Name:_____

Student ID Number:_____

Section (Core):_____

Instructor's Name (circle one below):

Hurwitz Marshall Samarbakhsh Shkilko

BU393: Financial Management II Midterm Exam
Spring 2012

Instructions:

1. Place your ID card on the right hand side of the desk.
2. Do not begin this examination until you are instructed to do so by the proctor.
3. You have 1 (one) hour to complete this exam.
4. **You must use a pencil to fill out the attached scantron form.** On the scantron, please indicate (i) the last name of your instructor, (ii) the course number (BU393), (iii) your section (e.g., Section G), (iv) your ID number (both on the front and on the back of the scantron), (v) your name, **(vi) on the back of the scantron, please mark Test Form as "A".** Failure to follow these instructions may result in a lower exam score.
5. The exam consists of 20 multiple choice questions and 1 problem. The exam package contains a total of ten pages. Count the pages to be certain that there are no pages missing. Answer ALL questions and show ALL work.
6. No notes or books are permitted. Calculators are permitted.
7. Two pages of formulas are appended to this exam. You may detach the formula sheets. At the end of the exam, please fold the formula sheets in half and place them inside the exam.
8. You are not allowed to leave the examination room until 30 minutes after the start of the exam, and you must sign the identification sheet before leaving. If you must leave the room for personal reasons, please raise your hand, and a floating proctor will escort you.
9. Your examination paper must be handed in at the front of the exam room before you leave. No paper of any kind is to be taken from the room. When you are finished, make sure that the proctor notes your name on the list of students who turned the exam in.
10. **Cheating on an examination will result in an "F" in the course and will be accompanied by an investigation according to the University's academic misconduct guidelines.**
11. Credit will be based on CONTENT and not LENGTH of the answers.
12. Proctors and instructors will maintain order; they will not answer any questions about the exam, including clarification questions. If you need to make assumptions to answer a question, state the assumptions made.

MULTIPLE CHOICE QUESTIONS (3 points each)

Choose the most correct answer for each of the following multiple choice questions. Once you have chosen the answer, indicate (in pencil) the letter that corresponds to your answer on the provided scantron. The scantron is the only record of your answer that will be considered while marking the exam. No partial credit will be assigned for scantrons that are filled out improperly. There is only ONE best answer to each of the following multiple choice questions.

1. An investment with an initial cost of $16,000 produces cash flows of $5,000 annually. If the cash flow is evenly spread out over the year, and the firm can borrow at 10%, the payback period is _____ years.

   a. 3.20
   b. 3.52
   c. 4.05
   d. 4.55
   e. None of the above.

2. An investment project is most likely to be accepted by the payback period rule and not accepted by the NPV rule if the project has:

   a. a large initial investment with moderate positive cash flows over a very long period of time.
   b. most of the cash flows occurring at the beginning of the project.
   c. a very large negative cash flow at the termination of the project.
   d. All projects approved by the payback period rule will be accepted by the NPV rule.
   e. The payback period rule and the NPV rule cannot be used to evaluate the same type of projects.

3. The problem of multiple IRRs can occur when:

   a. there is only one sign change in the cash flows.
   b. the cash flows increase over the life of the project.
   c. the cash flows decline over the life of the project.
   d. there is more than one sign change in the cash flows.
   e. None of the above.

4. The IRR decision rule should be reversed if:

   a. the NPV rule and the IRR rule lead to different capital budgeting decisions.
   b. the IRR is computed for one of several mutually exclusive investments.
   c. you are dealing with a financing project.
   d. the IRR is greater than 100%.
   e. None of the above.

5. Rio Pimco needs to choose between two mutually exclusive investment projects, named D and G. For both D and G, the cash flows change sign only once. If the cost of capital were zero, NPV_D would be \$10M, and NPV_G would be \$8M. IRR_G = 11%, IRR_D = 12%, and WACC = 10%. Which of the following statements is true?

   a. At Rio Pimco's cost of capital, both projects have negative NPVs and should be rejected.
   b. At Rio Pimco's cost of capital, $NPV_G > NPV_D$, therefore project G should be selected.
   c. Project D should be preferred over project G at any WACC < 12%.
   d. Project G should be preferred over project D at any WACC < 12%.
   e. Because D and G are projects of different sizes, telling which project is better is impossible without computing an IIRR.

6. Company XYZ needs to choose between two mutually exclusive investment projects, named A and B. For both A and B, the cash flows change sign only once. The IRR of A is 11%, the IRR of B is 12%, the incremental IRR of A-B is 8.5%, and the cost of capital is 9%. Which of the statements below is true?

   a. Because IIRR is positive, pick A over B.
   b. Since $IRR_B > IRR_A$, pick B over A.
   c. Since IIRR<k, reject both projects
   d. Since IIRR<k, accept both projects
   e. **Because $NPV_B > NPV_A$ at XYZ's cost of capital, pick B over A.**

7. Which of the following should be included in the analysis of a project?

   I. sunk costs
   II. opportunity costs
   III. erosion costs
   IV. incremental costs

   a. I and II only
   b. III and IV only
   c. II and IV only
   d. II, III, and IV only
   e. I, II, and IV only

8. Interest expense is typically excluded from the project cash flows because:

   a. all projects are always financed only by equity
   b. taxes cannot be adjusted for the correct debt rate
   c. the discount rate (WACC) reflects the cost of debt
   d. the analysis is too crude to handle debt impacts
   e. None of the above.

