Review Questions for Inventory

Explain what "decoupling" means in the context of inventory management.

Decoupling means to separate various parts of the production process. Each of the parts can then function at its own best pace.

What are the main reasons that an organization has inventory?

Reasons to carry inventory include decoupling or separating parts of the production process, decoupling the firm from fluctuations in demand and providing a stock of goods that will provide a selection for customers, taking advantage of quantity discounts, and providing a hedge against inflation.

List the four types of inventory.

The four types of inventory are raw material, work-in-process, maintenance/repair/operating supply (MRO), and finished goods.

Describe ABC inventory analysis in one sentence. What are some policies that may be based upon the results of an ABC analysis?

ABC inventory analysis is a method for dividing on-hand inventory into three classifications based on annual dollar volume. Some policies include: purchasing resources expended on supplier development should be higher for individual A items than for C items; A items should have tighter physical inventory control, and forecasting A items may warrant more care.

What are the techniques to control service inventories?

Techniques to control service inventories include good personnel selection, training, and discipline; tight control of incoming shipments; and effective control of all goods leaving the facility.

Several inventory models assume "independent demand." Explain what that term means and why the assumption is important.

Independent demand means that demand for one particular item does not affect, and is not affected by, demand for a different item. When item demands are dependent, such as when wheels are demanded for assembly onto lawnmowers, independent ordering with EOQ may not be appropriate.

List the typical components that constitute inventory holding or carrying costs.

Typical components of inventory holding or carrying costs include housing costs, material handling costs, labor cost from extra handling, investment costs, pilferage, scrap, and obsolescence.

Describe the costs associated with ordering and maintaining inventory.

Costs that are associated with ordering and maintaining inventory include initial purchase cost of the item, holding cost (insurance, space, heat, light, security, warehouse personnel, etc.), obsolescence or deterioration cost (particularly important in perishable goods or in a product that is undergoing rapid technological evolution), and ordering or setup cost (cost of forms, clerical processing, etc., or cost of machine setup).

List the typical cost components that constitute ordering costs in inventory systems.

Typical components of ordering costs include cost of supplies, forms, order processing, clerical support, and so forth.
Compare the assumptions of the production order quantity model to those of the basic EOQ model.

All are the same, except the assumption that receipt of inventory is instantaneous, which holds for EOQ, but not POQ.

In some inventory models, the optimal behavior occurs where ordering costs and carrying costs are equal to one another. Provide an example of a model where this "rule" does not hold; explain how the model's results are optimal anyway.

This rule will not hold in all instances of quantity discount models. In order to take advantage of a discount, it may be cheaper to order a quantity that is not an EOQ. The goal in quantity discount models is to minimize the sum of ordering, carrying, and purchase costs.

What are the assumptions of the EOQ model?

The more important assumptions of the basic EOQ model are demand is known and constant over time, the lead time, that is, the time between the placement of the order and the receipt of the goods, is known and constant, the receipt of the inventory is instantaneous; i.e., the goods arrive in a single batch, at one instant in time, quantity discounts are not possible, the only variable costs are the cost of setting up or placing an order and the cost of holding or storing inventory over time, and if orders are placed at the right time, stockouts or shortages can be completely avoided.

How sensitive is the EOQ to variations in demand or costs?

The EOQ is relatively insensitive to small changes in demand or setup or carrying costs because the cost curve is relatively flat around the EOQ. For example, if demand increases by 10%, EOQ will increase by approximately 5%.

What is a reorder point?

A reorder point is the inventory level (point) at which action is taken (an order placed) to replenish the stocked item.

Define service level.

The service level is the percentage of demand met by available stock; it is the complement of the probability of a stock out.

What happens to the cost of the inventory policy when the service level increases?

The cost of the inventory policy increases dramatically with increases in service level.

How would a firm go about determining service level?

Service level is a difficult parameter to determine. Basically, the firm uses its subjective judgment to balance the cost of additional inventory against the cost of lost goodwill due to stockouts or shortages.

What is a fixed-period system?

It is a system in which inventory orders are made at regular time intervals.

Describe the difference between a fixed-quantity and a fixed-period inventory system?

In a fixed-quantity inventory system, when the quantity on hand reaches the reorder point, an order is placed for the specified quantity. In a fixed-period inventory system, an order is placed at the end of the period. The quantity ordered is that needed to bring on-hand inventory up to a specified level.