NAME: _____

THIS IS A TWO HOUR EXAM. YOU MUST STOP WRITING IMMEDIATELY WHEN THE END OF THE EXAM IS ANNOUNCED – PLEASE REMAIN SEATED AND WAIT FOR THE PROCTORS TO COLLECT THE EXAMS.

YOU ARE ALLOWED TO LEAVE ONLY AFTER HALF AN HOUR HAS PASSED SINCE THE START OF THE EXAM.

YOU *ARE ALLOWED* TO LEAVE BEFORE THE EXAM IS OVER IF YOU FINISH MORE THAN FIVE MINUTES EARLY (TURN IN YOUR EXAM TO ONE OF THE PROCTORS ON YOUR WAY OUT).

DO NOT TURN THIS PAGE UNTIL THE INSTRUCTION TO BEGIN IS GIVEN.

DO NOT SEPARATE THE PAGES OF THIS EXAMINATION .

BE SURE TO PUT YOUR NAME AND STUDENT ID NUMBER ON THE TOP OF THE NEXT PAGE OF THIS EXAMINATION.

REMEMBER TO SHOW ALL WORK.

PLEASE FOLLOW ALL DIRECTIONS.

The next page contains general instructions.

There are instructions accompanying the individual Problems.

Only Pari is able to answer your questions.

There are limits to the types of questions I will answer.

GOOD LUCK!

"If you owe the bank $100 that's your problem. If you owe the bank $100 million, that's the bank's problem."

JP Getty.

Name: _____

Student Number: _____

Finance FINA 395 Mid Term 1

Fall 2010 Instructor Parianen Veeren

October 17, 2010 70 points

This exam is composed of 10 multiple choice questions and 4 multi-part word problems. Some of the sub-questions rely on information calculated in other parts of the question. Carry through errors will not be penalized. You have access to a financial calculator and you may have one 8½×11 inch "cheat sheet" with material on both sides. These sheets must be in human handwriting and may not be mechanically altered (i.e. reduced by a photocopier).

Show all work. Credit will not be given for answers without supporting information. Please limit the amount of extraneous information in your answers since it makes it difficult to ascertain your understanding. Use the backs of the pages for scratch. Do not write answers outside of the allotted space (i.e., **I do not read the backs of exams**).

Read through the exam before starting. Good luck!

Part 1 Multiple Choice _____ (30)

Part 2 Word Problems

Problem 1: _____ (10)

Problem 2: _____ (10)

Problem 3: _____ (10)

Problem 4: _____ (10)

Total: _____ (70)

Bonus _____ (3)

Q1. You work for a payday loan company Rob Inc. The effective annual rate (EAR) for loans given by the company is 16.8%. You have been asked to quote this rate as APR with bi-weekly compounding:

A. 15.58%
B. 33.87%
C. 15.63%
D. 15.55%
E. 18.23%

Q2. What is the value today of a 15-year annuity that pays $500 a year? The annuity's first payment occurs at the end of year 6. The annual interest rate 12 percent for years 1 through 5 and 15% thereafter:

A. 1,238.17
B. 1,423.89
C. 1,442.59
D. 1,453.59
E. 1,658.98

Q3. You will receive a 10-year growing annuity. You will receive your first payment of $1,000 at the end of the year. Your annuity will grow at 10% after that. Your required rate of return is 10%. What is future value (FV_{10}) of this growing annuity?

A. 10,000.00
B. 23,579.48
C. 25,937.42
D. 100,000.00
E. Infinity (Impossible to calculate)

Q4. Which of the following statements is incorrect?

A. If a project has a profitability index of greater than 1, it means its NPV is positive
B. Discounted payback period is always less than payback period
C. Profitability index is a good method to evaluate mutually exclusive projects
D. B & C
E. A, B & C

Q5. You believe in Efficient Market Hypothesis. You are thinking of investing 1,000 dollars. You are provided with following information about different actively managed well diversified mutual funds. Which one will you pick?

