

1. (10 Marks) Calculate the following interest rates:

1-a) What “interest rate per quarter” is equivalent to a 8.5% effective annual interest rate?

1-b) What is the “interest rate per week” if the nominal interest is 11%, compounded quarterly?

2. (15 Marks) According to the CBB (Canadian Black Book), which reports resale values of used vehicles in Canada, Honda Accord topped the list in 2008 with a resale value of 53% of the purchase price after 48 months. If Alex purchases an Accord for \$35,000 today and sells it 48 months later for the reported resale value, what is the monthly cost of owning the car over the 48 months, with a nominal interest rate of 12%, compounded semi-annually? Use cash flow formulas to solve this question.

3. (20 Marks) Using the cash flows in the table below, find out 3-a) the “equivalent present worth at $t=0$ yr.”, 3-b) the “equivalent future worth at $t=12$ yr.”, and 3-c) “the equivalent annuity worth over 12 yrs.” The effective interest rate is given as 10%. Use the compounding interest tables to solve this question.

Year.	Revenue	Disbursement
0	2,000	-
1	2,000	-
2	2,000	-
3	2,000	-
4	2,000	-
5	2,000	2,000
6	2,000	4,000
7	2,000	6,000
8	2,000	8,000
9	5,000	2,000
10	4,000	2,000
11	3,000	2,000
12	2,000	2,000

4. (15 Marks) Jonathan decides to save for a down payment on a new car to be purchased 30 months from now. He decides to deposit \$150 per month into a savings account which earns 10 percent nominal interest compounded monthly. He plans to make a series of 20 regular monthly deposits with the first deposit scheduled for one month from today. After end of month 20, the account will receive no more deposits but will provide 8 percent nominal interest compounded monthly on the balance for another 10 months. How much will be in the account at the end of the 30-month period? Use cash flow formulas to solve this question.

5. (20 Marks) GE348 Construction Company plans to build an apartment in the College Street as a rental property. It plans to rent it for 10 years and then sell it at the end of the period. The company will invest 2.5 million to build the apartment and expects to receive 0.3 million per year over 10 years as rental income. In addition, the company will sell the apartment at the end of 10 years and expects 1.4 million as its resale value. What should be the effective interest rate for this investment plan if the company wants to have at least 0.2 million as a revenue (i.e. gain) at the end of 10 years? Use cash flow formulas to solve this question.

6. (20 Marks) Kelly and three other friends bought a \$60,000 apartment on the 8th Street last year and they put a down payment of \$10,000. They decided to pay off the full mortgage within 5 years (i.e., the amortization period and the term of Mortgage is 5 years.). Their mortgage payments are due at the end of each month, and October 31 last year was their first payment. Now is October 15, and Kelly and her friends have made all the 12 payments until last month. How much do they still owe right now (i.e. the amount of principal outstanding), given a nominal interest rate of 12%, compounded monthly? Use factor values in the compounding interest tables to solve this question.

