1. You are trying to decide between two options for a copier. The first option costs $12,000 now, and then costs $3,000 per year in maintenance. The second option costs $16,000 now, and $2,000 per year in maintenance. The first copier will last for 3 years and the second option will last for 4 years. If your discount rate is 7%, and you need a copier for the foreseeable future, which option should you choose? [8]

2. You are considering a car lease. You realize that the better the car holds its value, the lower are your lease payments. At the end of the lease, you either give the car back or pay the residual value (the value of the car at the end of the lease). You are looking at a $30,000 car and a 36-month lease with the first payment due in one month. If the interest rate is 4.8% APR, compounded monthly, how high does the residual value have to be in order for your payments to be less than $500 per month? [8]?

3. A payday loan is structured to obscure the true interest rate you are paying. For example, in Washington, you pay a $30 "fee" for a two-week $200 payday loan (when you repay the loan, you pay $230). What is the effective annual interest rate for this loan? [6]
4. What is an IRR and how is it used? [7]

5. Explain and justify the goal of the financial manager. [7]

7. You notice that the yields-to-maturity (YTM) of some zero-coupon Treasury bonds are:

<table>
<thead>
<tr>
<th>Maturity</th>
<th>3 months</th>
<th>6 months</th>
<th>1 year</th>
<th>1.5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>YTM</td>
<td>1%</td>
<td>1.5%</td>
<td>1.8%</td>
<td>2%</td>
</tr>
</tbody>
</table>

All of the YTM’s are quoted as APRs with semi-annual compounding.

a. You are looking at a 1-year zero-coupon corporate bond with a credit spread of 80 basis points. What is its price? [5]

b. Would the YTM of a 1.5-year 2% coupon bond be more than, less than or equal to 2%? Why?[4]

c. Would the YTM of a 1.5-year 10% coupon bond be more than, less than, or equal to the YTM of a 1.5-year 5% coupon bond? Explain. [4]

8. You need to borrow $100 for 6 months. You can do it on your credit card at an APR of 19.6%, compounded monthly. But, your friend offers to lend you the $100 as long as you pay her back $110 in 6 months. Which is the better deal? [6]
9. After spending $10,000 on client-development, you have just been offered a big production contract
by a new client. The contract will add $200,000 to your revenues for each of the next 3 years and it
will cost you $100,000 per year to make the additional product. You will have to use some existing
equipment and buy new equipment as well. The existing equipment is fully depreciated, but could be
sold for $50,000 now. If you use it in the project, it will be worthless at the end of the project. You
will buy new equipment valued at $30,000 and straight-line depreciate it to zero over 3 years. It will
be worthless at the end of the project. Your current production manager earns $80,000 per year.
Since she is busy with ongoing projects, you are planning to hire an assistant at $40,000 per year to
help with the expansion. You will have to immediately increase your inventory from $20,000 to
$30,000. It will return to $20,000 at the end of the project. Your company’s tax rate is 35% and your
discount rate is 15%. Should you accept the contract? [20]
10. You are considering two mortgages. Each is for $300,000 with a 6% APR, compounded monthly. One is for 15 years (180 months) and the other is for 30 years (360 months). Show that the payment for the 15-year mortgage is less than twice the payment for the 30-year mortgage and explain why this is the case. [8]

11. Here’s a common retirement problem: you want to retire with $10,000 per month in real income from your investments. How many nominal dollars do you need to have saved when you retire? Assume the following: 43 years until retirement, nominal monthly discount rate of 0.7012%, monthly inflation rate of 0.3%, 25-year retirement, first withdrawal from your savings occurs one month after you retire. [If you get stuck, assume a nominal income of $10,000 per month and you can get partial credit] [8]

12. You bought a 6% coupon bond (semi-annual coupons) for $1020. If you sold it for par after receiving one coupon, what would your return be? [2]