B

B.I Q4) $HA_1 = L/2 + x$ $HA_2 = L/2 - x$

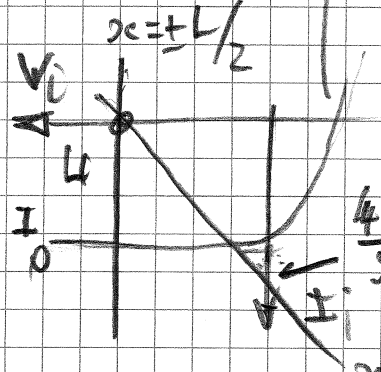
$r_1 = \rho \frac{HA_1}{S} = \frac{\rho}{S}\left(\frac{L}{2} + x\right)$ $r_2 = \rho \frac{HA_2}{S} = \frac{\rho}{S}\left(\frac{L}{2} - x\right)$

$\frac{r_2}{r_1} = \frac{\frac{L}{2} - x}{\frac{L}{2} + x} = \begin{cases} 1 & \text{pour } x = 0 \\ 0 & \text{pour } x = L/2 \\ \infty & \text{pour } x = -\frac{L}{2} \end{cases}$

B.II Q5) $V_i + (r_1 // r_2) I_i = U$

pente $-\frac{1}{r_1} - \frac{1}{r_2}$ $r_{1/2} = r_0\left(\frac{1}{2} \pm \frac{x}{L}\right)$

pente $= \begin{cases} -\frac{4}{r_0} & \text{pour } x = 0 \quad (r_0/2) // (r_0/2) \\ \infty & \text{pour } x = \pm L/2 \quad r_1 \text{ ou } r_2 = 0 \end{cases}$



résistance max = pente min

$\frac{1}{r_0}\left[\frac{1}{\frac{1}{2} - x} + \frac{1}{\frac{1}{2} + x}\right] = \frac{1}{r_0} \times \frac{1}{\frac{1}{4} - x^2}$

minimum $\rightarrow \frac{1}{4} - x^2$ max $\Rightarrow x = 0$

cas le plus enfeuant $x = 0$

condition de polarisation : $\frac{4U}{r_0} > I_0$ $U > \frac{r_0 I_0}{4}$

Q8) Diviseur de courant $I_1 r_1 = I_2 r_2$

$\frac{I_2}{I_1} = \frac{r_1}{r_2} = \frac{L/2 + x}{L/2 - x} = \frac{1 + 2x/L}{1 - 2x/L}$

$I_1 = I_0 \frac{r_2}{r_1 + r_2} = I_0 \frac{HA_2}{A_1 A_2} = I_0\left(\frac{1}{2} - \frac{x}{L}\right)$

$I_2 = I_0 \frac{r_1}{r_1 + r_2} = I_0 \frac{HA_1}{A_1 A_2} = I_0\left(\frac{1}{2} + \frac{x}{L}\right)$

$\Rightarrow \Delta I = I_1 - I_2 = -2 I_0 \frac{x}{L}$ $\frac{\Delta I}{\Sigma I} = -2\frac{x}{L}$