Name _____ Student ID _____

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

Final Examination: Semester 2 Academic Year: 2008
Date: February 23rd , 2009 Time: 09:00-12:00
Subject: 225-354 Logistics and Supply Chain Management Room: หัวหุ่นยนต์

ทุจริตในการสอบ โทษขั้นต่ำ คือ ปรับตกในรายวิชาที่ทุจริต และพักการเรียนหนึ่งภาคการศึกษา

Instructions: Read carefully

1. All materials are allowed.
2. There are 10 problems for this test. 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 120 points.

Distribution of Score

Problem	Points	Points Gained
1	12	
2	7	
3	7	
4	7	
5	7	
6	15	
7	10	
8	20	
9	15	
10	20	

Tests are prepared by
Nikorn Sirivongpaisal

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Problem 1: (12 points) From the beer game experiment in class, explain symptom and causes of the bullwhip effect. Also clearly sketch two important graphs from this experiment.

Problem 2: (7 points) List all the factors that effect to transportation cost.

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Problem 3: (7 points) What is "Advanced Shipping Notice (ASN)"? And explain the benefit of ASN.

Problem 4: (7 points) List the advantages and disadvantages of random location put-away system and commodity put-away system.

Problem 5: (7 points) What is Peterson-Silver's Rule? And what is its usefulness?

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Problem 6: (15 points) From the provided data below, calculate unit transportation cost (Baht/ton) from Songkhla to Bangkok.

1. Distance from Sonkhla to Bangkok	900 Kilometers
2. Truck's loading weight	13 Tons
3. Number of Trips	20 trips per month
4. Driver's salary	16,000 Baht per month
5. Truck's price	5,000,000 Baht
6. Truck's lifetime	12 years
7. Fuel price	(5 × Distance) Baht per trip
8. Driver's allowance	(0.5 × Distance) Baht per trip
9. Depreciation method	Straight line, no salvage value

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Problem 7: (10 points) The given data below are from the wholesaler, which are representing the symptom of its transportation service. Assume you are a manager of this store; calculate the performance indicators for the transportation service. Also identify the problem occurring in this store.

Month	Number of Shipments	Not Right Amount	Not Right Products	Broken During Transportation	Not Right Time
Feb	700	14	13	7	8
Mar	765	12	11	6	7
Apr	565	11	6	4	2
May	590	12	8	6	2
Jun	540	15	10	7	5
Jul	647	13	9	5	3
Total	**3,807**	**77**	**57**	**35**	**27**

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Problem 8: (20 points) From the provided data below, calculate the vehicle routing of the transportation network by using the saving algorithm. Capacity of truck is 15 tons.

Table 1. Ton of raw material collected

Customer	Tons of order
1	40
2	200
3	300
4	700

Table 2. Distance Matrix between node

	0	1	2	3	4
0	0	1.43	1.60	0.26	6.17
1	1.43	0	0.90	1.17	7.08
2	1.60	0.90	0	1.07	6.98
3	0.26	1.17	1.07	0	1.23
4	6.17	7.08	6.98	1.23	0

Note Node 0 is the company

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Problem 9: (15 points) Weekly demand for product "A" at a grocery store is normally distributed with a mean of 500 and a standard deviation of 200. This product takes normal random variable with a mean of 2 weeks and a standard deviation of 3 days to supply a grocery's order. This grocery is targeting a customer service level of 90 percent and monitors its inventory continuously. How much safety inventory of product "A" should grocery carry? What should its ROP be?

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Problem 10: (20 points) From the provided relationship chart below, draw the activity relation ship diagram.