QUESTION

A contractor has to supply 10 000 bearings a day to an automobile manufacturer. When he starts a production run, he can produce 25 000 bearings per day. The cost of holding one bearing in stock for one year (365 days) is £0.02 and the set up cost for a production run is £18. How frequently should production runs be made?

ANSWER

This is the standard batch production model with $d = 10,000,\ r = 25,000,\ h = \frac{2}{365}$ and $s = 1800$.

$$Q* = \sqrt{\frac{2sd}{h\left[1 - \frac{d}{r}\right]}} = \sqrt{\frac{2.2800.10000}{\frac{2}{365}.\frac{15}{25}}} = 104,642$$

$T* = \frac{Q*}{d} = 10.46$ is the time between production runs.

A practical answer if $T* = 10$ with $Q* = 100,000$.