MET 352 Engineering Design Department of Materials and Metallurgical Engineering South Dakota School of Mines and Technology

Assignment 9: Engineering Economics

Submit digitally before 11:00 pm Monday 4-11-19

1. What is the difference in a car payment for a \$20,000 car financed for 60 months at 8% and the amount of money you would need to invest every month starting at the end of the first month (just like a car payment) to have \$20,000 at the end of five years? (Use 0.08/12 for the monthly interest rate.)

- 2. If for the above problem, inflation increases the amount of money needed to have the same buying power at the end of 60 months from \$20,000 to \$23,000, how much would need to be invested at the end of each month to have the same buying power in 60 months?
- 3. How many years would you need to invest \$1,000 per year starting today at 8% to be able to withdraw \$1,000 per year from the accumulated investment starting a year after your last deposit? Assume the annual interest rate on your nest egg is 8%.
- 4. Which of the two alternatives has the minimum annual cost?A: Keeping your old car that is worth \$2,000 and costs \$2,400 to operate annually.B: Buying a new used car for \$10,000 that costs \$1,000 to operate annually.

The old car will have a salvage value of \$1,000 in three years while the new used car will have a salvage value of \$4,000 in three years. Assume the time value of your money is 10%.

5. When is the break even if a new product costs 1M to launch and nets 0.2M annually if i = 12%?