

CHAPTER 29

INVENTORY MANAGEMENT

Problem 1

Annual usage (units)	50,000
Carrying cost per unit (Rs)	4
Ordering cost per order (Rs)	100
EOQ (units) : $\sqrt{\frac{2 \times 100 \times 50,000}{4}}$	1,581

Impact of Purchase Discount:

Purchase lot	1,581	1,000	2,000
Quantity discount	0.25	0.25	0.25
No of orders	32	50	25
Average inventory	791	500	1,000
Total ordering cost	3,200	5,000	2,500
Total carrying cost	3,162	2,000	4,000
Total cost	6,362	7,000	6,500
Savings in discount	12,500	12,500	12,500
Net savings	6,138	5,500	6,000

Problem 2

Annual material requirement (units)	2,500
Acquisition cost per order (Rs)	400
Carrying cost per unit (Rs)	50
EOQ (units): $\sqrt{\frac{2 \times 400 \times 2,500}{50}}$	200
Safety stock: 0.25 x EOQ	50
Daily usage	10
Lead time (days)	10
Usage during lead time (units)	100
Re-order point (units)	150

Problem 3

Requirements (units)	3,000					
Unit price (Rs)	20					
Total value (Rs)	60,000					
Ordering cost per order (Rs)	30					
Carrying cost per unit (Rs)	0.50					
EOQ (units)	600					
No of orders	1	2	3	4	5	6
Order size	3,000	1,500	1,000	750	600	500
Average inventory	1,500	750	500	375	300	250
Total carrying cost (Rs)	750	375	250	188	150	125
Total ordering cost (Rs)	30	60	90	120	150	180
Total cost	780	435	340	308	300	305
Applicable discount	0.07	0.04	0.04	0.02	0.01	0.01
Savings in discount (Rs)	4,200	2,400	2,400	1,200	600	600
Net savings (Rs)	3,420	1,965	2,060	893	300	295

Problem 4

Units	Unit cost	Total cost
7,000	10.00	70,000
8,000	9.00	72,000
10,000	2.00	20,000
6,000	8.00	48,000
8,000	1.00	8,000
2,000	60.00	120,000
5,000	0.40	2,000
4,000	40.00	160,000

Units	Unit cost	Total cost	% cost	% units
4,000	40.00	160,000	32.00	8.00
2,000	60.00	120,000	24.00	4.00
8,000	9.00	72,000	14.40	16.00
7,000	10.00	70,000	14.00	14.00
6,000	8.00	48,000	9.60	12.00
10,000	2.00	20,000	4.00	20.00
8,000	1.00	8,000	1.60	16.00
5,000	0.40	2,000	0.40	10.00
50,000		500,000		

Problem 5

Inventory	Lost sales	Inc. invtry	Inc. sales	Inc. c. cost (3.5%)	Inc. cont. (30%)	PBT	PAT (Tax 35%)	Inc. NWC (18%)	Inc. Invst	ROI (%)
200	250	-	-	-	-	-	-	-	-	-
250	180	50	70	1.75	21	19.25	12.51	12.6	62.6	20.0%
300	120	50	60	1.75	18	16.25	10.56	10.8	60.8	17.4%
350	50	50	70	1.75	21	19.25	12.51	12.6	62.6	20.0%
400	20	50	30	1.75	9	7.25	4.71	5.4	55.4	8.5%
450	0	50	20	1.75	6	4.25	2.76	3.6	53.6	5.2%

The company should hold an inventory Rs 350 lakh since ROI is more than the opportunity cost of capital, 12%. In fact, the optimum level may lie between Rs 350 lakh to Rs 400 lakh inventory.