Q5.

The likelihood func would be $\prod_{i=1}^{n} p(x_i|\theta) = \frac{1}{\theta^n} \prod_{i=1}^{n} I(0 \leq x_i \leq \theta)$. To maximize this likelihood, one would notice that we need all the indicators to be true, but this means $\theta \geq x_{(n)}$ where $x_{(n)}$ is the largest observation. However, we also need $\frac{1}{\theta^n}$ as large as possible, so θ to be as small as possible, this means that we would take $\theta = x_{(n)}$. Therefore, the MLE for θ would be $x_{(n)}$, i.e., the largest observation in the sample.