BUS312: Introduction to Corporate Finance

Assignment #5

Question #1

If you borrow $13,000 at 14 percent per annum compounded monthly for 60 months, with the first payment in one month, what will your monthly payment be? What is the effective annual interest rate on this loan?

Question #2

You make 12 annual deposits of $2,000, starting in one year, into an account which pays 11% per annum. What is your account balance at the time of the last deposit? What is your account balance one year after the last deposit?

Question #3

A local finance company quotes a 20% interest rate on a one year loan. If you borrow $10,000, the interest for the year will be $2,000. Because you will pay a total of $12,000, the finance company requires that you pay $1,000 per month over the next 12 months with the first payment in one month. Is this a 20% loan? Find the effective annual interest rate on this loan. Find the annual interest rate compounded monthly. (The easiest methods are to use trial and error or Goalseek in Excel).

Question #4

You are looking at an investment that has an effective annual rate of 15.5% per annum. Find the following:

a. The effective rate for a semi-annual holding period,
b. The effective rate for a quarterly holding period,
c. The effective rate for a monthly holding period,
d. The nominal rate per annum compounded semi-annually,
e. The nominal rate per annum compounded quarterly,
f. The nominal rate per annum compounded monthly.
g. Repeat this question with a 14.5%, 13.5% and 12.5% per annum effective rate. Use at least 5 decimal places for all of the rates in this question.

Question #5

If you purchase an asset today for $200,000, you expect the following set of cash-flows:

a. $95,000 in one year,

b. $90,000 in two years,
c. $0 in three years,
d. $70,000 in four years,
e. $60,000 in five years,
f. $50,000 in six years, *and*
g. $40,000 in seven years.

What is the per annum return on your investment? (The easiest methods are to use trial and error or Goalseek in Excel).

Question #6

Starting today, you are going to deposit $13,500 per year for the next 30 years into your bank account (30 deposits). You plan to retire thirty years from today. At that time you plan to make withdrawals for twenty years (20 withdrawals, with the first withdrawal 30 years from today). If you expect interest rates to be 8% per annum into the future, what will be your yearly withdrawal in your retirement?

Question #7

For the past five years, you have made semi-annual deposits of $4,000 in a savings plan. The first deposit was exactly five years ago and the last deposit was six months ago. There were ten deposits in all. The plan has paid 8 percent per annum compounded quarterly. Today, you made the first of 12 semi-annual withdrawals. Each of the first six withdrawals will be equal to one another and each of the seventh through twelfth withdrawals will be equal to one another. Each withdrawal from the first set of six will be twice as large as a withdrawal from the second set of six. Starting today, you expect the interest on your plan to be 7% p.a. compounded semi-annually. How much do you expect your withdrawals to be?

Question #8

a. You expect to receive $550 every three years into the future (as described below). The yearly interest rate is 8%. What is the present value if:
    a. The first payment is three years from today and there are twenty payments.
    b. The first payment is received today and payments are expected forever.
b. Now suppose you wish to pay $550 into a savings account every three years (as described below). The yearly interest rate is 8%. What is the future value at the time of the last payment if:
    a. The first deposit is today and there are 30 payments.
    b. The first payment is 2 years from today and there are 30 payments.

Question #9

Suppose the effective annual interest rate for a savings account which compounds interest quarterly is 10.0%. What is the nominal rate of interest per annum compounded monthly? What is the continuously compounded rate of interest?