

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

**PRINCE OF SONGKLA UNIVERSITY**  
**DEPARTMENT OF INDUSTRIAL ENGINEERING**

Midterm Exam: Second Semester

Academic Year: 2008

Date: 26 ธันวาคม 2551

Time: 09:00 – 12:00

Course: 226-203 Computer Aided Design

Room: A203

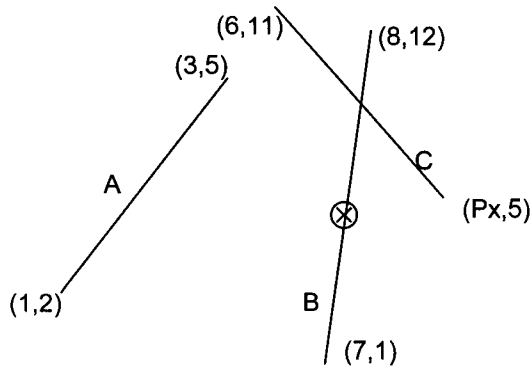
ทฤษฎีในการสอบ โทษชั้นต่ำคือ ปรับตกในรายวิชาที่ทฤษฎีและพักการเรียน 1 ภาคการศึกษา

**Instructions:**

1. The exam has 3 problems and the total score is 100.
2. Use of calculators is allowed.
3. This is a closed book exam.

Problem	Score	Your Score
1	45	
2	25	
3	30	
<b>Total</b>	<b>100</b>	

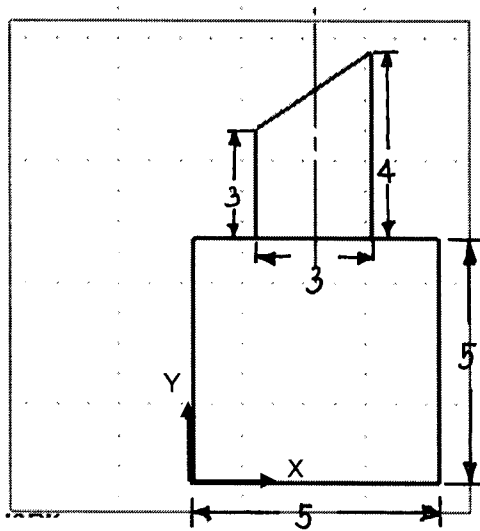
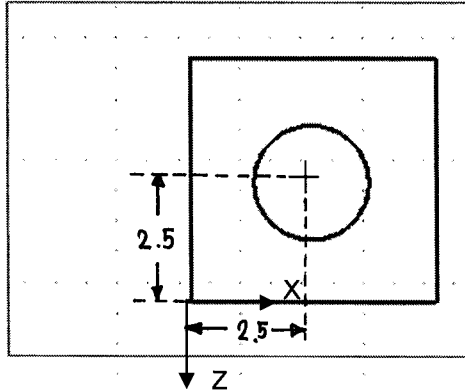




1. จากรูปด้านบน คำนวณหา

- 1.1 (5) สมการ analytic ของเส้นตรง B
- 1.2 (5) สมการ parametric ของเส้นตรง A
- 1.3 (10) พิจารณาเส้นตรง C เมื่อกำหนดให้ค่าของ X เปลี่ยนไปในอัตราเดียวกับค่าของ Y โดยให้  $t = 0$  ณ พิกัด (6,15) และ  $t = 3$  ณ พิกัด (Px, 5) จงคำนวณสมการ parametric ของเส้นตรง C
- 1.4 (15) เมื่อใช้คำสั่ง "Quick Extend" กับเส้นตรง A ทราบว่าจุดสิ้นสุดของด้านที่ถูก Extend ออกไปจะอยู่ที่พิกัดอะไร และระยะที่ Extend ออกไปนั้นมีความยาวเท่าไร
- 1.5 (10) หากคลิกเลือกคำสั่ง "Quick Trim" แล้วตามด้วยการคลิกที่ตำแหน่ง  $\otimes$  ทราบว่าเส้นตรง B จะเหลือความยาวเท่าไร
- 1.6 (15) เส้นตรง D ซึ่งมีจุดเริ่มต้นอยู่ที่ (3,7) และจุดสิ้นสุดอยู่ที่ (5,11) หากใช้คำสั่ง "Quick Extend" กับเส้นตรง D ว่าจะสามารถทำการ Extend ได้หรือไม่ด้วยการใช้เส้นตรง C เป็นเส้นสิ้นสุดการ Extend จงพิสูจน์ (Bonus จะได้คะแนนข้อนี้ เมื่อทำถูกต้อง)

