

PRINCE OF SONGKLA UNIVERSITY

FACULTY OF ENGINEERING

Midterm Examination : Semester 1

Academic Year : 2008

Date : July 27, 2008

Time : 09:00 - 12:00

Subject : 226-439 Logistics & Material Handling System

Room : A400

ทุจริตในการสอบ โทษขั้นต่ำปรับตกในรายวิชานั้น และพักการเรียน 1 ภาคการศึกษา

Directions :

- Can take any books to the room.
- Show your solutions and methods on your exam papers.
- Don't ask any questions to the proctors.** If you think you don't understand any questions, you should make a decision by your own.
- There are 8 problems. You must do all of them.
- Can use any calculators.

Name.....Code.....

Question	Full Points	Taken Points
1	15	
2	15	
3	10	
4	5	
5	10	
6	20	
7	15	
8	20	
Total	110	

Assoc. Prof. Wanida Rattanamanee

Lecturer



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1. (15 points) From Figure 1, what are disappeared? Put them in the Figure and explain the logistics structure. How can you improve this logistics structure?

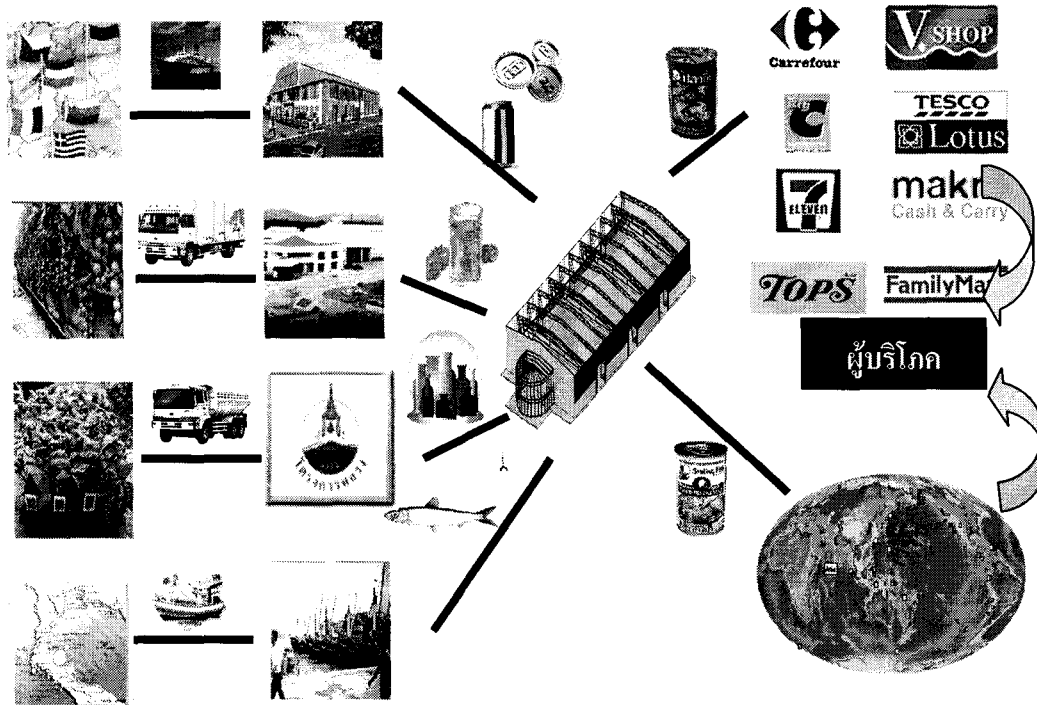


Figure 1. An Example of Logistics Structure

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2. **(15 points)** Give the short explanation of the answer for the following questions.

2.1 What is the heart of Logistics?

2.2 What is the aim of Logistics?

2.3 Should the logistics department be organized in a factory? Why?

2.4 Give 2 measures for the logistics system.

2.5 What is logistics?

3. **(10 points)** The definition of material handling system is the art and science of moving, storing, protecting and controlling material." Explain in detail for these 4 major activities.



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4. (10 points) Explain the concept of Figure 2 and Figure 3.

