PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Mid-term examination : semester 1   Academic Year : 2010
Date : August 7,2010   Time : 13.30 – 16.30
Subject : 225-346 Engineering Economy   Room : A203, S103, R201

Instruction

     1. Attempt all questions.
     2. Write answers in this examination paper.
     3. Total examination papers are 7 pages.
     4. The points are as follows ;

Question No	1	2	3	4	5	Total
Full points scored	10	16	20	12	17	75
Scored						

ทุจริตในการสอบ โทษขั้นต่ำ คือ ปรับตกในรายวิชาที่ทุจริต
และพักการเรียน 1 ภาคการศึกษา

Boonrueing Manasurakarn

1. Find the quantity of break-even point of speakers sold and total sales dollars from the below statement. (10 points)

XYZ company
Income statement
For the Month of July 31, 2010

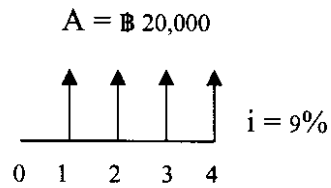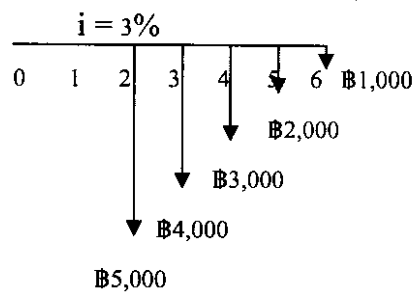|	Total
Sales (400 speakers)	$ 1,000,000
Less variable Expenses	60,000
Contribution margin	40,000
Less fixed expenses	35,000
Net operating income	$ 5,000

2. Write down only the principle formulas in each cash flow diagram.
   2.1 Using basic annual worth formula (3 points)

$$A = \textrm{B } 20,000$$

$$i = 9\%$$

$$0 \quad 1 \quad 2 \quad 3 \quad 4$$

$$F_s =$$

2.2 Using basic gradient formula (5 points)

$$i = 3\%$$

$$0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad \textrm{B}1,000$$

$$\textrm{B}2,000$$

$$\textrm{B}3,000$$

$$\textrm{B}4,000$$

$$\textrm{B}5,000$$

$$P_{()} =$$

3

2.3 (8 points)

i = 7 %

| 0 | 1 | 2 | | 7 | 8 |

A=฿ 50,000

฿600 ฿900

฿2,100

฿2,400

A =
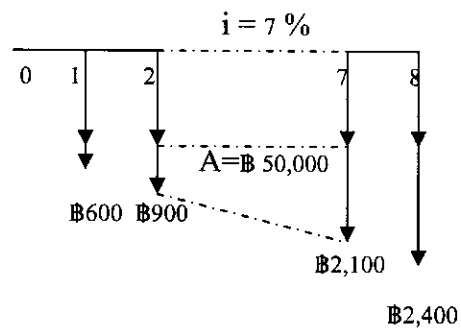
3. Find the equivalent future worth (F_{10}) from the below cash flow diagram. (20 points)

$250,000 $300,000
$200,000
$150,000
$100,000   A = $100,000

0 1 2   3   4   5   6   7   8   9   10
                    i = 12%
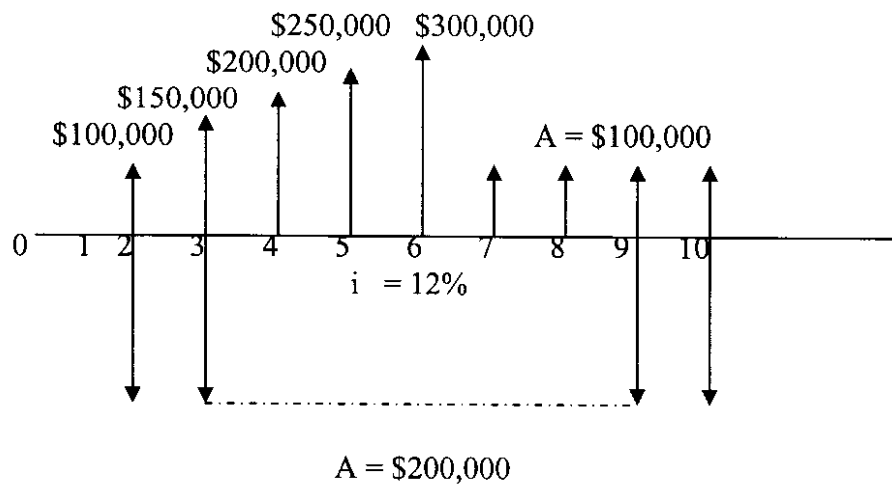
A = $200,000

4. A new asset is purchased for ฿ 1,200,000 and is estimated to have a life of 10 years and a scrap value of ฿ 200,000 at the end of that time. What will be the depreciation cost, the accumulative depreciation and the book value at the end of the seventh year ? Assume an interest rate of 4% and R = 30% . Answer only values of the following questions : (12 points)

4.1 By straight line method :

d_7 =

d_7 * =

BV_7 =

4.2 By declining balance method :

d_7 =

d_7 * =

BV_7 =

4.3 By sum-of-the years' digits method :

d_7 =

d_7 * =

BV_7 =

4.4 By sinking fund formula:

d_7 =

d_7 * =

BV_7 =

5. An investment of ฿ 10,000,000 can be made in a fully depreciable (i.e. no salvage value) project that will produce a uniform annual revenue of ฿ 4,838,000 for 5 years. From this revenue,
฿ 2,000,000 per year will have to be paid for operation and maintenance costs and ฿ 200,000 per year for insurance. The company is willing to accept any project which MARR = 12% . Show whether this is a desirable investment using the internal rate of return method. (17 points)