A. American actively managed fund that has given 2% above the market rate of return during last five years, it charges a fee of 0.5%
B. Vanguard Institutional that has earned 3% above the market rate of return during last five years and charges a fee of 1%
C. Blackrock mutual fund that has consistently outperformed the market by 4% and charges a fee of 1.5%
D. A well-diversified fund managed by Eaton Vance. It has earned 6% above the market and charges a fee of 3%.
E. A growth mutual fund that has earned risk adjusted return of 8% above the market for last five years. It charges a fee of 4%.

Q6. Station CJXT is considering replacement of its old fully depreciated sound mixer. Two new models are available. Mixer X has a cost of $410,000, a five year expected life and after tax cash savings of $120,000 per year. Mixer Y has s cost of $625,000, an eight year life and after tax cash flow saving of $131,000 per year. No new technological developments are expected. The cost of capital is 11.7%. Should CJXT replace the old mixer with X or Y?

A. With X, because it has higher NPV (of 25,807) than Y.
B. With Y, because it has lower cost saving per year (Equivalent annual Savings) of 6,508. 58
C. With X, because it has higher cost saving per year (Equivalent annual Savings) of 7, 106.6
D. With Y, we do not have to calculate equivalent annual saving because Y has lower NPV as compared to X.
E. With X, because it has higher cost savings per year of 5,161.00

Q7. Your friend is visiting you on a weekend. You want to go to Habs game. However, it is snowing rather heavily outside. Your friend cancels the program to go to the game. Your friend, who holds an MBA from McGill, remarks that if he had purchased the ticket for the game, he would have gone for the game even in the snow storm. Your friend's statement is ignoring which of the following capital budgeting principals:

A. Opportunity Cost
B. Allocated Cost
C. Administrative Cost
D. Sunk Cost
E. None of the above

Q8. The shareholders of Toronto Laughs Inc. need to elect nine new directors. There are 2.5 million shares outstanding. How many minimum numbers of shares do you need to be certain to elect at least one director? Toronto Laughs Inc. uses cumulative voting:

A. 1,250,001
B. 250,001
C. 500,001
D. 1,250,000
E. 125,001

Q9. A study by Johnson, Magee, Nagarajan and Newman looked the effect of unexpected death of the CEO on the stock price of the company. They found that, on average, these companies experienced abnormal returns of 40% on the day of the announcement of death. This evidence violates:

A. Weak Form Efficiency
B. Semi-strong Form Efficiency
C. Strong Form Efficiency
D. All of the above
E. None of the above

Q10. The market price of_____ maturity bonds fluctuates _____ compared with_____maturity bonds as interest rates change (everything else being constant).

A. shorter, less, longer
B. shorter, more, longer
C. longer, less, shorter
D. both b and c

Problem 1

The government of Smart People has a program for recent graduates who are interested in becoming home owners and you have qualified for the program. The program requires that you pay $500.00 a month for the next 25 years and the government will contribute $200.00 a month for you over the same period. Under this plan, you are not allowed to sell or rent the house for the first 25 years. 25-year Government bonds currently have yield to maturity of 6%. Your bank has quoted mortgage rate that is 2.4% more than this. Assume that you would like to rent the property after the 25-year period to recover the value of the property at that time over a period of 20 years. How much should you charge as rent per month in order to meet this goal? At that time, your required rate of return (Effective Annual Rate) is 10.8% per year. (Assume that the value of these payments after 25 payments represents the fair value of the house).

Solution

FV (t=25) = [n=300, y=(1+(0.06+0.024)/2)$^{2/12}$ -1, pmt =500] =497,730.92

FV (t=25) = [n=300, y=(1+(0.06)/2)$^{2/12}$ -1, pmt =200] = 137,037.91

Value at (t =25) = $497730.92 + 137,037.91 = $634,768.83

PMT (pv=634,768.83, n=240, y=1.108$^{1/12}$ -1,) = $6,252.186

Similar to problem 5.5 from the text book

Problem 2

FBK Corp. has two different bonds and one class of shares currently outstanding. Bond Alpha has a face value of $50,000 and matures in ten years. The bond makes no payments for the first three years, and pays $4,500 semi-annually for the last seven years. Bond Bravo has a face value of $80,000 and matures in ten years. This bond makes no payments over its life except the payment of face value at maturity.

