

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

PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Mid-term Examination: Semester 1

Academic Year: 2007

Date: July 30, 07.

Time: 13.30 – 16.30

Subject: 225-345 Engineering Economy

Room: R 201,A203,A205

Instructions

- There are 8 questions (9 pages).
- Total score is 100.
- Answer all questions.
- Dictionary, calculators, computers, books and lecture-notes are allowed.

ด้วยเกียรติและศักดิ์ศรี ข้าพเจ้าจะขอสัตย์ในการสอบ

ลงชื่อ.....รหัส.....

ทฤษฎีในการสอบโทษขั้นต่ำคือปรับตกในรายวิชาที่ทฤษฎี และพัก

การเรียน 1 ภาคการศึกษา

Good luck
Sakesun Suthummanon

Question	Full Score	Score
1	10	
2	30	
3	10	
4	5	
5	5	
6	20	
7	10	
8	10	
Total	100	



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1. Why do you think it is important for managers to understand the mechanics of demand and supply? Give examples of companies whose business was either helped or hurt by change in supply or demand in the markets. (10 points)

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2. The manager for the Tiger Beer Company has narrowed the search for a new facility location to seven communities. Production capacity and cost structure are shown in table below:

Community	Baht/Year								
	Land	Property taxes	Insurance	building	equipment	Labor	materials	transportation	overhead
Pattalung	500000	40000	20000	1000000	40000	100000	1000000	500000	100000
Songkia	500000	40000	20000	1400000	40000	80000	700000	330000	90000
Naratiwat	400000	40000	20000	1000000	40000	100000	900000	500000	100000
Pattani	2000000	50000	20000	900000	30000	80000	500000	330000	90000
Yala	700000	40000	20000	1000000	40000	100000	800000	500000	100000
Nakom	200000	40000	20000	900000	40000	100000	800000	500000	100000
Surat	600000	40000	20000	1000000	40000	100000	700000	500000	100000

Production at 100,000 Barrel per year

- 2.1. Which of the communities can be eliminated from further consideration because they are dominated (both variable and fixed costs are higher) by another community?
- 2.2. Using the break-even analysis to calculate the break-even quantities in order to determine the range over which each community provides the lowest cost.

(30 points)

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3. Philip is choosing between model *A* (a budget model) and model *B* (with more features and a higher purchase price). What *incremental costs* would Philip incur if he chose model *B* instead of the less expensive model *A*? What would be your advice?

	Model A	Model B
Purchase price	\$10,000	\$17,500
Installation costs	3,500	5,000
Annual maintenance costs	2,500	750
Annual utility expenses	1,200	2,000
Disposal costs after useful life	700	500

(10 points)

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4. If \$500 were deposited in a bank saving account, how much would be in the account at the end of three year? If the bank paid **5% of interest compounded annually**.
(5 points)

5. Suppose the bank changed its interest policy in question 4 to **6% interest, compounded quarterly**. For this situation a \$500 deposit now would result in how much money in the account at the end of three year?

(5 points)



6. The manager of fast-food restaurant featuring hamburgers is adding salads to the menu. There are two options, and the price to the customer will be the same for each. The make option is to install a salad bar stocked with vegetables, fruits, and toppings and let the customer assemble the salad. The salad bar would have to be leased and a part-time employee hired. The manager estimated the fixed cost at \$12,000 and variable costs totaling \$1.50 per salad. The buy option is to have preassembled salads available for sale. They would be purchased from a local supplier at \$2.00 per salad. Offering preassembled salads would require installation and operation of additional refrigeration, with annual fixed cost of \$2,400. The manager expects to sell 25,000 salads per year. Using the break-even analysis to calculate the break-even quantities in order to determine the range over which each option provides the lowest cost.

(20 points)

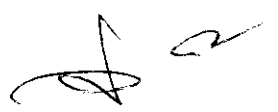
Name.....Code.....

7. Taksin purchased a new car. He wishes to set aside enough money in a bank account to pay the maintenance on the car for the first five years. It has been estimated that the maintenance cost of a car is as follows:

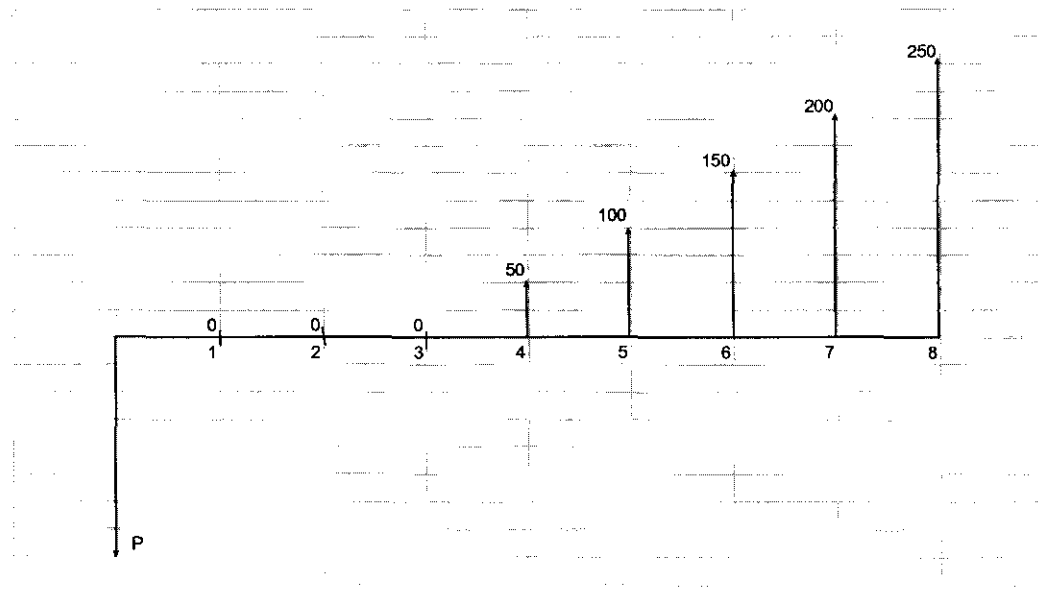
Year	Maintenance cost
1	100
2	120
3	140
4	160
5	240

Assume the maintenance costs occur at the end of each year and that the bank pays 5% interest. How much should he deposit in the bank now?

(10 points)



8. Compute the value of **P** in the diagram below. Use a 10% interest rate.



(10 points)