

$$1. \quad \underline{E}_{th} = \underline{U}_{CD} = \underline{U}_{CA} - \underline{U}_{DA} = \left(\frac{\underline{Z}_1}{\underline{Z}_1 + \underline{Z}_2} - \frac{n}{n+1} \right) \underline{E} = \left(\frac{\underline{Z}_1 - n\underline{Z}_2}{(\underline{Z}_1 + \underline{Z}_2)(n+1)} \right) \underline{E} : \text{réponse b)}$$

$$2. \quad \underline{Z}_{th} = \underline{Z}_1 // \underline{Z}_2 + nR // R = \frac{nR}{n+1} + \frac{\underline{Z}_1 \underline{Z}_2}{\underline{Z}_1 + \underline{Z}_2} : \text{réponse a)}$$

$$3. \quad \text{l'équilibre} \quad \underline{E}_{th} = \left(\frac{\underline{Z}_1 - n\underline{Z}_2}{(\underline{Z}_1 + \underline{Z}_2)(n+1)} \right) \underline{E} = 0 \quad \text{soit} \quad \underline{Z}_1 = n\underline{Z}_2 \quad \text{soit} \quad \frac{\underline{Z}_1 \underline{Y}_2}{\underline{Z}_1 \underline{Y}_2} = n = \left(R_1 + \frac{1}{jC_1 \omega} \right) \left(\frac{1}{R_2} + jC_2 \omega \right)$$

$$\text{Par identification des parties réelles et imaginaires,} \quad n = \frac{R_1}{R_2} + \frac{C_2}{C_1} \quad \text{et} \quad R_1 C_1 \omega = \frac{1}{R_2 C_2 \omega} \quad \text{soit} \quad \omega_0^2 = \frac{1}{R_1 R_2 C_1 C_2}$$