Final Examination
Semester 1/ Year 2009

COURSE : INVENTORY MANAGEMENT
COURSE CODE : LOGT 1013
TIME : 2 1/2 HOURS
DEPARTMENT : MANAGEMENT
LECTURER : HO SOK CHING

Student’s ID :
Batch No :

Notes to candidates:
1) The question paper consists of 2 pages and 5 questions.
2) Students are required to answer All questions (Section A) & Only Two Questions (Section B).
3) Return the question paper with your answer booklet.
Inventory Management
(Section A)

(2 marks each x 10 questions = 20 marks)

1. The ability of manufacturing to produce goods and services is called:
   a. scheduling
   b. production planning
   c. capacity
   d. routing
   e. none of the above

2. Priority in production planning relates to:
   a. what should come first
   b. how much of what is needed and when
   c. capacity
   d. an objective of the firm
   e. none of the above

3. Which of the following is an input to the production plan?
   a. strategic business plan
   b. financial plan
   c. market plan
   d. engineering plan
   e. all of the above are inputs

4. Which of the following are characteristics of an MRPII system?
   I. It incorporates the plans of marketing, production and finance.
   II. It is a fully integrated planning and control system.
   III. It has feedback from the bottom up.
   a. I only
   b. II only
   c. III only
   d. I, II and III
   e. none of the above

5. If the opening inventory is 100 units, the sales are 500 units and the ending inventory is 200 units, then manufacturing must produce:
   a. 300 units
   b. 400 units
   c. 500 units
   d. 600 units
   e. none of the above

1/5
6. Over a 10-week period the cumulative sales are forecast at 10,000 units, the opening inventory is 200 units and the closing inventory is to be 100 units. What should be the weekly planned production for level production?
   a. 990
   b. 1000
   c. 1010
   d. 1030
   e. none of the above

7. Which of the following is an objective of purchasing?
   I. Obtain goods and services of the required specification and quality.
   II. Obtain goods and services at the lowest cost.
   III. Be sure the best possible service and delivery are provided by the supplier.
   a. I only
   b. II only
   c. III only
   d. IV only
   e. all are objectives of purchasing.

8. Which of the following is the best statement about the general principles of forecasting?
   a. forecasts are more accurate for larger groups of items
   b. forecasts are more accurate for nearer periods of time
   c. every forecast should include an estimate of error
   d. all of the above are general principles of forecasting
   e. none of the above is a general principle of forecasting

9. Which of the following are reasons for keeping inventory?
   I. To allow for goods in transit.
   II. To build up stock for seasonal demand.
   III. To reduce production costs.
   IV. To guard against uncertainty in supply and demand.
   a. I, II and III only
   b. II, III and IV only
   c. II and IV only
   d. all the above are valid reasons
   e. none of above are valid reasons
10. All of the following are reasons to keep inventory EXCEPT:
   a. Allow flexibility in production scheduling
   b. Couple supply with demand
   c. Meet fluctuations in product demand
   d. Provide a safeguard against delivery time variations
   e. Long lead time for receiving

Q2. (5 marks each x 4 questions = 20 marks)

   Equation:
   \[ TSL = \{ Usage\ rate \times (lead\ time + review\ period)\} + safety\ stock \]
   \[ Safety\ stock = CS\ factor\times MAD\times (lead\ time + review\ period) \]

   a) If the sum of the absolute deviations of demand was 500 for 10 periods, MAD would be:

   b) The average demand for an item is 1000 per month. The mean absolute deviation of monthly demand is 300 units. The MAD for yearly sales will be approximately:

   c) If the lead time is 1 week, the review period is 4 weeks, the average demand is 100 units per week and the safety stock is 50 units, the target level will be:

   d) If the lead time is 1 week, the review period is 1 week, the average demand is 100 units per week and the safety stock is 50 units, the target level will be:

   3/5
Inventory Management
(Section B)

Q3
(a) Is it generally better to over-estimate or under-estimate demand? Explain. (5 marks)

(b) Explain any 5 factors causes of forecasting inaccuracy. (25 marks)

Q4.
(a) Calculate the safety stock level (5 marks) and
(b) Calculate the target Stock Level based on scenarios given as below: (10 marks)

<table>
<thead>
<tr>
<th>Review period for an A class Item</th>
<th>1 day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply lead time</td>
<td>10 days</td>
</tr>
<tr>
<td>Average Demand Rate</td>
<td>5 units per days</td>
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<td>Required customer service level 85%</td>
<td>85% = 1.04 (service factor)</td>
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</table>

(c) What is the new target stock level if the review period is increased to 2 days? (5 marks)

(d) What is the new target stock level if the review period is increased to 5 days? (5 marks)

(e) Will you suggest increasing the review period? Explain. (5 marks)
Inventory Management  
(Section B)

Q5

(a) Define what is meant by inventory carrying costs. What are the main components of inventory carrying costs?

