Name: \_\_\_\_

\_\_\_\_\_ (5 pts)

You may use the FE Handout for Engineering Economics provided to complete this test. To get any partial credit, you must show your work. All work should be shown on these pages. Clearly mark your answer.

1. (15 Points) At the end of each year, a worker invests \$2,000 into an account the draws 4% interest. The worker makes every payment for the next 30 years <u>except</u> for the payment at the end of year 10. That is, no money is invested at the end of year 10. How much money will be in the account at the end of the 30 years?

a)	\$107,788	c)	\$109,209
b)	\$108,568	d)	\$112,170

- 2. (15 points) A car dealer is offering to a buyer one of two incentives: zero percent financing or \$3,000 cash back. If the car price (before the incentives) is \$25,000, find the following to compare the two options in terms of monthly payments.
  - a. Financing through the dealer Find the <u>monthly</u> payment to the car dealer for a \$25,000 loan at zero percent interest for 5 years.

b. Financing through a bank – Find the <u>monthly</u> payment to a bank for a 5 year loan at 6% when the buyer finances the \$22,000 cost through a bank (i.e. the buyer takes the \$3,000 cash back incentive).

3. (15 Points) On a piece of equipment, it is estimated that the service expense will be as follows:

Year	<b>Maintenance</b>
1	\$300
2	\$350
3	\$400
4	\$450
5	\$500

What is the equivalent uniform annual maintenance cost for the machinery if the interest rate is 4%?

a)	\$375.21	c)	\$400.00
b)	\$396.08	d)	\$576.48

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4. (15 Points) What is the annual equivalent cost of the following cash flow diagram? The interest rate is 10%.



5. (15 points) The following alternatives are being considered for a lab project. Find the present worth for each option to support a project that requires 20 years of service. Assume the interest rate is 8%. Which option is less expensive in terms of present value?

	Option A	Option B
First Cost	\$39,000	\$20,000
Salvage Value	\$2,000	\$4,000
Annual Maintenance	\$1,200	\$1,800
Useful Life (years)	20	10

6. (20 points) Determine the two equal deposits, the first deposit required now and the second deposit at the end of year 6, so that you can withdraw \$2,000 at the end of each year for the next 12 years. Assume that money can earn 4% interest, compounded annually.

a)	\$9,385	c)	\$10,484
b)	\$10,302	d)	\$12,000