Isaiah Dyaji 17/sci01/027

1a C_3 = Rs. 100/- per order, C_1 = Re. 0.05 per unit and λ = 30 units per year

Solution

i. Economic lot Size

$q_0 = \sqrt{(2C_3 \times \lambda)} / C_1$

$q_0 = \sqrt{(2 \times 100 \times 30)} / 0.05$

= 1549.2 units.

ii. The associated total costs

$C_0 = \sqrt{2 \times C_3 \times C_1 \times \lambda}$

$= \sqrt{2 \times 100 \times 0.05 \times 30}$

= Rs 17.3

Total Cost Including material cost = 30 x 1 + 17.3 = 47.3

= Rs 47.3/ Per year

iii) Length of line between orders

$L_0 = q_0 / \lambda$

= 1549.2 / 30

= 51.64 years between orders.

b. C_3 = Rs. 50/- Per order, C_1 = Re 0.05 per unit and λ = 30 units Per year

Solution

i. $q_0 = \sqrt{(2C_3 \times \lambda)} / C_1$

$q_0 = \sqrt{(2 \times 50 \times 30)} / 0.05$

= 1095.4 units.

ii. $C_0 = \sqrt{2 \times C_3 \times C_1 \times \lambda}$

$= \sqrt{2 \times 50 \times 0.05 \times 30}$

= Rs 12.2.

Total Cost including material cost = 30 x 1 + 12.2 = 42.2

= Rs 42.2 / Per year

iii. $L_0 = q_0 / \lambda$

1095.4 / 30 = 36.5

2. λ = 10,000 units per annum C_3 = Rs. 36
P = Rs 2/- C_1 = 18%

a. $q_0 = \sqrt{(2 \times 36 \times 10{,}000)} / (2 \times 0.18)$
$= \sqrt{720{,}000} / 0.36$
$= 2357.02$

b, Number of orders = λ / q_0
$= 10{,}000 / 2357.02$
$= 4.24$

Order Period = q_0 / λ
$= 2357.02 / 10{,}000$
$= 0.24$ of years
$= 365 \times 0.24$
$= 87.6$ days.

c, C_3 = Rs. 1250/- per order, C_1 = 0.01 per unit & λ = 40 units per year.

Solution.

i, $q_0 = \sqrt{(2(3 \times \lambda)} / C_1$
$= \sqrt{(2 \times 100 \times 40)} / 0.01$
$= 8944.3$ units

ii, $C_0 = \sqrt{2(C_3 C_1 \lambda)}$
$= \sqrt{2 \times 100 \times 0.81 \times 40}$
$= Rs\ 8.9$
Total cost Including material cost = $40 \times 1 + 8.9$
= Rs 48.9 / per year.

iii, $L_0 = q_0 / \lambda$
$= 8944.3 / 40$
$= 223.6$ years between orders

d, C_3 = Rs. 1
per year.

i, $q_0 = \sqrt{}$
$=$
$= 1$

ii) $C_0 = \sqrt{2}$
$= \sqrt{2}$
$=$ Rs
Total cost
= Rs 3

iii) $L_0 = q_0$
$= 158$
$= 79.$

d, C_3 = Rs 100 per order, C_1 = Rs 0.04 per unit and λ = 20 units per year.

Solution.

i) $q_0 = \sqrt{(2(3 \times \lambda))} / C_1$

$= \sqrt{(2 \times 100 \times 20)} / 0.04$

$= 1581.1$ units.

ii) $C_0 = \sqrt{2 C_3 C_1 \lambda}$

$= \sqrt{2 \times 100 \times 0.04 \times 20}$

$= Rs\ 12.7$

Total cost including material cost = $20 \times 1 + 12.7$

= Rs 32.7 / per year

iii) $t_0 = q_0 / \lambda$

$= 1581.1 / 20$

$= 79.1$ years between orders.