PRINCE OF SONGKLA UNIVERSITY

FACULTY OF ENGINEERING

Midterm Examination : Semester 1 Academic Year : 2010

Date : August 6, 2010 Time : 13:30 - 16:30

Subject : 226-316 Material Handling System & Logistics Room : S104

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	10	
2	10	
3	10	
4	10	
5	15	
6	15	
7	15	
8	15	
Total	100	

Good Luck

Assoc. Prof. Wanida Rattanamanee

Lecturer

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Code.....

1. **(10 points)** From Figure 1, what is the figure shown? Explain the detail of the figure.

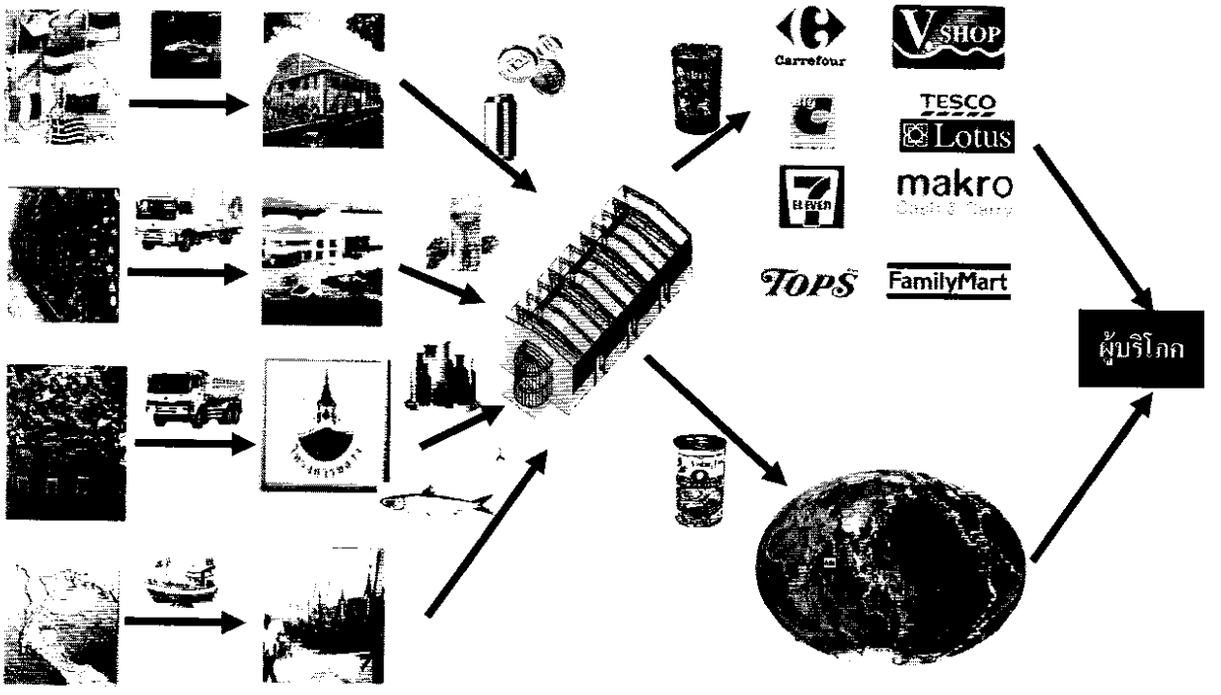

Figure 1 for Question 1

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2. **(10 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?

2.1 .....

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2.2 .....

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2.3 .....

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2.4 .....

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2.5 .....

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3. **(10 points)** Give 5 logistics activities and explain all in details.

3.1 .....

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3.2 .....

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3.3 .....

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3.4 .....

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3.5 .....

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4. **(10 points)** From the following solutions, what is the appropriate material handling system measured for each that show your solutions are better.?

4.1 There is a new equipment that reduce material damage.

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4.2 There is a new way to move material that reduce handling steps.

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4.3 There is a storage and retrieval automation system.

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4.4 There is a new equipment that reduce handling labors.

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4.5 There is an AGV system.

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5. **(15 points)** Six manufacturing departments labeled A, B, C, D, E and F are to be assigned among the six sites, of size 10×10 feet^2 each as shown in Figure 2. Four products are processed through the six 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,F	200
2	A,C,B,F,C,D,E	250
3	A,B,D,E,C,F	200
4	A,F,C,D,B,E	300

A	C	D
F	E	B

Figure 2 Sites for locating the departments

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6.1 Develop the frequencies From-to-chart. **(6 points)**

6.2 From Figure 2, what is the cost associated with this assignment? If cost (bahts) per trip between A and the others is 10, B and the others is 5, and the rest is 15? Then develop a new layout which is better than the initial layout and give the reason why it is better. **(9 points)**

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6. **(15 points)** From the Figure 3, design and draw an equipment used to pick up the logs to the saw machine.

