P1) Tenemos $F_\theta(x) = \mathbb{P}_\theta(X \leq x) = \left(1 - \left(\frac{\theta}{x}\right)^c\right) \mathbb{1}_{x \in [\theta, \infty)}$

$$f_\theta(x_i) = \frac{\partial}{\partial x} F_\theta(x_i) = c\,\frac{\theta^c}{x_i^{c+1}}\,\mathbb{1}_{x \geq \theta}$$

$$\Rightarrow f_\theta(\vec{x}) \overset{\text{MAS}}{=} \prod_{i=1}^{n} f_\theta(x_i) = c^n \cdot \theta^{nc} \cdot \left(\prod_{i=1}^{n} \mathbb{1}_{x_i \geq \theta}\right) \cdot \left(\frac{1}{\left(\prod_{i=1}^{n} x_i\right)^{c+1}}\right)$$

$$= \underbrace{c^n \cdot \theta^{nc} \cdot \mathbb{1}_{\min_i (x_i) \geq \theta}}_{g_\theta(T(x))} \cdot \underbrace{\left(\frac{1}{\prod_{i=1}^{n} x_i}\right)^{c+1}}_{h(x)}$$

$$= g_\theta(T(x))\; h(x)$$

Def $T(x) = \min_i (x_i)$

$\Rightarrow$ Por criterio fact. $T(x)$ es sufic.

P2

Sabemos $f_\theta(x_i) = 1/\theta \, \mathbb{1}_{x_i \leq \theta}$

$$\Rightarrow f_\theta(\vec{x}) = \prod_{i=1}^{n} f_\theta(x_i) = 1/\theta^n \prod_{i=1}^{n} \mathbb{1}_{x_i \leq \theta} = 1/\theta^n \, \mathbb{1}_{\max_i (x_i) \leq \theta}$$

- $g_\theta(T(x)) = 1/\theta^n \, \mathbb{1}_{\max_i (x_i) \leq \theta} = 1/\theta^n \, \mathbb{1}_{T(x) \leq \theta}$
- $h(x) = 1$

Entonces, por criterio de fact. $T(x)$ es suficiente $\boxed{}$