

**Submit on Brightspace as a single MS Word, Excel or PDF file. Highlight or box your numerical answers, but show the work and explain your reasoning. (3pt)**

Note that solutions will be posted on the 14<sup>th</sup> for exam study purposes, so late work will not be accepted.

1. (10pt) Your company is considering whether to spend \$1million in process improvement investments, or do nothing and leave the money in the bank earning interest. What interest rate is required to make the investment a better choice than doing nothing if the process improvement savings are:

Year (End)	Savings (\$)
1	150,000
2	200,000
3	220,000
4	210,000
5	260,000
6	260,000

2. (25pt) A biofuel manufacturing facility makes an \$85 million fixed capital investment in a new plant. The anticipated salvage value is \$7 million after a 10 year project life. Create a table showing the depreciation schedules for both straight line and MACRS 5 year depreciation. If the company has revenue of \$170 million per year, operating costs of \$99 million per year, and is subject to a tax rate of 25%, what are the after tax net profit and after tax cash flow values?

What difference would it make in this problem if the salvage value went to \$0?

3. (10pt) If you take out a loan for the purchase of a new car for \$40,000 at an interest rate of 5% compounded daily, what is your monthly payment for a 5 year loan?
4. (10pt) The cost of maintenance on this new car is expected to be \$80 in the first year, and to increase by \$65 in each of the following 15 years. What is the equivalent average annual cost at 4% APY (if you were interested in comparing to costs for leasing a vehicle instead)?
5. (7pt) What was the average inflation rate (for chemical manufacturing, not the general public) between 2012 and 2022?