Name _____ Student ID _____

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

Mid Term Examination: Semester 2   Academic Year: 2009
Date: 27 December 2009   Time: 09:00 – 12:00
Subject: 225-354 Logistics and Supply Chain Management   Room: R300

ทุจริตในการสอบ โทษขั้นต่ำ คือ ปรับตกในรายวิชาที่ทุจริต และพักการเรียนหนึ่งภาคการศึกษา

Instructions: Read carefully
1. Only 3 pages, size A4 with hand writing, are allowed to bring into the room.
2. There are 13 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

Problem	Points	Points Gained
1	6	
2	6	
3	6	
4	6	
5	6	
6	6	
7	6	
8	6	
9	6	
10	6	
11	15	
12	10	
13	15	

Tests are prepared by
Nikorn Sirivongpaisal

Problem 1: (6 points) The statement is said "The objective of every supply chain is to maximize the value generated for the manufacturing component of the supply chain." Do you think the previous statement whether true of false? If it is false, give the reason why it's false.

Problem 2: (6 points) What is competitive strategy? What is supply chain strategy? What is strategic fit? And what is the importance of achieving strategic fit?

Problem 3: (6 points) Draw the picture that exhibits the relationship between "Cycle View of Supply Chains" and "Push/Pull View of Supply Chains".

Problem 4: (6 points) The statement is said "To achieve complete strategic fit, a firm must ensure that all functions in the value chain have diverse strategies that support functional goals." Do you think the previous statement whether true of false? If it is false, give the reason why it's false.

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Problem 5: (6 points) List the abilities included in supply chain responsiveness. Provide at least five abilities.

Problem 6: (6 points) Explain the basic trade-off between responsiveness and efficiency for inventory driver of supply chain performance.

Problem 7: (6 points) Explain the basic trade-off between responsiveness and efficiency for facilities driver of supply chain performance.

Problem 8: (6 points) Explain the main advantage of in-transit merge over drop-shopping and the advantages and disadvantages of distributor storage with carrier delivery.

Problem 9: (6 points) Fill in the blank the following questions with these words "increase", "decrease", "increase then decrease", or "decrease then increase".

(a) As the number of facilities in a supply chain increases, the inventory and resulting inventory costs will _____ .

(b) As the response time desired by the customer decreases, the required number of facilities in the distribution network _____ .

(c) As the number of facilities in a supply chain increases, total transportation cost _____ .

(d) As the number of facilities in a supply chain network increases, total logistics costs will _____ .

(e) As the number of facilities in a supply chain increases, total facility costs _____ .

Problem 10: (6 points) From the list of product characteristics provided in the following table, identify the most appropriate distribution network design.

Product	Most Appropriate Distribution Network Design
Gas sold in retail station	
Books and CD's	
Car such Toyota, Honda	
CP Fresh Mart	

Problem 11: (15 points) One manufacturing company is considering expansion by building a new factory in either "City A" or "City B", or perhaps even in both cities. It is also considering building at most one new warehouse, but the choice of location is restricted to a city where a new factory is being built. The net present value of each of these alternatives is shown in the following table. Also the capital required is shown in the same table. From information given, formulate the model that maximizes the total net present value. **(Do not solve for the solution, formulate model only)**

Alternatives	Net Present Value	Capital Required
Building factory in "City A"	9 million Baht	6 million Baht
Building factory in "City B"	5 million Baht	3 million Baht
Building warehouse in "City A"	6 million Baht	5 million Baht
Building warehouse in "City B"	4 million Baht	2 million Baht

Problem 12: (10 points) Two plants are to serve three market points through one or two warehouses, as shown in figure. Volume flowing either to or from each point, and the associated transportation rates, are given as follows. Use the center-of-gravity method to find the optimum single warehouse location. **Do only 2 iterations. Note:** scale of figure is 1:10 Km.
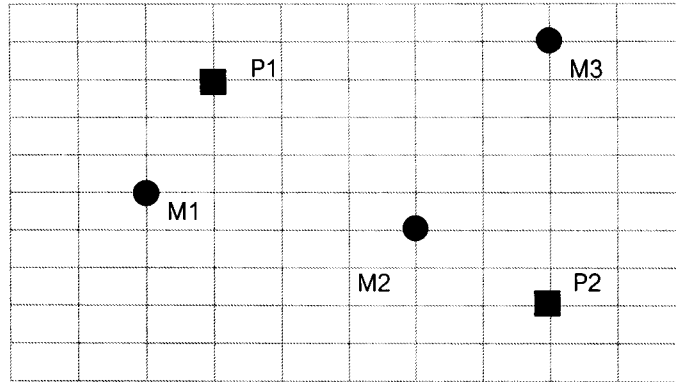
(0,0)

Point No.	Point, i	Total Volume Moving (units)	Transportation Rate (Baht/unit/Kilometer)
1	P1	5,000	0.04
2	P2	7,000	0.04
3	M1	3,500	0.095
4	M2	3,000	0.095
5	M3	5,500	0.095

Problem 13: (15 points) Hot & Cold is European manufacturer of home appliances. It has plants in France, Germany, and Finland. The European market is divided into four regions: North, East, West, and South. Plant capacities (millions of units per year), annual fixed costs (millions of euros per year), regional demand (millions of units), and variable production and shipping costs (euros per unit) are as shown in table. And the company implements single sourcing strategy for its customers. What is the optimal network for the firm if their goal is to minimize costs? **(Do not solve for the solution, formulate model only)**

Supply City	Variable Production and Shipping Costs				Capacity	Annual Fixed Cost
	North	East	South	West		
• France	100	110	105	100	50	1,000
• Germany	95	105	110	105	50	1,000
• Finland	90	100	115	110	40	850
Demand	30	20	20	35		