IBM 311

Inventory Management

Practice Questions

Q 1 Under what set of circumstances is a) the inter order time period and b) the order size across orders i) variable and ii) fixed for an organization following 1) Continuous Inventory Management System and 2) Periodic Inventory System?

Q 2 Why do organizations keep inventory?

Q 3 How is resilience of the supply chain related to the inventory?

Q 4 State the assumptions of the production quantity model and derive the expressions for optimal order quantity, reorder point and production run under these assumptions.

Q 5 List a few companies whose service levels are less than 95%.

Q 6 How is standard normal table useful in calculation of service level and safety stock?

Q7 Soap is produced on a production line that has an annual capacity of 60,000 cases. The annual demand is estimated at 26,000 cases, with the demand rate essentially constant throughout the year .The cleaning, preparation, and setup of the production line cost approximately $135.The manufacturing cost per case is $4.50, the annual holding cost is figured at a 24% rate. Thus, $C_h = IC = 0.24(\$4.50) = \$1.08$. What is the recommended production lot size?

Discount Category	Order Size	Discount (%)	Cost
1	0 to 999	0	5.00
2	1000 to 2499	3	4.85
3	2500 and over	5	4.75

Suppose that the data and cost analyses show an annual holding cost rate of 20%, An ordering cost of $49 per order, and an annual demand of 5000 units; what order quantity should we select?

Q8 A chemical firm produces sodium bisulfate in 100-pound bags. Demand for this product is 20 tons per day. The capacity for producing the product is 50 tons per day. Setup costs $100, and storage and handling costs are S5 per ton a year. The firm operates 200 days a year. (Note: 1 ton = 2,000 pounds.)

a. How many bags per run are optimal?

b. What would the average inventory be for this lot size?

c. Determine the approximate length of a production run, in days.

d. About how many runs per year would there be?
e. How much could the company save annually if the setup cost could be reduced to $25 per run?

Q9 Suppose that the Higley Radio Components Company has a product for which the assumptions of the inventory model with backorders are valid.

Information obtained by the company is as follows:

D=2000 units per year

I=20%

C=$50 per unit

Ch=IC=(0.20)($50)=$10 per unit per year

Co=$25= per order

The annual backorder cost is estimated to be $30 per unit per year.

- Calculate the minimum cost values for the order quantity Q* and the planned backorders S*.
- Calculate Maximum inventory.
- Calculate Cycle time..
- Calaculate The total annual cost

Q 10 Westside Auto purchases a component used in the manufacture of automobile generators directly from the supplier. Westside's generator production operation, which is operated at a constant rate, will require 1000 components per month throughout the year (12,000 units annually). Assume that the ordering costs are $25 per order, the unit cost is $2.50 per component, and annual holding costs are 20% of the value of the inventory. Westside has 250 working days per year and a lead time of 5 days. Answer the following inventory policy questions:

a. What is the EOQ for this component?

b. What is the reorder point?

c. What is the cycle time?

d. What are the total annual holding and ordering costs associated with your recommended EOQ?

Q 11 EL Computer produces its multimedia notebook computer on a production line that has an annual capacity of 16,000 units. EL Computer estimates the annual demand for this model at 6000 units. The cost to set up the production line is $2345, and the annual holding cost is $20 per unit. Current practice calls for production runs of 500 notebook computers each month.

a. What is the optimal production lot size?
b. How many production runs should be made each year? What is the recommended

cycle time?

c. Would you recommend changing the current production lot size policy from the monthly 500-unit production runs? Why or why not? What is the projected savings of your recommendation?

Q12 What is the most economical number of units to order? Annual requirement = 48,000 units Ordering cost = $9 per order Carrying cost = 15% of per-unit cost Per unit cost = $4 per unit

Q 13 A manufacturing company places a semi-annual order of 24,000 units at a price of $20 per unit. Its carrying cost is 15% and the order cost is $12 per order. **Required:** What is the most economical order quantity?