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**PRINCE OF SONGKLA UNIVERSITY**

**FACULTY OF ENGINEERING**

**Midterm Examination : Semester I**

**Academic Year : 2007**

**Date : August 3, 2007**

**Time : 09:00 – 12:00**

**Subject : 225 - 343 Production Management and Optimization**

**Room : A401**

ทฤษฎีในการสอบ โทษขั้นต่ำปรับตกในรายวิชานั้น และพักการเรียน 1 ภาคการศึกษา

**Directions**

1. The following materials can be led into examination room : lecture notes, textbooks, electronic handheld calculator, and dictionary.
2. Using all kinds of communication equipment such as PDA phone, cellular phone, and notebook computer are illegal.
3. You have to answers ALL questions.
4. You have to fill your name and ID on this page and fill only ID on the top-right corner of the other pages.
5. There are seven pages (this page is included), six problems with 40 points.

First name Mr./Miss ..... Last name .....

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Problem no.	Points	Your points
1	8	
2	5	
3	8	
4	6	
5	7	
6	6	
	40	

\*\*\*\*\* Asst. Prof. Charoen Jaitwijitra \*\*\*\*\*

Read the problems carefully, and then write the answer down to the specified lines under each problem. Don't forget to answer every question for each problem.

1. ( 8 points ) Room registrations in the Hatyai Hotel have been recorded for the past 9 years. Management would like to determine the mathematic trend of the guest registration. Given the following time-series data, develop a regression equation relating registrations to time. Then forecast 2008 registrations.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005
Registrations (in thousands)	17	16	16	21	20	20	23	25	24

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4. The owner of an old Thai-style home must decide to subdivide the home in to many rooms for tourists. If there are three alternatives with two levels of annual profit as shown in the table below.

Alternatives	Annual profit under various demand patterns (Baht)			
	High	p	Average	p
A	900000	0.5	250000	0.5
B	800000	0.4	700000	0.6
C	600000	0.3	550000	0.7

- a. (3 points) Draw the decision tree using the above information.

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- b. (3 points) Which option has the highest expected value?

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5. Saengchai Manufacturing is currently producing a tape holder that has a variable cost of 25 Baht per unit and a selling price of 50 Baht per unit. Fixed costs are 750,000 Baht. Current volume is 40,000 units. The firm can produce better product by adding a new piece of equipment to the production line. This equipment will increase the fixed costs by 20,000 Baht but the variable costs would be reduced to 24 Baht per unit. Volume for the new and improved product should rise to 41,000 units.

a. (4 points) Should the company invest in the new equipment?

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b. (3 points) At what volume does the equipment choice change?

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- 6. ( 6 points ) Heng Heng chinese restaurant order fresh shrimp from a supplier. The demand per month is 1500 kilograms with an average daily demand of 50 kilograms. The supplier can deliver 100 kilograms per day. The restaurant has to pay 50 Baht for each purchasing order and pay for holding the raw material (fresh shrimp) 2 Baht per kilogram per month. Solve for the optimum number of units per order (EOQ) and total costs per month for ordering and holding cost.

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