

Submission Deadline: **Thursday, April 6, 2017 at 430 PM**

Each member of your group has to sign the paper copy of the submission, which must be typed. In addition, I will encourage you to submit electronically also.

ANSWER ALL QUESTIONS:

1. Your company produces precious stones. Each stone sells for \$100. The material cost for each stone is \$30.00, while fixed costs each year for factory upkeep and administrative expenses come to \$200,000. The machinery, which costs \$1,000,000, is depreciated straight line over 10 years to a salvage value of zero.
 - a. What is the accounting break-even level of sales in terms of number of units sold? *Explain what you are doing!*
 - b. What is the NPV break-even level of sales assuming a tax rate of 35%, a 10-year project life and a discount rate of 12%? *Explain what you are doing!*
 - c. Compare the sales levels worked out above at (a) and (b), and comment on their differences, if any.

2. As a financial analyst based in the United States, you have just computed both the accounting and NPV break-even sales levels for a project under consideration. You have used a straight line depreciation over a six-year period. Your manager wants you to redo the computation using the Modified Accelerated Cash Recovery System or MACRS. Under the rules, the applicable depreciation rates over years 1 to 6 will be 20, 32, 19.20, 11.52, 11.52 and 5.76. MACRS effectively allows a firm to use higher depreciation rates in the early years.
 - a. Qualitatively speaking (no calculation needed!), how will a switch to MACRS affect the accounting break-even level of sales in the first years of the project?
 - b. Qualitatively speaking (no calculation needed!), what will happen to the NPV break-even level of sales?
 - c. Will the switch to MACRS make the project more or less attractive? Explain.

3. The Table shows the annual return on stock market, Government of Canada Bond and Treasury bills from 2010 to 2014.

Year	TSX Return	T-bill Return	Government Long Bond Return
2010	.2215	.0064	.0317
2011	.0812	.0093	.0276
2012	.0187	.0096	.0183
2013	.0796	.0097	.0227
2014	.0715	.0092	.0218

Using the data in the Table above,

- a. Calculate the average rate of return and standard deviation of return on TSX, government bonds, and Treasury bills between 20010 and 2014.
 - b. Form a portfolio with one-third invested in each of the three securities and calculate its average rate of return and standard deviation. Do you find any benefit from diversification here? How?
4. The monthly rates of return of TCC are given below.
- a. Using the EXCEL slope function, calculate the beta of TCC.
 - b. If the risk-free rate currently is 5% and market risk premium is 7%, what is expected return now on TCC stock? What is the expected return on a portfolio that replicates the market?

Month	Market return %	TCC return %
January	0	+1
February	0	-1
March	-1	-2.5
April	-1	-0.5
May	+1	+2
June	+1	+1
July	+2	+4
August	+2	+2
September	-2	-2
October	-2	-4

5. You are evaluating an expansion of your current business. The annual cash flow forecast (in millions of dollars) for the project are as follows:

Years	Annual Cash Flow
0	-100
1-10	+15

According to your analysis, the beta of the firm is expected to be 1.4. Currently T-bill rate is 4% and the expected return on the market portfolio is 12%. Will the project generate sufficient cash flows to meet the required return? If your answer is no, at what cost of the project will you accept it? Please explain your answers.

6. The common stock and the debt of ABC Co. are valued at \$70 million and \$30 million, respectively. Investors currently require a 16% return on the common stock, and an 8% return on the debt. If ABC Co. issues an additional \$10 million of common stock, and uses this amount to retire debt, what happens to the expected return on the stock? Assume that the change in capital structure does not affect the risk of the debt, and that there are no taxes.