

Name

ID No

PRINCE OF SONGKLA UNIVERSITY  
FACULTY OF ENGINEERING

Midterm examination : semester 1

Academic Year : 2009

Date : August 1, 2009

Time : 13.30 – 16.30

Subject : 225-346 Engineering Economy

Room : R201, R300

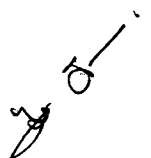
Instruction

1. Attempt all questions.
2. Write answers in this examination paper.
3. Total examination papers are 8 pages.
4. The points are as follows ;

Question No	1	2	3	4	5	Total
Full points scored	20	10	18	12	10	70
Scored						

ทฤษฎีในการสอบ โทษขั้นต่ำ คือ ปรับตกในรายวิชาที่ทฤษฎี  
และพักการเรียน 1 ภาคการศึกษา

Boonrueing Manasurakarn



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1. Find the value of the unknown quantity in the accompanying cash-flow diagram, figure 1, to establish equivalence of cash flow inflows and outflows. Let  $i = 8\%$  per year. (20 points)

Note : the end year 0 – 5 using only arithmetic gradient formula.

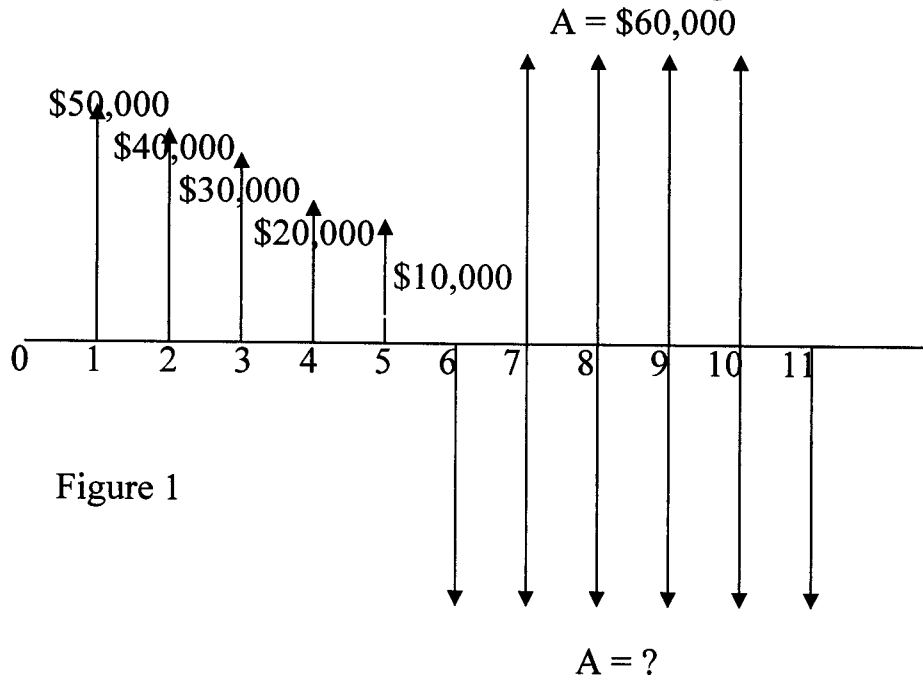


Figure 1

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2. A plant operation has fixed costs of \$ 2,000,000 per year, and its output capacity is 100,000 electrical appliances per year. The variable cost is \$ 40 per unit. If the plant want to earn the profit 30%, what is the price per unit of the electrical appliances?  
(10 points)

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3. A new machine has a cost basis of \$1,600,000 and a 8-year depreciable life. The estimated salvage value of the machine is \$400,00 at the end of 8 years,  $x = 4$ .

Determined :

1. annual depreciation deduction in year 6.
2. book value at end of year 3.
3. cumulative depreciation through year 4.

By straight-line method, declining balance method and sum of the years digits method. (18 points)

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

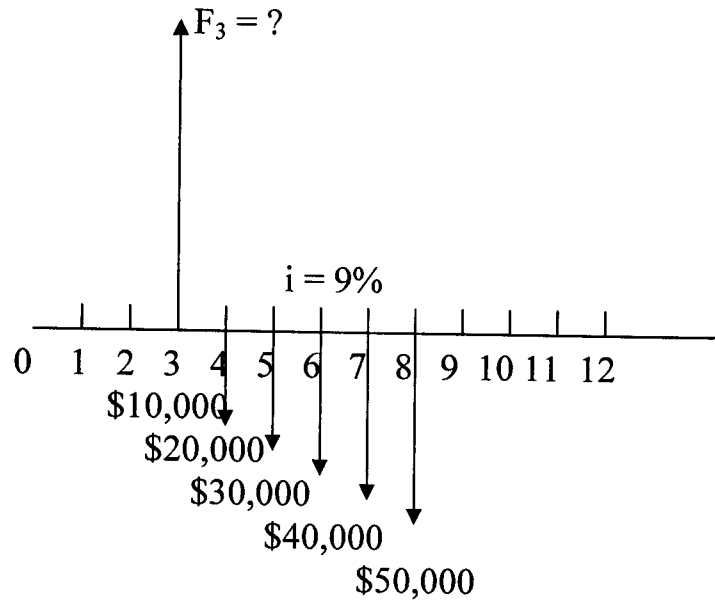
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5. Find the formula and the value of the unknown quantity in the below accompanying cash-flow diagram, figure 1, to establish equivalence of cash flow inflows and outflows.

5.1



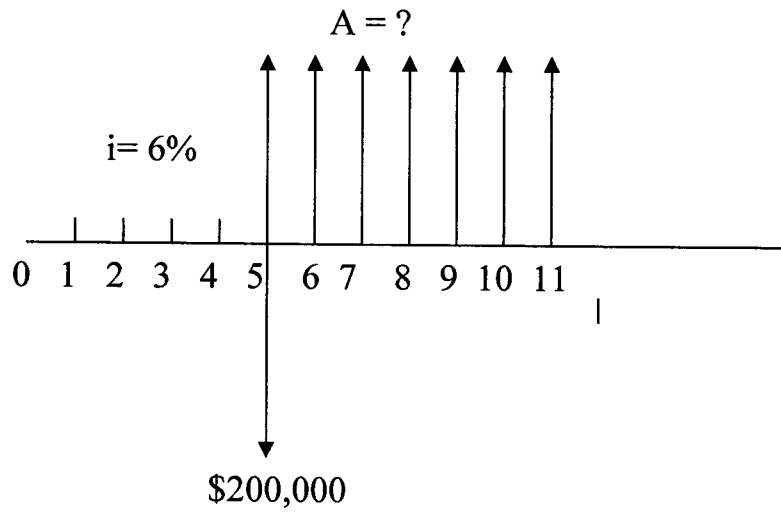
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5.2



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