

PRINCE OF SONGKLA UNIVERSITY

FACULTY OF ENGINEERING

Final Examination : Semester I

Academic Year : 2005

Date : October 8, 2005

Time : 1:30 - 4:30 PM

Subject : 225 - 343 Production Management and Optimization

Room : R300

ทูลจวรทในการสอบ โทษจันต่าปรบตคในรายวชานัน และพัทการเรยน 1 ภาคการศกษา โทษสูงสุด ให้ออก

Before doing this test, please read this first!

1. The following materials can be led into examination room :-
 - Lecture notes, handouts, or textbooks.
 - Electronic handheld calculator.
 - Languages translate equipment.
2. Not allow for communication equipment such as PDA phone, mobile telephone, and laptop (notebook) computer.
3. You have to write answers to ALL questions.
4. You have to fill your name and ID on this page and on the top right of the remainder.
5. There are five questions with 40 points.

First name Mr./Miss Surname

Student ID

Score (fills by lecturer)

Question no.	Points	your score
1	8	
2	8	
3	8	
4	8	
5	8	
	40	

(This test is prepared by Asst. Prof. Charoen Jaitwijitra)

Name

ID

1. Mr. Rattapoom, the owner of the five - star product of OTOP is trying to make decision for his business. The product “Durian Chip” might become high demand for a short period, and then demand dropping off rapidly afterward. He plans to sell the product at 30 Baht per bag.

If the decision to manufacture the Durian Chip is made, special machine will have to be purchased. If machine costing 10,000 baht is purchased, the manufacturing cost per bag will be 25 Baht. If machine costing 20,000 Baht is purchased, the manufacturing cost per bag will be 24 Baht.

He has estimated sales volumes (number of bag will be sold) and their associated probabilities. These are shown in Table 1.

Table 1. Sales volumes and probabilities

Volume	Probability
2,000	0.30
5,000	0.40
10,000	0.20
20,000	0.10

He decides that the product should be produced if a positive expected profit is associated with either type of machine. If a positive expected profit is possible, he should purchase the machine associated with the highest expected profit.

Use the above information to draw the decision tree and analyze the tree. Your answer should be composed of the following,

- a. Should Rattapoom continue to produce or not?
- b. If a positive expected profit is possible, what type of machine should be purchased?

Name

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Draw decision tree here

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3. The owner of a small grocery has noted a sales pattern for window locks that seems to parallel the number of break-ins reported each week in the newspaper. The data are as following :

Sales	46	18	20	22	27	34	14	37	30
Break-ins	9	3	3	5	4	7	2	6	4

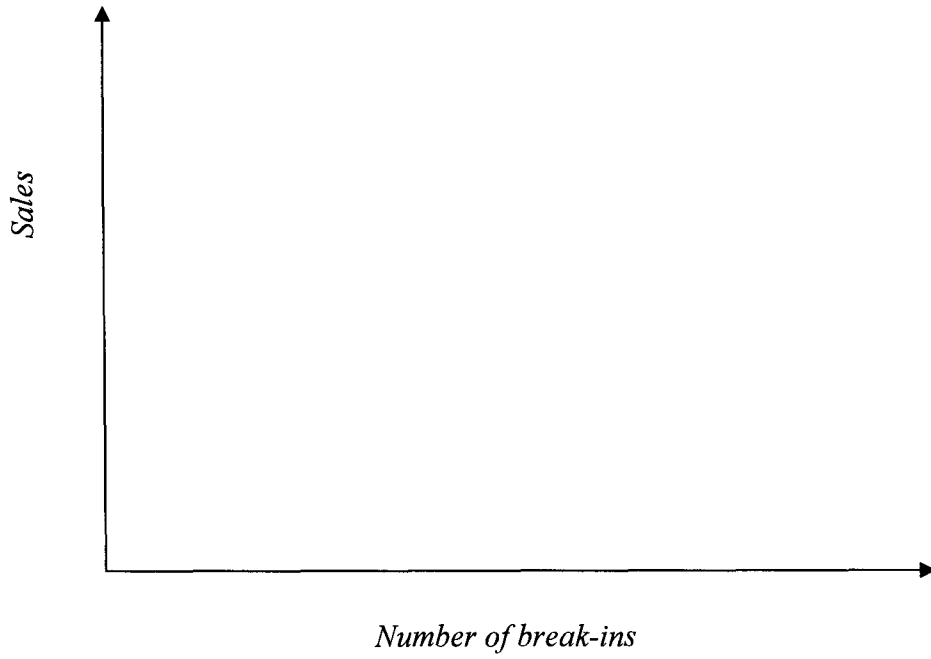
a. Plot the data to determine which type of equation, linear or nonlinear, is appropriate.

(Plot graph on next page)



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b. Construct a regression equation for the data.

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price of 80 Baht per kilogram. An ordering cost is 4000 Baht per time and annual holding cost of 17 percent of purchase price per kilogram.

- a. Determine the order size that will minimize the total cost.
- b. If the supplier offered the discount at 1000 kilograms instead of at 500 kilograms, what order size would minimize total cost?

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Name

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5. A mobile communication service company has offers 2 type of services as shown below.
If Ms Armeena calls for 34 minutes for 6 times, each call has the following durations;

Call no.	1	2	3	4	5	6
Minutes	4.50	5.25	6.10	3.69	4.31	10.15

Analyze this problem for finding which type should be choosing for Armeena so as to pay for less money.

เลือกแพ็คเกจ โทรนาทีละบาท คิดเป็นวินาที

นาทีแรก (บาท/นาที)	นาทีที่ 2 (บาท/นาที)	นาทีที่ 3 เป็นต้นไป (บาท/นาที)	คิดค่าโทรตามจริงเป็นวินาที ตั้งแต่วินาทีแรก ตลอด 24 ชั่วโมง
3	3	1	

▪ 2 นาทีแรก นาทีละ 3 บาท นาทีถัดไป นาทีละ 1 บาท คิดค่าโทรเป็นวินาที ตั้งแต่วินาทีแรก

แพ็คเกจ นานจริงจริง ▪ โทรนาทีละ 2.50 บาท คิดเป็นนาที

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