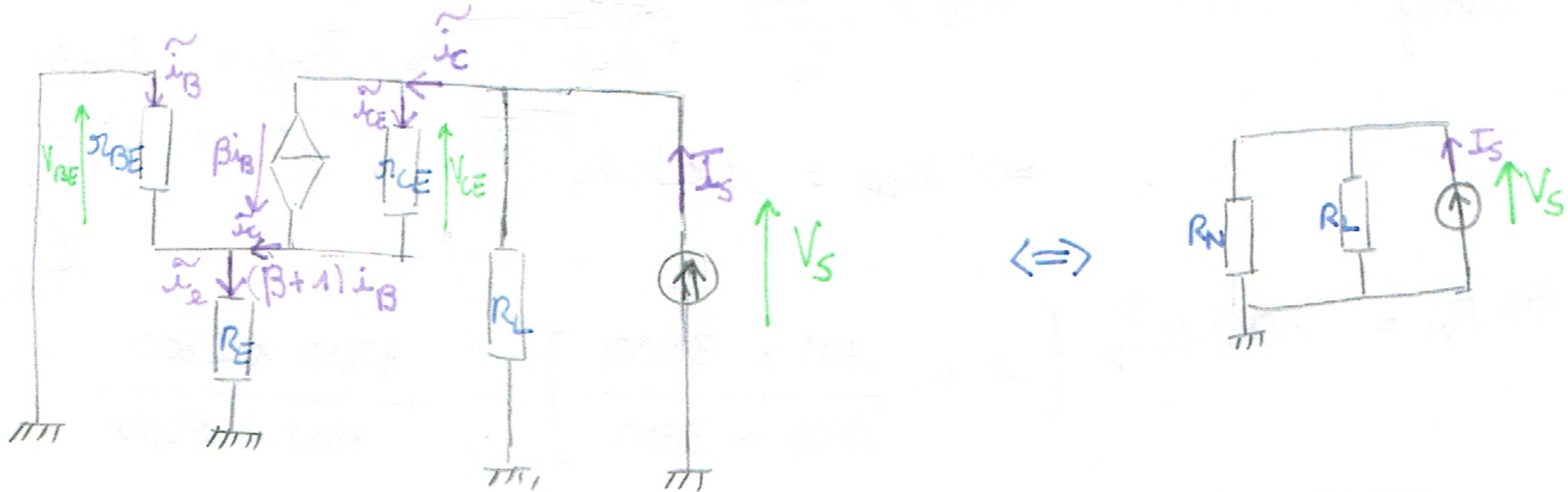


TP1, suite

Partie 3, suite

**3.7** Étude dynamique de la source de courant.

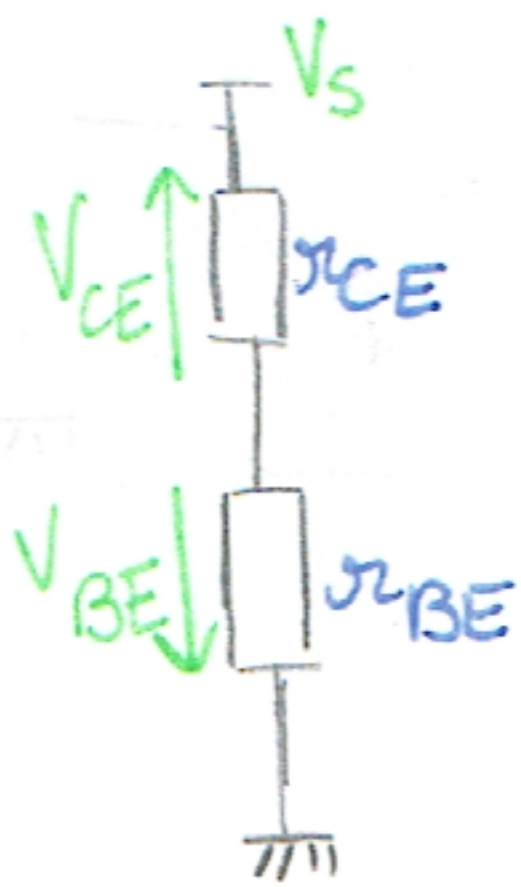
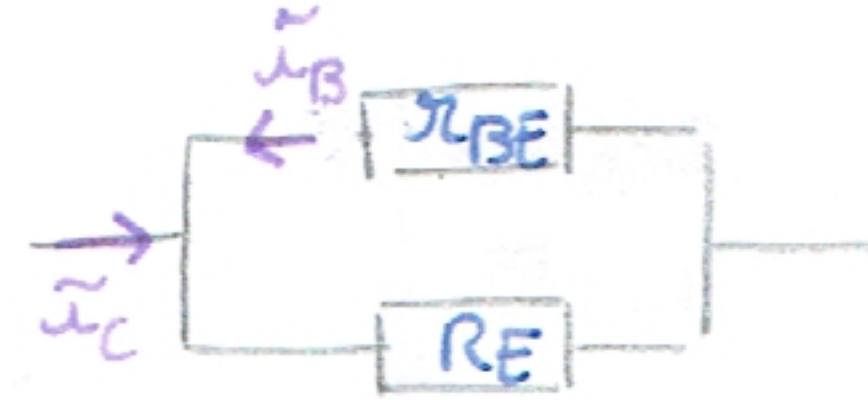
1/



$$2/ R_N = \frac{V_S}{I_S}$$

$\Rightarrow$  pont diviseur de courant entre  $R_E$  et  $r_{BE}$

$$-i_B = \frac{R_E}{r_{BE} + R_E} i_C$$



$$V_S = V_{CE} - V_{BE} = \tilde{i}_{CE} r_{CE} - \tilde{i}_B r_{BE}$$

$$\text{avec } \tilde{i}_{CE} = \tilde{i}_C - \beta \tilde{i}_B$$

$$V_S = (\tilde{i}_C - \beta \tilde{i}_B) r_{CE} - \tilde{i}_B r_{BE}$$

$$= \tilde{i}_C r_{CE} + \beta \frac{r_{CE} R_E}{r_{BE} + R_E} \tilde{i}_C + \frac{R_E}{r_{BE} + R_E} r_{BE} \tilde{i}_C$$

$$R_N = \frac{V_S}{\tilde{i}_C} = r_{CE} \left[ 1 + \frac{\beta R_E}{r_{BE} + R_E} \right] + \frac{R_E r_{BE}}{r_{BE} + R_E}$$