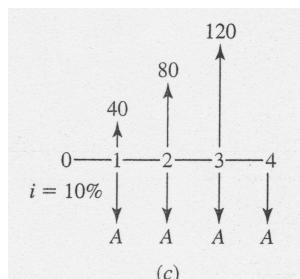
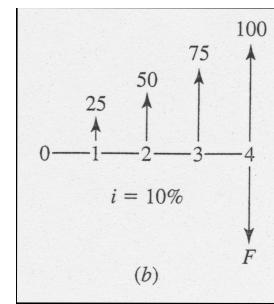
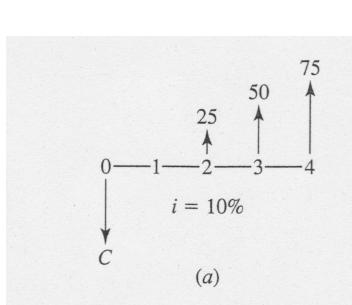


## ENGR 301 Practice Questions 2

These questions were derived from the course text. Try to solve them on your own. The solutions will be posted after 48hours.

1. A sum of money  $Q$  will be received 6 years from now. At 5% annual interest, the present worth now of  $Q$  is \$60. At the same interest rate, what would be the value of  $Q$  in 10 years?
  
2. Candice borrows \$1000. To repay the amount she makes 12 equal monthly payments of \$90.30. Determine the following:
  - a. The effective monthly interest rate
  - b. The nominal annual interest rate
  - c. The effective annual interest rate
  
3. Compute the unknown values for the cash flow diagrams given below.



4. A battery manufacturing plant has been ordered to cease discharging acidic waste liquids containing mercury into the city sewer system. As a result, the firm must now adjust the pH and remove the mercury from its waste liquids. Three firms have provided quotes on the necessary equipment. An analysis of the quotes provided the following table of costs:

Bidder	Installed Cost	Annual Operating Cost	Annual Income from Mercury Recovery	Salvage Value
Foxhill Instrument	\$35,000	\$8,000	\$2,000	\$20,000
Quicksilver	\$40,000	\$7,000	\$2,200	0
Almaden	\$100,000	\$2,000	\$3,500	0

If the installation can be expected to last 20 years and money is worth 7%, using Present Worth Analysis, which equipment should be purchased?

5. A pump is needed for 10 years at a remote location. The pump can be driven by an electric motor if a power line is extended to the site. Otherwise, a gasoline engines will be used. Using an annual cash flow analysis and a 10% interest rate, determine how the pump should be powered.

	Gasoline	Electric
First cost	\$2400	\$6000
Annual operating cost	\$1200	\$750
Annual maintenance	\$300	\$50
Salvage value	\$300	\$600
Life, in years	5	10

6. Consider the following cash flow:

Year	Cash Flow
0	-\$1000
1	0
2	+300
3	+300
4	+300
5	+300

Compute the rate of return on the \$1,000 investment to within 0.1%.

7. The Acme Chemical Company bought \$45,000 of research equipment, which it believes will have a zero salvage value at the end of its 5-year life. Compute the depreciation schedule for the equipment by each of the following methods:

- a. Straight-line
- b. Sum-of-year's-digits
- c. Double-declining-balance
- d. CCA as a Class 8 asset