(10 marks)

(b) Discuss what is meant by ABC analysis of inventory. What are the several measures that can be used to determine ABC status?

(10 marks)

(c) Classify the following items into class A, B and C accordingly. How do you determine this?

(10 marks)

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<td>2</td>
<td>8.00</td>
<td>16</td>
<td></td>
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<tr>
<td>B121</td>
<td>20</td>
<td>4.00</td>
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<tr>
<td>C223</td>
<td>40</td>
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Southern College
Kolej Selatan
南方学院

Marking Scheme
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Semester 1/ Year 2009

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   c. capacity

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3. Which of the following is an input to the production plan?
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   IV. To guard against uncertainty in supply and demand.
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10. All of the following are reasons to keep inventory EXCEPT:
   b. Couple supply with demand
Inventory Management
(Section A)

Q2. (5 marks each x 4 questions = 20 marks)

Equation:

\[ TSL = \left( \text{Usage rate x (lead time + review period)} \right) + \text{safety stock} \]
\[ \text{Safety stock} = \text{CS factor x MAD x } \left( \text{lead time + review period} \right) \]

a) If the sum of the absolute deviations of demand was 500 for 10 periods, MAD would be:

\[ 50 \quad \left( \frac{500}{10} \right) \]

b) The average demand for an item is 1000 per month. The mean absolute deviation of monthly demand is 300 units. The MAD for yearly sales will be approximately:

\[ 1040 \text{ units} \quad \left( 1000 + \left\{ 1000 \times \frac{12}{300} \right\} \right) \]

c) If the lead time is 1 week, the review period is 4 weeks, the average demand is 100 units per week and the safety stock is 50 units, the target level will be:

\[ 550 \text{ units} \quad \left( 100 \times \left\{ 1 + 4 \right\} + 50 \right) \]

d) If the lead time is 1 week, the review period is 1 week, the average demand is 100 units per week and the safety stock is 50 units, the target level will be:

\[ 250 \text{ units} \quad \left( 100 \times \left\{ 1 + 1 \right\} + 50 \right) \]
Inventory Management
(Section B)

Q 3
(a) Is it generally better to over-estimate or under-estimate demand? Explan. (5 marks)

In corporate, over –estimate or under-estimate are not encouraged and accepted. We shall provide accurate information / accurate estimate of demand. Reason, minimizing the possibility to have store extra stock in the warehouse, and avoiding an additional cost of investment. Under-estimate of demand will jeopardized the service level.

(b) Explain any 5 factors causes of forecasting inaccuracy. (25 marks)

Answer:

Causes of forecasting inaccuracy:
- Inaccuracy data
- Sales information rather than demand statistics
- Bias
- Market sensitivity. Speed of response to change
- Poor assessment of supply capacity
- Inclusion of extra demand in the forecast
- Shortage of data.
Inventory Management  
(Section B)

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(e) Will you suggest increasing the review period? Explain. \(5\) marks\)

Q4 (answer)

(a) Safety stock = 1.04 x 2.5 x \(\sqrt{10 + 1}\) = 8.6 \(5\) marks\)
(b) Target stock Level = 5 x (10+1) + 8.6 = 63.6 \(10\) marks\)
(c ) safety Stock = 9
New target stock Level = 5 x (10+2) + 9 = 69 \(15\) marks\)
(d) 5 x (10+5) + 9 = 84 \(5\) marks\)

(e) No, increase the review periods it mean increase the risk factor and which will increase the capital investment to purchase an additional quantity.(if risk factor increased) \(5\) marks\)

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Inventory Management
(Section B)

Q5

(a) Define what is meant by inventory carrying costs. What are the main components of inventory carrying costs? (10 marks)

Inventory carrying costs refer to the costs associated with holding inventory. Inventory carrying costs consist of a number of different components, and their importance can vary from product to product. These components include obsolescence costs, shrinkage costs, storage costs, taxes, and interest costs.

(b) Discuss what is meant by ABC analysis of inventory. What are the several measures that can be used to determine ABC status? (10 marks)

ABC analysis is an approach that recognizes all inventories are not of equal value to a firm and, as a result, all inventory should not be managed in the same way. Measures that can be used to determine ABC status include sales volume in dollars, sales volume in units, the fastest selling items, item profitability, or item importance.

(c) Classify the following items into class A, B and C accordingly? How do you determine this? (10 marks)

Answer:

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