ECONOMIC ORDER QUANTITY

15. Calculate Economic Order Quantity (EOQ) from the following:

Annual usage of an item of stores	8,000 units.
Cost of placing one order	₹ 30
Unit purchase price of the item	₹ 15
Cost of carrying one unit of stock for one year	20% of the purchase price per unit

[Ans. EOQ 400 units.]

16. A company uses 5120 units of a component in a year. The purchase price per unit of component is ₹5 and the carrying cost including interest is estimated at 20% of the average inventory investment on annual basis. The cost of placing an order and process the delivery is ₹10. Ascertain the Economic Order Quantity and the number of orders, each of the Economic Order Quantity, to be placed for the component in a year.

[1987]

[Ans. E.O.Q. 320 units, No. of order placed = 16]

17. Find the Economic Order Quantity from the following data :

Actual consumption - 18,000 units (per annum)

Cost per unit ₹ 1.50

Cost of Placing Order and processing the delivery –

₹12 per order.

[1990]

Inventory carrying cost – 20% of unit value.

[Ans. 1,200 units]

18. A steel rolling mill uses a particular type of iron costing ₹ 500 per ton. Its annual consumption of that iron is 200 tons. The cost of placing an order is ₹ 100 and the rate of interest is 10% p.a. Work out the Optimum Quantity to be ordered by the mill.

[Ans. EOQ 28.28 tons.]

19. A manufacturer uses 75,000 units of a particular material per year. The materials cost is ₹1.50 per unit and the carrying cost is estimated to be 25% p.a. of average inventory cost. The cost of placing an order is ₹18. You are required to determine the economic order quantity and frequency of order p.a.

[1995]

[Ans. EOQ : 2,683 units, Frequency of orders : 28 times]

20. A manufacturing company consumes on average 300 units of an item of raw materials per month. The cost per unit of raw materials is ₹ 25. The cost of placing an order is ₹ 250. The cost of carrying one unit of inventory per year are:

(i) Rent, taxes, insurance etc. ₹ 2.50 and

(ii) Interest on inventory @ 10%.

Calculate Economic Order Quantity.

[Ans. EOQ 600 units]

21. The annual, demand for an item is 18,000 units. The unit cost is ₹ 27 and inventory

carrying charges are 20%. p.a. If the cost of one procurement is ₹ 150, determine :

(i) Economic Order Quantity.

(ii) Number of Orders per year; and

(iii) Time between two consecutive orders.

22. Sachin Ltd. furnishes the following information — (i) Consumption : 300 units per quarter; (ii) Cost per unit ₹40; (iii) Cost of processing an order ₹600; (iv) Obsolescence 15%; (v) Insurance on inventory 25%.

Compute (a) Economic Order Quantity, (b) No. of order per year, (c) Time between two consecutive order.

A supplier offers a discount of 2% on a purchase of 600 units. Should it be accepted?

[1998]

23. About 200 units are required per quarter. ₹100 per order is incurred for placing an order. The inventory carrying cost per unit is ₹4. The re-order level is 350 units. The minimum usage is 25 units per week and the re-order period is 4-6 weeks.

Compute — (a) Economic order quantity, (b) Maximum level. **[2000]**

24. The following data are available in respect of a material 'MMI' used in the production of a goods of M/s Bright Ltd. for the year 2015 :

Cost of the Materials per unit — ₹50;

Weekly consumption — 300 units;

Ordering cost per order — ₹650;

Stock holding cost — 2% per month (on cost).

Compute (a) Economic Ordering Quantity, (b) Optimum No. of Orders per year and (c) Time lag between two consecutive orders. **[2002]**

25. A Company purchases a spare part from its suppliers @₹ 60 per unit. Annual requirements are 1,600 units. The following further information are available :

Cost of one procurement — ₹ 100

Tax, insurance, rent etc. per unit per annum — ₹ 2

Annual return on investment — 10%

Find out (a) Economic Order Quantity, (b) Time gap between two consecutive orders.

