Chapter 14 Problems 1, 5, 9

1. Suppose that the R&B Beverage Company has a soft drink product that shows a constant annual demand rate of 3600 cases. A case of the soft drink costs R&B $3. Ordering costs are $20 per order and holding costs are 25% of the value of the inventory. R&B has 250 working days per year, and the lead time is 5 days. Identify the following aspects of the inventory policy:
2. Economic order quantity
3. Reorder point
4. Cycle time
5. Total annual cost

5. The Metropolitan Bus Company (MBC) purchases diesel fuel from American Petroleum Supply. In addition to the fuel cost, American Petroleum Supply charges MBC $250 per order to cover the expenses of delivering and transferring the fuel to MBC’s storage tanks. The lead time for a new shipment from American Petroleum is 10 days; the cost of holding a gallon of fuel in the storage tanks is $0.04 per month, or $0.48 per year; and annual fuel usage is 150,000 gallons. MBC buses operate 300 days a year.

A. What is the optimal order quantity for MBC?

B. How frequently should MBC order to replenish the gasoline supply?

C. The MBC storage tanks have a capacity of 15,000 gallons. Should MBC consider expanding the capacity of its storage tanks?

D. What is the reorder point?

9. Cress Electronic Products manufactures components used in the automotive industry. Cress purchases parts for use in its manufacturing operation from a variety of different suppliers. One particular supplier provides a part where the assumptions of the EOC model are realistic. The annual demand is 5000 units, the ordering cost is $80 per order, and the annual holding cost rate is 25%.

1. If the cost of the part is $20 per unit, what is the economic order quantity?
2. Assume 250 days of operation per year. If the lead time for an order is 12 days, what is the reorder point?
3. If the lead time for the part is seven weeks (35 days), what is the reorder point?
4. What is the reorder point for part (c) if the reorder point is expressed in terms of the inventory on hand rather than the inventory position?