1. Explain how to decide which cash flows to consider in a capital budgeting decision? [6]

2. You are choosing between two loans. One is pegged to inflation and charges a real interest rate of 6% APR, compounded annually. The other charges a nominal rate of 9.8% APR, compounded semi-annually. If inflation is 0.3% per month, which has the lower rate? [5]

3. My sons like to play with Star Wars action figures. Each figure costs $10. When I was their age (33 years ago), I played with the original Star Wars action figures that cost $3 each. If the average rate of inflation has been 3.34% per year (annual compounding), has the price of action figures increased by more or less than the rate of inflation? [5]
4. Your company is considering a 3-year contract to produce organic chocolates in Seattle. The equipment needed would cost $50,000 and would be depreciated on a 5-year straight line basis to zero. You think you might be able to sell the equipment at the end of the contract for $24,000. You will also use some existing equipment with a book value of zero and a market value of $10,000. Your company’s vice president of operations would supervise production along with her other duties. Her salary is $120,000 per year. The cost of producing the chocolate would be $200,000 per year. The revenues are expected to be $225,000 per year. New working capital for production will be $20,000 immediately. Project working capital will stay level at $20,000 in year 1, decrease to $10,000 in year 2 and then drop to 0 at the end of the project. Your discount rate is 12% and your tax rate is 35%. Forecast all incremental free cash flows and compute the project’s NPV. [20]
5. Let’s say that starting one month from today, you save $500 per month for 40 years and then retire. Starting one month after you retire, you make monthly withdrawals for 20 years. If your interest rate is 0.7% per month, what is the amount you could withdraw each month so that you would not run out until the last withdrawal? [8]

If inflation is 0.3% per month, what is the real value of your first withdrawal? [2]

Now let’s assume that you increase your savings each month by the amount of inflation, which is 0.3% per month. If everything else stays the same and you want to make withdrawals in retirement that have a constant real value, what will the real value of your withdrawals be? [5]

6. Explain the difference between a sunk cost and an opportunity cost in capital budgeting. [6]
7. Assume the following term structure of interest rates:

<table>
<thead>
<tr>
<th>Time</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 months</td>
<td>1.0%</td>
</tr>
<tr>
<td>1 year</td>
<td>1.1%</td>
</tr>
<tr>
<td>1.5 years</td>
<td>1.4%</td>
</tr>
<tr>
<td>2 years</td>
<td>1.8%</td>
</tr>
<tr>
<td>2.5 years</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

All rates are quoted as semi-annually compounded APR’s.

What is the price of a 4% bond (semi-annual coupons) that matures in exactly 1.5 years? [6]

What is the price of a 1.5-year $1000 zero-coupon bond (a $1000 STRIP)? [4]

Why does one sell at a premium and the other at a discount? [4]

What is the current yield of the STRIP? What is the current yield of the bond? [4]

Which would have a higher yield-to-maturity: the STRIP or the bond? Why? [5]
[Problem 6 continued—keeping the same term structure of interest rates]

You own a 2-year BBB-rated zero-coupon corporate bond with a $1000 par value. Its price is currently $920. What is its credit spread? [4]

If the credit spread on BBB bonds changes to 260 basis points, what will the change in price of the bond be? [4]

8. You are leasing a $20,000 car with a $10,000 residual value. The salesperson says they are giving you a great financing rate of 3.6% APR (compounded monthly) and that your payments will be $360 per month for a 3-year car lease. Is the salesperson telling the truth about your financing rate? [Assume the 1st payment is in one month] [8]

If not, is the true interest rate they are charging you higher or lower than 3.6%? Explain. [4]