2. สมการของ Datum Plane ที่ใช้ในการสร้างชิ้นส่วนที่ยื่นออกมาจาก Block ด้วยคำสั่ง "Extruded Body" คืออะไร



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3. ทุ่นยนต์ตัวหนึ่งถูกควบคุมให้ทำการพ่นสีลงตามแนวของเส้นโค้ง PQ ซึ่งมีสมการดังนี้

$$P = CU^T$$

$$U = [u^3 \ u^2 \ u \ 1]$$

$$C = \begin{bmatrix} 5 & 1 & -4 & 3 \\ -9 & 6 & 5 & 0 \end{bmatrix}$$

เพื่อให้ความเข้มข้นมีความสม่ำเสมอตลอดแนวเส้นโค้ง กำหนดให้ในระหว่างการพ่น หัวพ่นสีจะต้องอยู่ห่างจากเส้นโค้งเป็นระยะ 5 หน่วยวัดตามแนวตั้งฉากกับเส้นโค้ง ให้คำนวณตำแหน่งของหัวพ่นเมื่อหัวพ่นเคลื่อนผ่าน  $u = 0.75$

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

Mid Term Examination: Semester 2  
Date: 25 December 2008  
Subject: 225-601 Supply Chain Management

Academic Year: 2008  
Time: 09:00 – 12:00  
Room: ห้องห้าหุน

ทฤษฎีในการสอบ โทษขั้นต่ำ คือ ปรับตกในรายวิชาที่ทฤษฎี และพักการเรียนหนึ่งภาคการศึกษา

**Instructions: Read carefully**

1. All materials are allowed.
2. There are 12 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 100 points.

**Distribution of Score**

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

Tests are prepared by  
Nikorn Sirivongpaisal

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**Problem 1: (5 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 or false? If it is false, give the reason why it's false.

**Problem 2: (5 points)** The statement is said “The cycle view of the supply chain is useful when considering operational decisions, because it categorizes processes based on whether they are initiated in response to or in anticipation of customer orders.” Do you think the previous statement whether true or false? If it is false, give the reason why it's false.

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**Problem 3: (5 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 or false? If it is false, give the reason why it’s false.

**Problem 4: (5 points)** List the abilities included in supply chain responsiveness. Provide at least five abilities.

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**Problem 5: (5 points)** Explain the basic trade-off between responsiveness and efficiency for inventory driver of supply chain performance.

**Problem 6: (5 points)** The statement is said “Companies using seasonal inventory will build up inventory in periods of low demand and store it for periods of high demand when they will not have the capacity to produce all that is demanded.” Do you think the previous statement whether true or false? If it is false, give the reason why it’s false.



**Problem 7: (5 points)** The statement is said “The main advantage of a distribution network with local storage is that it can lower the inventory and facility costs.” Do you think the previous statement whether true or false? If it is false, give the reason why it’s false.

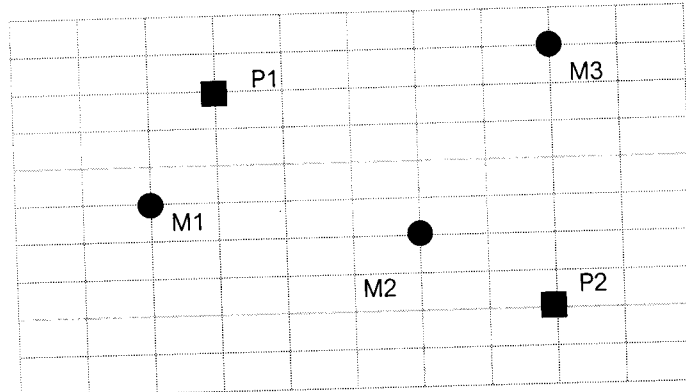
**Problem 8: (5 points)** Fill in the blank the following questions with these words “increase”, “decrease”, “increase then decrease”, or “decrease then increase”.

- (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 9: (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 10: (15 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>i</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

*[Handwritten signature]*

**Problem 11: (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. 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
<b>Demand</b>	30	20	20	35		

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**Problem 12: (15 points)** Refer to page 194, problem 1 in your textbook, use a decision tree to solve the problem.