PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Mid-term : semester 1   Academic Year : 2004

Date : August 2, 2004   Time : 13.30 – 16.30

Subject : 225-345 Engineering Economy   Room : R300

Instruction

1. Attempt all questions.
2. Write answers in this examination paper.
3. All materials are allowed in to the examination room.
4. Total pages are 8 pages.
5. The points are as follows :

Question No	1	2	3	4	5
Full points scored	19	17	12	14	13

ทุจริตในการสอบ โทษขั้นต่ำคือปรับตกในรายวิชาที่ทุจริตและพักการเรียน 1 ภาคการศึกษา

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instructor

1. A factory produces 5 products : A, B, C, D and E. The annual revenue of the factory is ฿ 5,000,000, and fixed cost is ฿ 1,070,500. The variable cost per unit, price per unit and total revenue are as below table :

Item	variable cost per unit (฿/unit)	price per unit (฿/unit)	total revenue (฿)
A	40	50	2,000,000
B	48	60	1,500,000
C	64	80	750,000
D	75	100	450,000
E	80	125	300,000

Fill only answers in to the below blankets :
(19 points)

item	marginal cost/unit (฿/unit)	total marginal cost (฿)
A		
B		
C		
D		
E		

$$AMC \; = \; \underline{\qquad\qquad} \; x$$

$$= \qquad\qquad \%$$

Name _____ ID.number _____ department_____

Break-even point N = ——————————— baht

                       = baht

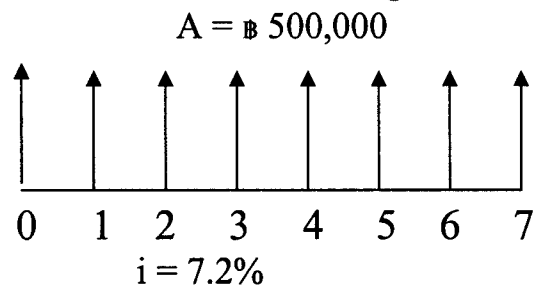| Item	Break-even point in unit (units)
A	
B	
C	
D	
E	

2. Calculate the below questions : (17 points)

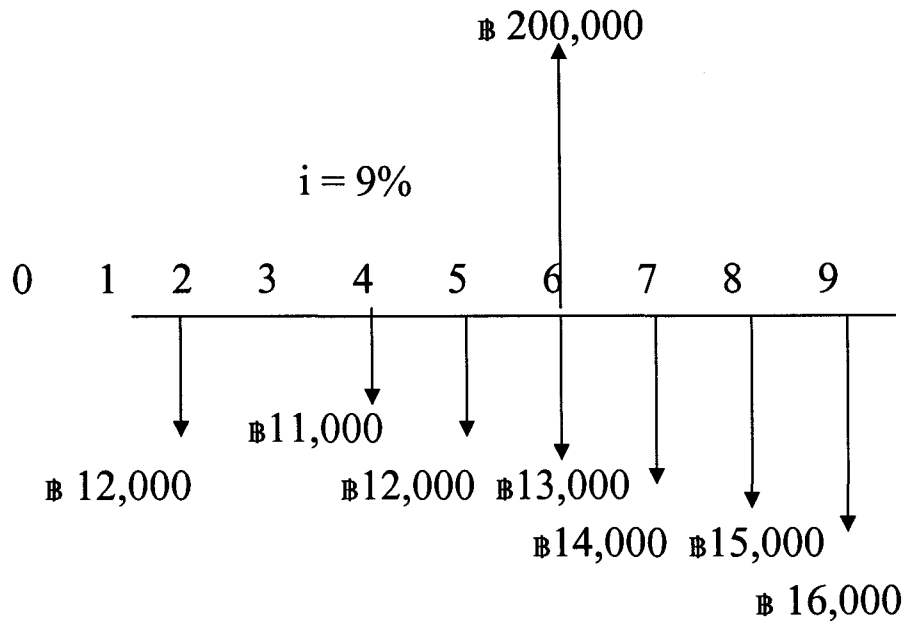2.1 Refer to the below cash flow diagram . Find P_0 = ?

$$i = 7\%$$

$$A = ฿\,400,000$$
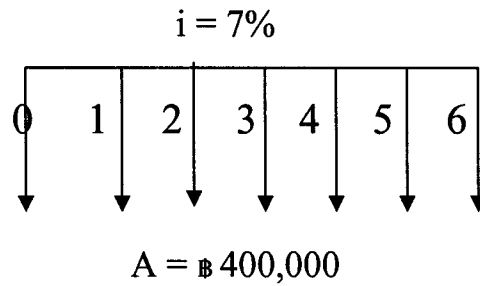
(4 points)

2.2 Refer to the below cash flow diagram . Find F_7 = ?

$$A = ฿\,500,000$$

$$i = 7.2\%$$

(6 points)

page4

Name _____ ID.number _____ department_____

2.3   Refer to the below cash flow diagram. Find P_0 = ?
Instruction : you must calculate the arithmetic gradient formula that you have leaned. (7 points)

฿ 200,000

i = 9%

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     0    1    2    3    4    5    6    7    8    9
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฿11,000

฿ 12,000   ฿12,000 ฿13,000

฿14,000 ฿15,000

฿ 16,000

Name _____ ID.number _____ department_____

3. A company purchases a machine ฿ 5,000,000. The machine has a life time 6 years and salvage value is ฿ 500,000. R = 0.4 .

Fill only answers in to the below blankets :
(12points)

    3.1 The straight line depreciation of year 3 is

                _____ baht.

    3.2 The declining balance depreciation of the year 6 is

                _____ baht.

    3.3 The sum of the years digit depreciation of year 4 is baht._____

    3.4 The book value of year 5 with declining balance depreciation method is

              _____ baht.

    3.5 The book value of year 2 with the sum of the years digit depreciation method is

              _____ baht.

    3.6 The cumulative depreciation of year 4 with the declining balance depreciation method is

              _____ baht.

4. A company purchases a boiler for 3,000,000 baht, which would have an economic life of 8 years and be worth ฿ 500,000 in salvage value at the end of that time. The estimated annual revenue which will accrue will be ฿ 800,000. It is estimated that the operation and maintenance costs would be 10,000, 20,000, 30,000, 40,000, 50,000, 60,000, 800,000 and 100,000 baht from the first year to the year eight, respectively. The policy of minimum attractive rate of return is 15% . What is the internal rate of return? What is the conclusion of this project?
(14 points)

5. A semiautomatic assembly machine can be purchased for ฿ 180,000 with annual revenues of ฿ 60,000 and an annual expenses is ฿ 30,000. What is the pay back of period? Should it be purchased if a 15% return is required ? The life time of project is 10 years?
(13 points)