[2004]

26. The daily consumption for an electronic machine is approximately 100 units. Everytime when an order is placed, a fixe cost of ₹ 5 is incurred. The daily holding cost per item of inventory is ₹ 0.40. If the lead time is 5 days, determine the economic lot.

[Ans. EOQ 50 units.]

27. From the following particulars calculate EOQ and number of orders to be given in a year:

Monthly consumption	2,000 units.
Unit price	₹ 10
Ordering cost per order	₹ 50
Storage cost	2% p.a.
Interest rate	10% p.a.

[Ans. EOQ 1,414 units; No. of orders 17 Approx.)]

28. A purchase manager places order for his organisation, each time for a lot of 500 kgs of raw-material. From the following information, find out the amount of profit or loss of the organisation for the said order :

Annual consumption : 1,000 kgs

Cost per kg of Raw-material : ₹ 100

Ordering cost per order : ₹ 400

Inventory carrying cost : 20%

[2010]

[Ans. E.O.Q 200 Kgs, Total cost if E.O.Q Method is followed ₹ 1,04,000; Total Cost if Existing ordering Policy is followed ₹ 1,05,800; Loss on Placing of Existing Order ₹ 1,800.

[Hints : (a) Total Cost if E.O.Q Method is followed

			₹
			1,00,000
Purchase Price 1000 Kg × ₹100	=		2,000
Add : Ordering Cost 5× ₹400	=		
Add : Carrying Cost $\frac{200}{2}$ × ₹20	=		2,000
			1,04,000

(b) **Total cost if Existing ordering policy is followed**

Purchase Price 1000 Kg × ₹100	=		1,00,000
Add : Ordering Cost $\frac{1000}{500}$ × ₹400	=		800
Add : Carrying Cost $\frac{500}{2}$ × ₹20	=		5,000
			1,05,800

(c) Loss on Placing of Existing Order =

= ₹1,05,800 – ₹1,04,000

= ₹1,800]

29. Pooja Pipes Ltd. uses about 75,000 valves per year and the usage is fairly constant at 6,250 valves per month. The valve costs ₹ 1.50 per unit when bought in large quantities; and the carrying cost is estimated to be 20% of average inventory investment on an annual basis. The cost to place an order and process the delivery is ₹ 18. It takes 45 days to receive delivery from the date of an order and a safety stock of 3,250 valves is desired. You are required to determine - (i) The most economical order quantity and frequency of orders; (ii) The re-order point; and (iii) The most economical order quantity if the valves cost ₹ 4.50 each instead of ₹ 1.50 each. [2012]

[Ans.: (i) E.O.Q 3,000 Values; No. of Orders 25 times; (ii) Re-order point 12,625 Values. (iii) E.O.Q. 1,732 Valves]

30. From the following particulars calculate the best quantity to be ordered :

Ordering Quantity (in kg)	Price per kg
	₹
Less than 250	10.00
250 and less than 800	9.60
800 and less than 2,000	9.40
2,000 and less than 4,000	9.20
4,000 and above	9.00

The annual requirement of the materials is 4,000 kg. Stock holding cost is 20% of average inventory value. Ordering cost per order is ₹ 100/-

[Ans : E.O.Q 2,000 units total minimum cost ₹ 38,840, optimum No. of order 2.]

[2013]

INVENTORY TURNOVER RATIO

31. From the following information for the year ended 31st March, 2015. Calculate the Inventory Turnover Ratio of the two items and put forward your comments on them:

	Material A	Material B
	₹	₹
Opening stock on 1.4.14	40,000	36,000
Purchases during the year	2,08,000	1,08,000
Closing stock on 31.3.15	24,000	44,000

[Ans.: Inventory Turnover Ratio : Material A 7 and Material B 2.5; A — Fast moving; B—Slow moving.]

[Hints: $\text{Inventory Turnover Ratio} = \dfrac{\text{Cost of material consumed during a period}}{\text{Aveage inventory held during the period}}$]