# BUS312: Introduction to Corporate Finance

## Assignment #6

### Question #1

a. The value of services provided by your house are expected to be $9,500 at the end of this year (measure services at ends of years). The value of services is expected to decline at a rate of 3% thereafter (i.e., depreciation which is a negative growth factor) until your house is demolished exactly twenty years from now (i.e., no further services rendered by the house after this time). If current interest rates are 10% and the value of your house is calculated as the present value of future services, how much can you sell your house for today? Assume that the purchaser uses the same theory of value as you do.
b. Use the information from part A above to answer the following question. If you enter into a contract to sell your house exactly 12 years from today but you ask for payment immediately, how much should you demand? Assume the purchaser uses the same theory of value and think carefully about the future services to be received by the purchaser.

### Question #2

You currently have $1,000,000 in your bank account as the result of an aggressive investment plan. You will not make additional deposits to your account. Instead, starting today, you plan to make constant annual withdrawals for thirty years (thirty-one withdrawals) from this account to finance your retirement. At the time of the final withdrawal you want to have a zero balance in your account. Your bank guarantees an 8 percent per annum interest rate compounded monthly on your account. How much money will you have in your account exactly 23 years from today immediately after the 24th withdrawal?

### Question #3

You borrowed from the Bank of Montreal in order to purchase your Burnaby home. The 15 year mortgage calls for equal monthly payments. The first payment is one month after you receive the borrowed funds. The contract rate of interest on the mortgage is 8.5% per annum compounded monthly. The interest portion of the 39th payment is $1,750.00. How much did you originally borrow?

Question #4

Some years ago, interest rates were relatively high but had decreased significantly compared to the past two or three years. Mortgage rates were relatively great but at the same time, banks were paying high rates of interest to attract deposits. In order to free up funds from older low interest rate mortgages, a number of banks offered various plans to encourage people to pay off their existing low rate mortgages more rapidly. John Stubbs borrowed from the Bank of Burnaby a number of years ago at 12.0% per annum compounded monthly. The bank has now offered John the opportunity to increase his monthly principal and interest mortgage payments from $1053.0. In return the Bank has agreed to reduce the contract rate of interest on the loan from the original 12.0% per annum compounded monthly to 8 percent per annum compounded monthly. With the new payment plan, the loan would be paid off in 10 years. Under the existing terms, the mortgage would be paid off in 27 years and 10 months. (Ignore semi-annual compounding of Canadian mortgage rates, all rates are compounded monthly). The upcoming payment under either mortgage is in one month. Presume that your decision is based only on the principles of discounted cash-flow analysis. In other words, other factors are presumed equal. Also assume that payments are fixed to the maturity of either mortgage (i.e., ignore the difference between "term" and "amortization period" in Canadian mortgages).

a. What is the current loan balance?
b. If under the new plan, the bank uses the current balance from part (a) to calculate principal and interest payments, what will John's total monthly payments be?
c. If current market interest rates are 7% per annum - compounded monthly - should he accept the bank's offer? (Your decision should be based on the principles of discounted cash-flow analysis).