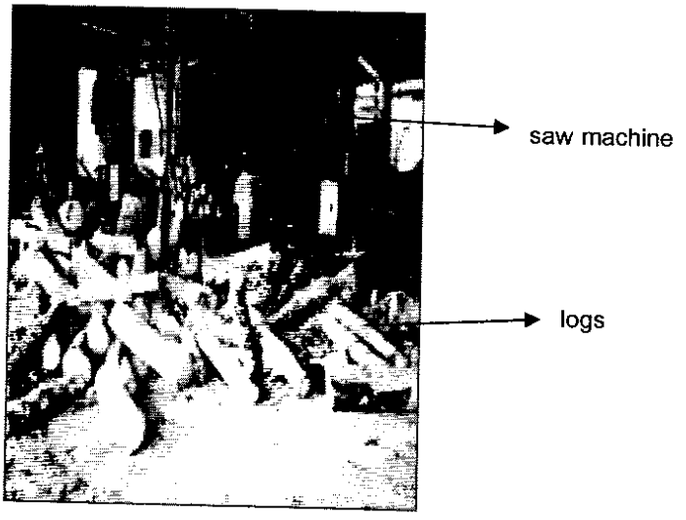

Figure 3 for Question 5

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7. **(15 points)** From Figure 4, a manager wants to assign these tasks to workstations as efficiently as possible, and achieve an hourly output of 15 units. Assume the shop works 8 hours per day. Assign the tasks shown in the precedence diagram (times : minutes).

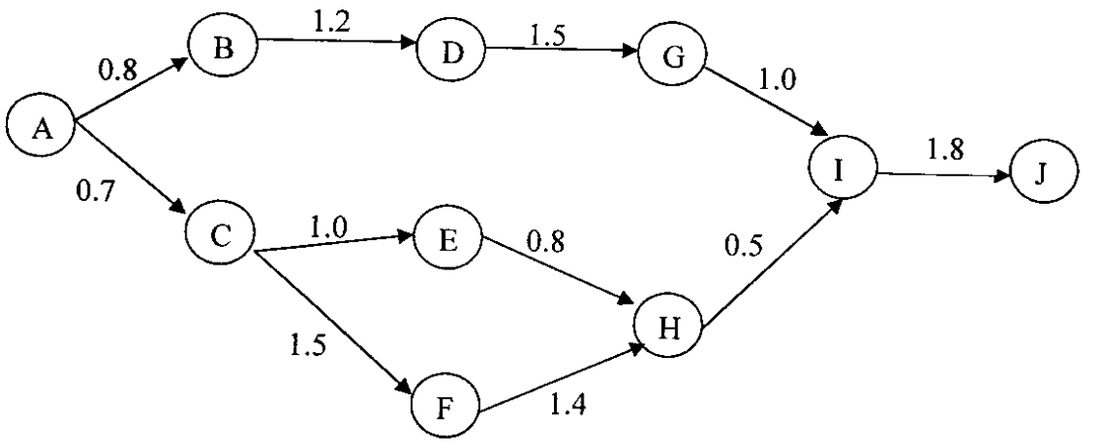

Figure 4 The work sequence for Question 7

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.

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8. **(15 points)** From Figure 5, what is the product of the figure? What is the problem of the current design? How is the new design applied to solve the problem?

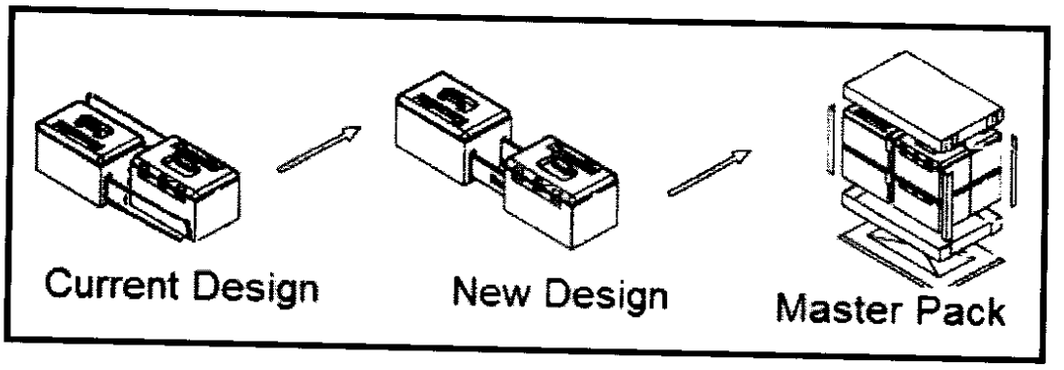

Figure 5