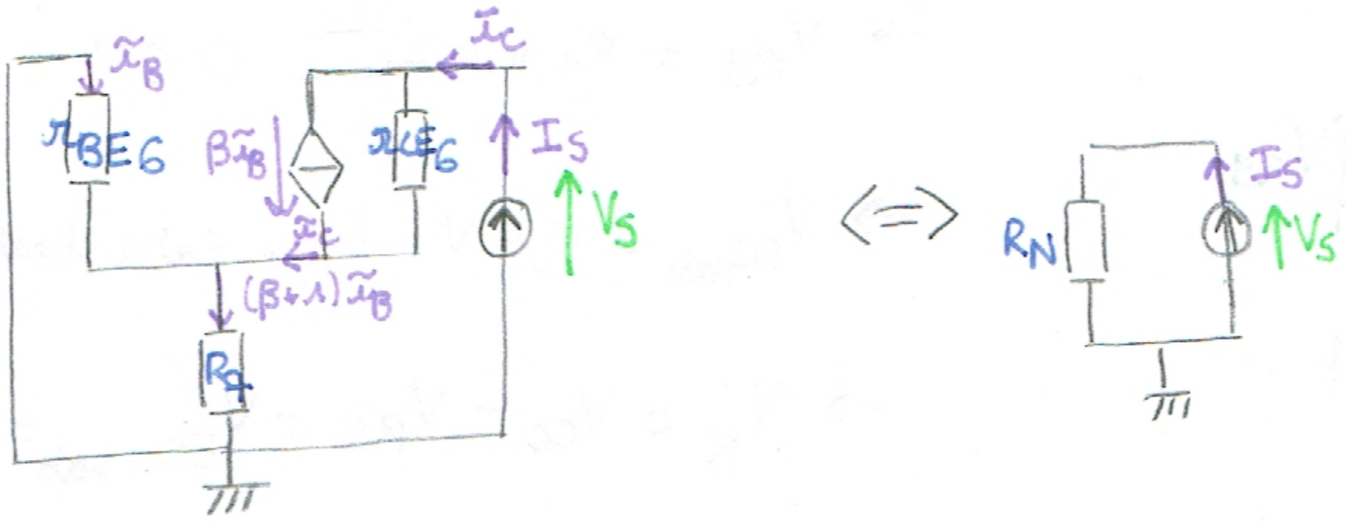
$$V_{th} = \frac{r_d V_{CC} + R_g V_{EC}}{r_d + R_g}$$



$$R_{th} = R_g // r_d // R_{10} + RV_2 \approx r_d$$

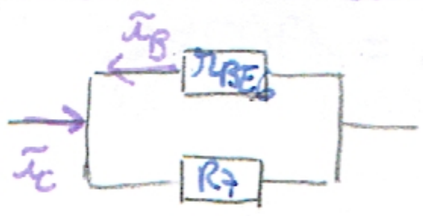
car $r_d \ll (R_g, R_{10}, RV_2)$.

* schéma équivalent dynamique (petit signaux) :



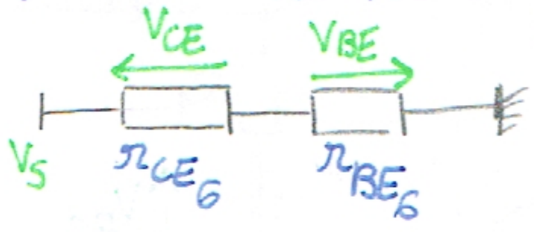
* déterminer l'expression de $R_N = \frac{V_S}{I_S}$.

→ pont diviseur de courant entre r_{BE_6} et R_7 :



$$-\tilde{i}_B = \frac{R_7}{r_{BE_6} + R_7}\,\tilde{i}_c \quad (1)$$

→ pont diviseur de tension entre r_{CE} et r_{BE} :



$$V_S = V_{CE} - V_{BE} = \tilde{i}_{CE}\, r_{CE_6} - \tilde{i}_B\, r_{BE_6} \qquad \text{or } \tilde{i}_{CE} = \tilde{i}_c - \beta\tilde{i}_B$$

(1) ↓

$$V_S = (\tilde{i}_c - \beta\tilde{i}_B)\, r_{CE_6} - \tilde{i}_B\, r_{BE}$$

$$= \tilde{i}_c\, r_{CE_6} + \beta\,\frac{r_{CE_6} R_7}{r_{BE_6} + R_7}\,\tilde{i}_c + \frac{R_7}{r_{BE_6} + R_7}\,\tilde{i}_c \,.$$