

Prince of Songkla University  
Department of Industrial Engineering, Faculty of Engineering

Mid Term Examination: Semester 2  
Date: 15 December 2005  
Subject: 225-601 Supply Chain Management

Academic Year: 2005  
Time: 9:00-12:00  
Room: ห้องหัวหูน

ทฤษฎีในการสอบ โทษขั้นต่ำ คือ ปรับตกในรายวิชาที่ทฤษฎี และพักการเรียนหนึ่งภาคการศึกษา

**Instructions: Read carefully**

1. All materials are allowed.
2. There are 2 sections for this test. Section 1 has 5 problems and section 2 has 3 problems. Do all of them. Also show your work clearly and legibly.
3. Answer the questions in this test paper, only.
4. You must write your name and your student ID in every page of the test.
5. Total score is 100 points.

**Distribution of Score**

Section	Problem	Points	Points Gained
1	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
2	1	25	
	2	20	
	3	15	

Tests are prepared by  
Nikorn Sirivongpaisal

Name \_\_\_\_\_ Student ID \_\_\_\_\_

**Section 1: (40 points)** Answer the following questions. Explain your answer or concept clearly.

**Problem 1: (8 points)** Explain the relationship between “Business management” and “Quality”.

**Problem 2: (8 points)** “It is a tragedy that, in the West, relations between ... buyer and seller have been confrontational and adversarial .... It is not uncommon for a supplier with a history of loyal service to be unceremoniously dumped when the buyer finds another supplier selling more cheaply. Nor is it uncommon for a supplier to gouge a customer during a sellers’ market and boom time .... In the long haul, this win-lose philosophy can turn both sides into losers. (K.R. Bhote 1987)” Do you agree with this quotation? If you agree, explain, why.



Name \_\_\_\_\_ Student ID \_\_\_\_\_

**Problem 3: (8 points)** What do businesses have to make decisions about in the following supply chain problems?

3.1 Inbound-materials management issues.

3.2 Finished-goods inventory management issues.

3.3 Logistics network planning issues.

3.4 Transportation issues.

**Problem 4: (8 points)** Explain the advantages and disadvantages of using between “Network Modeling” and “Simulation Optimization” to solve logistics network configuration problem.



**Problem 5: (8 points)** What are the main factors that contribute to “The Bullwhip Effect”?

**Section 2: (60 points)** Answer the following questions.

**Problem 1: (25 points)** Suppose that a manufacturer of men’s shirts can produce a dress shirt in its Houston, Texas, plant for \$8 per shirt (including the cost of raw materials). Chicago is a major market for 100,000 shirts per year. The shirt is priced at \$15 at Chicago. Transportation and storage charges from Houston to Chicago amount to \$5 per hundredweight. Each packaged shirt weighs 1 lb.

As an alternative, the company can have the shirts produced in Taiwan for \$4 per shirt (including the cost of raw materials). The raw materials, weighing about 1 lb. per shirt, would be shipped from Houston to Taiwan at a cost of \$2 per hundredweight. When the shirts are completed, they are to be shipped directly to Chicago at a transportation and storage cost of \$6 per hundredweight. An import duty of \$0.50 per shirt is assessed.

From a total systemwide costs point of view, should the shirts be produced in Taiwan? **Note:** hundredweight is equal 100 lb.



**Problem 2: (20 points)** Suppose that you have just been hired as an operation analyst for a new retail chain. Your first assignment is to evaluate and recommend an inventory policy to the management. You are given the following information for three categories of the products.

	Demand (per week)	Std. Deviation	Average Retail Price	Average Cost
Turtlenecks	2500	357	38	20
Wool Coat	1500	188	80	55
Jean Jacket	1900	230	59	42

Fixed order cost is \$500 per order per product. Lead time is 2 weeks. Inventory holding cost is 25% of inventory value annually.

(a) Find the optimal ordering quantities if demand was deterministic and assume no lead time.

(b) Determine the appropriate inventory strategy if you will employ a continuous review policy (i.e. specify when to place orders, how much to order, etc.). Assume a service level is 90%.

(c) Determine the appropriate inventory strategy if you will employ a weekly periodic review policy (i.e. specify when to place orders, how much to order, etc.). Assume a service level is 95%.



**Problem 3: (15 points)** A drug retailer has two ways that he can replenish his shelf merchandise: directly from vendors or through company's warehouse. Items with high sales volume and high replenishment quantity usually have a cost advantage if they can be purchased directly from vendors because no extra warehouse storage and handling required. The remaining items are more efficiently handled through warehousing. There are 12 items in a particular drug class. Annual sales data have been collected as shown below.

<b>Product Code</b>	<b>Dollar Sales (\$)</b>
10732	56,000
11693	51,000
09721	10,000
14217	9,000
10614	46,000
08776	71,000
12121	63,000
11007	4,000
07071	22,000
06692	14,000
12077	27,000
10542	18,000
<b>Total</b>	<b>391,000</b>

You are asked to give suggestion to this drug retailer. Which items that should be purchased directly from vendors do you suggest?