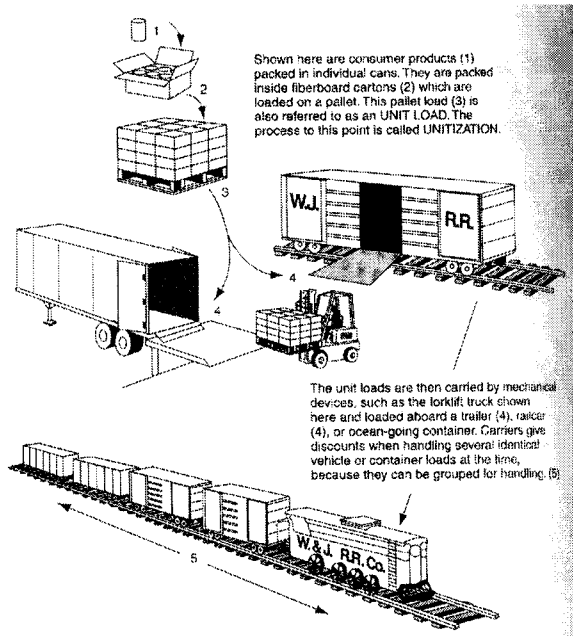


Figure 2

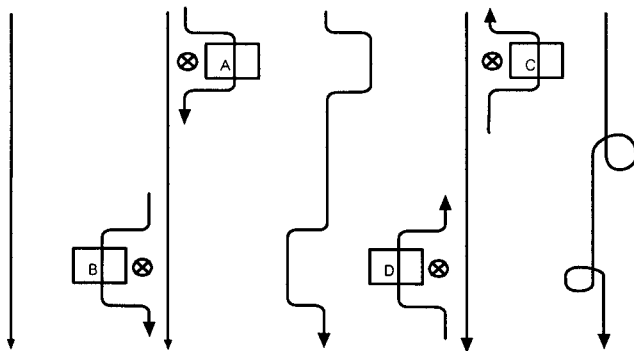


Figure 3

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5. (10 points) Give the answers for the following questions,

5.1 Define "Material flow"

5.2 Name a device or communications technology that helps reduce search time and improves picking accuracy.

5.3 Discuss the relationship between quality and material handling

6. (20 points) Five manufacturing departments labeled A, B, C, D, and E are to be assigned among the six sites, of size 10×10 feet each as shown in Figure 4. Four products are processed through the five departments according to the processing sequences and frequencies of movement between departments as shown in Table 1.

Table 1 The processing sequences of each product and the frequencies of movement between departments

Product	Processing Sequence	Flow Frequency
1	A,B,C,E,D	200
2	A,C,B,C,D,E	250
3	A,B,D,E,C	200
4	A,C,D,B,E	300

1	2	3
4	5	6

Figure 4 Sites for locating the departments

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6.1 Develop the frequencies From-to-chart and the distance From-to-chart between sites associated with the problem, assuming material movement between departments is from centered to centered and along the aisles only (select the shortest path between sites). **(8 points)**

6.2 Suppose an initial assignment of departments is below:

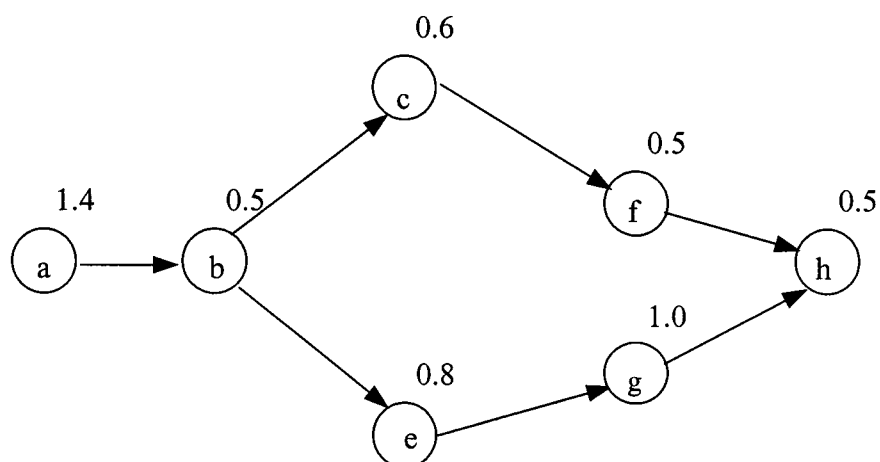
Dept. A located in site 2, Dept. B located in site 4, Dept. C located in site 3,
Dept. D located in site 1, Dept. E located in site 6.

What is the cost associated with this assignment? If cost (cents) per trip per foot between A and B is 10, A and C is 5, A and D is 5, B and C is 5, B and D is 10, C and D is 20, and another cost is 15. **(6 points)**

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6.3 Develop the better layout from Question 6.2 and give the reason why you think the developed layout is better. **(6 points)**

7. **(15 points)** A manager wants to assign tasks to workstations as efficiently as possible, and achieve an hourly output of 30 units. Assume the shop works a 60 minute per hour. There are 8 hours per day. Assign the tasks shown in the accompanying precedence diagram (times are in minutes) to workstations using "in order of most following tasks" rules.



D

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- 7.1 What is the value of cycle time?
- 7.2 How many workstations should have in the system?
- 7.3 Identify the tasks you would assign to each station.
- 7.4 Determine the percentage of idle time.

8. **(20 points)** From the class presentations, answer these following questions?
 - 8.1 How is the importance of information to the logistics system?
 - 8.2 What are the same and difference between Wal-Mart and Kmart?
 - 8.3 What is the objective of the "Economics of Pneumatic Conveying Systems" study?
 - 8.4 Explain and give an example of "material handling operating capacity, rated capacity, peak capacity, and design capacity"
 - 8.5 What is the gravity & powered roller conveyor system?
 - 8.6 What is AMENA?
 - 8.7 What is the integration logistics?