Starting end of this year, FBK is expected to pay $3/share in dividend every 2 years for the next 7 years, after which the company is going to pay an annual dividend with a constant growth rate of negative 5% for the following 2 years. Subsequently, the dividend is expected to grow at a rate of 4% forever. The stated annual interest rate is 12 %, compounded semi-annually, and the cost of equity is 15%.

A. What is the current price of bond Alpha?

Solution
Alpha
FV =$50,000
PV at t3 = (n=14, y=6, pmt=4500, fv=50000) = 63,942.4759
PV at 0 = (n=6, y=6, fv=63,942.4759) = $45,076.92237

B. What is the current price of bond Bravo? What would be the price of bond Bravo if it were to mature in 6 years instead?

Bravo

PV now = 80000/(1.06)^20 =$24,944.378

Price if mature in 6 yrs = 80000/(1.06)^12 = $39,757.549

C. What is the current price of FBK's stock?

2 yrs rate = 1.15^2 -1 = .3225

PV = {3+3*[1-1/(1.3225^3)]*(1/0.3225)}/1.15 + (3*0.95)/1.15^8 + (3*0.95^2)/1.15^9 +{[(3*0.95^2)*1.04]/(0.15-.04)}/1.15^9

= 7.200585 + 0.93167 + 0.76964 + 7.2766

= $16.1785

Similar to problem 6.11

Problem 3

Green Consulting has just hired you as a consultant and your first assignment is to evaluate the NPV of a project. Since the project is an expansion of an existing business, the only costs associated are labour, rent and other costs. The clients anticipate that the business will continue forever. The incremental revenue is expected to be $200,000 per year in nominal terms with a growth rate of 5% in real terms. Rent will be $24,000 per year in nominal terms. Labour costs will be $100,000 per year in nominal terms with a growth rate of 4% in real terms. Other costs will be $40,000 in nominal terms and will decrease by 1.5% per year in real terms. The rate of inflation is expected to be 3.5% per year. If the required rate of return is 9.5% in real terms, what is the NPV of the project? Assume the company does not pay taxes and all cash flows occur at year end.

Solution

Revenue:

PV = $ (200,000/1.035)/(0.095-0.05) = $4,294,149.222

Labour:

PV = $ (100,000/1.035)/(0.095-0.04) = $1,756,697.409

Other costs

PV = $ (40,000/1.035)/(0.095+0.015) = $351,339.4818

Rent

Nominal rate = 1.035*1.095-1 = 0.133325

PV = $24,000/0.1333 = $180,011.2507

NPV = $2,006,101.081

For more explanation on this problem refer to solution 8.8 from solution manual of the book.

Problem 4

a) MJ Corp. wants you to perform a feasibility study of a new project. You charge them $2,500 today. The project requires an initial capital of $5.5 million. Annual operating cash flow of $800,000 is expected for the next 10 years. The appropriate discount rate is 10%. What is the NPV of this project?

Solution:
$2,500 sunk cost
NPV = -5,500,000 + 800,000*{1-[1/(1+.1)^10]}*(1/0.1)
=-5,500,000 + 4,915,653.685
= $$-584,346.3155

b) Suppose after one year, the estimate of remaining annual cash flows will be either $1,200,000 or $400,000 with equal probability. At that time, the company can abandon the project, and sell it for $4 million. What is the value of this option? (You should assume that management of the company works in the best interest of the shareholders).

Solution

NPV = -5,500,000 + 800,000/1.1 + [0.5*1,200,000*{1-[1/(1+.1)^9]}*(1/0.1) + 0.5*4,000,000]/1.1

= -5,500,000 + 727,272.7273 + (0.5*6,910,828.58 +2,000,000)/1.1

=-5,500,000 + 727,272.7273+ 5,455,414.29/1.1

=-5,500,000 + 727,272.7273 + 4959467.536

= $$186,740.2637

Value of option = $$186,740.2637 - $$-584,346.3155

= $$771086.5792

Similar to the last question on the mock midterm.

Bonus:

What is wrong with this statement, “Most people (in some studies as high as 90%) believe that they are above average drivers”? Does your answer have any relevance to the behaviour of managers and investors?