

MgtOp 340
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Sample Exam for Exam 2

Multiple Choice

1. Suppose that the annual EOQ cost (setup plus inventory holding) for a product stored in a warehouse is \$10,000. What would the total company EOQ cost be if the firm decided to equally allocate the demand among 5 warehouses instead of one?

- a. less than \$10,000
- b. \$10,000
- c. greater than \$10,000 but less than \$50,000
- d. \$50,000

2. What is the mean squared error of the following forecasts?

<u>Month</u>	<u>Actual Sales</u>	<u>Forecast</u>
Jan.	614	600
Feb.	480	480
Mar.	500	550
Apr.	500	600

- a. 4232
- b. 12,696
- c. 41
- d. 136
- e. 3174

3. When using ABC analysis to classify inventory, which of the following forecasting methods is probably *most* appropriate for class A items?

- a. 3-month moving average
- b. 6-month moving average
- c. naive approach
- d. exponential smoothing

4. For a continuous review policy, 85% cycle service level, lead time = 0.5 weeks, and std. dev. of weekly demand = 50 units, how many units of safety stock should be held?
- a. 35
 - b. 50
 - c. 37
 - d. 74
 - e. 13
5. Consider a periodic review inventory system. If the inventory is reviewed every 2 weeks, the lead time is 5 weeks, annual demand is 12,000 units, and safety stock is 25 units, what should the target inventory level be?
- a. 1640
 - b. 12,025
 - c. 487
 - d. 1714
 - e. 1179
6. When is the EOQ model a special case of the POQ model?
- a. The demand per day approaches the demand per year.
 - b. The production rate per day approaches 0.
 - c. The production rate per day approaches infinity.
 - d. The backorder cost approaches infinity.
 - e. $d/p = 1$.
7. Consider a newsvendor environment where demand is expected to be uniformly distributed between 1000 and 4000 units. The variable production cost is \$20 per unit and the sales price is \$50 per unit. In addition, the producer must pay \$5 to discard any unsold units. How many units should be produced?
- a. 3000
 - b. 2636
 - c. 2500
 - d. 3182
 - e. 3308

8. Consider the demand data listed below. What is the 4-month moving average forecast for June?

<u>Month</u>	<u>Actual Demand</u>
Jan.	10,000
Feb.	12,000
Mar.	24,000
Apr.	8,000
May	14,000

- a. 14,000
 - b. Not enough information is given to answer the question.
 - c. 14,500
 - d. 13,500
 - e. 15,333
9. If a firm uses a periodic review policy and desires a 15% cycle service level, which of the following is true?
- a. It should compute safety stock with $z = 1.04$.
 - b. It should set safety stock = 0.
 - c. A periodic review system cannot be used with less than a 50% safety stock.
 - d. It should compute safety stock with $z = -1.04$, implying that the target inventory level should be less than the average demand during the protection interval.
10. Suppose that a manufacturer has one major buyer who orders its EOQ of 20,000 units about once per month. Annual demand is 240,000 units. The manufacturer has a setup cost of \$180 per order and a holding cost per unit of \$10. If the manufacturer practices lot-for-lot production, what would be the manufacturer's annual holding and setup cost?
- a. \$1
 - b. \$20,000
 - c. \$2,160
 - d. \$102,160
 - e. \$40,000
11. Suppose that you make automobiles as well as door handles for your automobiles, and you are confident about the demand for automobiles in the future. Which of the following inventory models is most appropriate for the door handles?
- a. EOQ
 - b. Continuous review with safety stock
 - c. Newsvendor
 - d. MRP
 - e. POQ

12. Given the following data, use exponential smoothing ($\alpha = .2$) to develop a demand forecast for period 3. Assume the forecast for the initial period is 5. What is the forecast?

<u>Period</u>	<u>Demand</u>
1	7
2	9

- a. 9
 - b. 3.72
 - c. 9.48
 - d. 5
 - e. 6.12
13. Suppose that you want to set up a 3-month weighted moving average forecasting system. You want the weights to be percentages (that add to 100%). Furthermore, you want weights for the most recent two months to be equal but you want each of those weights to be twice as large as the weight for the oldest month. What should the weight be for the oldest month?
- a. 33%
 - b. 25%
 - c. 80%
 - d. 50%
 - e. 20%
14. Consider a continuous review system. On-hand inventory equals 300, and there is a scheduled receipt of 35 units and a backorder for 335 units. If the reorder point is 800 units, how much should be ordered?
- a. 800
 - b. 500
 - c. 130
 - d. 1135
 - e. the EOQ amount
15. Consider a periodic review system and suppose that it is time to review the item. On-hand inventory equals 300, and there is a scheduled receipt of 35 units and a backorder for 335 units. If the target inventory level is 800 units, how much should be ordered?
- a. 800
 - b. 500
 - c. 130
 - d. 1135
 - e. the EOQ amount

16. Which lean tactic applies fool-proofing to eliminate waste?
- a. *Kaizen*
 - b. *Gemba* walks
 - c. frozen schedules
 - d. *Poka-yoke* devices
 - e. checklists
17. What type of inventory is designed to take advantage of economies of scale?
- a. cycle inventory
 - b. safety stock
 - c. anticipatory inventory
 - d. hedging inventory
 - e. seasonal inventory
18. For its new product, a firm has an annual holding cost percentage of 20%, an ordering cost of \$80 per order, and annual demand of 10,000 units. If they order less than 1100 units at a time, the purchase price is \$10.00. If they order 1100 or more units, then the purchase price for all units is only \$8.00. How much should the firm order at one time?
- a. 1,100
 - b. 10,000
 - c. 1,000
 - d. 283
 - e. 894

Problems

1. Your company sells a product for which the annual demand is 10,000 units. Holding costs are \$1.00 per unit per year, and setup costs are \$200.00 per order.
 - a. What is the economic order quantity for your product?
 - b. What is the total annual EOQ cost?
 - c. Now suppose that instead of purchasing the product, you decide to produce it yourself. Assume the same demand and cost structure as above. In addition, your average production rate would be 200 units per day, and you have 200 working days per year. What batch size should you use?
 - d. What is the annual cost of setup and holding from part c?
 - e. What conclusions can you make regarding the impact of production rate on the holding and setup costs?

2. Consider a newsvendor problem where demand is expected to be normally distributed with a mean of 1,000 units and a standard deviation of 800 units. This is a high-margin monopoly item, with a variable production cost of \$2 per unit and a sales price of \$100 per unit. In addition, the producer must pay \$1 to discard any unsold units. How many units should be produced?