9. If the inflation rate was positive the expected NPV of an investment would be:

a. understated if real cash flows were discounted by the nominal discount rate.
b. understated if nominal cash flows were discounted by the nominal discount rate.
c. overstated if the real cash flows were discounted by the nominal discount rate.
d. understated if the nominal cash flows were discounted by the real discount rate.
e. overstated if the real cash flows are discounted by the real discount rate.

10. Three years ago, GetAhead Co. bought a patent (class 44, CCA rate 25%) for $275,000. The patent allows GetAhead's iPad app to work cross-platform. Today, GetAhead decided to sell the patent as they have discontinued the app. The patent was their only asset in class 44. Facebook has offered them $1.7M for the patent. If GetAhead's tax rate is 40%, what is their total cash flow from the sale?

a. $1.102M
b. $1.377M
c. $1.415M
d. $1.505M
e. $2.260M

11. To make a decision with a decision tree:

a. one starts furthest out in time to make the first decision.
b. one must begin at time 0.
c. Any path can be taken to get to the end.
d. Any path can be taken to get back to the beginning.
e. None of the above.

12. At the end of year 1, if a project is successful, the profit will be $53,000 with a 2/3 chance of occurrence. There is also the 1/3 chance of a $24,000 loss. The cost of the project today is $44,000. The cost of capital is 15%. What is the NPV of the project at time 0?

a. -$20,232
b. -$13,275
c. $ 2,087
d. $ 7,536
e. Not enough information.

13. The use of WACC to select investments is theoretically acceptable when:

a. the correlations of all new projects are equal.
b. the NPV is positive when discounted by the WACC.
c. the systematic risk of the project is equal to the systematic risk of the firm.
d. the firm is well diversified and the unsystematic risk is negligible.
e. none of the above.

14. Beta measure depends highly on the:

a. direction of the market variance.
b. the overall cycle of the market.
c. the variance of the market and asset, but not their co-movement.
d. the standard deviation of the security and the market and how they are correlated.
e. All of the answers above are the same.

15. The beta of a firm is more likely to be high under what conditions:

a. high cyclical business activity and low operating leverage.
b. high cyclical business activity and high operating leverage.
c. low cyclical business activity and low financial leverage.
d. low cyclical business activity and low operating leverage.
e. None of the above.

16. For a multi-product firm, if a project's beta is different from that of the overall firm, then:

a. the CAPM can no longer be used.
b. the project should be discounted using the overall firm's beta.
c. the project should be discounted at a rate commensurate with its own beta.
d. the project should be discounted at the market rate in all cases.
e. the project should be discounted at the T-bill rate in all cases.

17. The problem of using the overall firm's beta in discounting projects of different risk is:

a. the firm would accept too many high-risk projects.
b. the firm would reject too many low risk projects.
c. the firm would reject too many high-risk projects.
d. the firm would accept too many low risk projects.
e. Both a and b could be correct.

18. ALMA Industries has just issued 500,000 new shares at a price of $32/share. The market risk premium is 6%, and the risk free rate is 4%. If ALMA's beta is 1.1, and ALMA will start paying a dividend of $2 per year at the end of this year, what is ALMA's approximate implied growth rate?

a. 3.0%
b. 3.7%
c. 4.4%
d. 5.1%
e. 6.1%

19. Lama Educational Systems currently has a D/E ratio of 0.5. It is thinking of increasing its leverage to 0.75 by raising debt. If Lama's current beta = 1.4, and T = 30%, what will beta be after raising the debt?

a. 1.04
b. 1.22
c. 1.40
d. 1.48
e. 1.58

20. The following information is available for Weighmore Products:

Security	Market Value	Required Rate of Return
Debt	$25 million	8%
Preferred stock	$10 million	10%
Common equity	$50 million	15%
Cash	$5 million	?

If its tax rate is 35%, what is Weighmore's WACC?

a. 10.12%
b. 11.53%
c. 11.93%
d. 12.22%
e. Cannot be determined without information on the rate of return for cash

PROBLEM: (40 points)

You work as a project manager at URconnected. Your staff has recently developed a new router product and you are evaluating production options.

The new router is expected to have a sales life of 7 years and produce pre-tax OCFs of $425,000 per year. Sales of the new router will cannibalize on sales of the older router models, resulting in a pre-tax OCF loss of $125,000 per year.

NWC will grow by $120,000 at the start of the project, of which $30,000 can be recovered at the end.

To manufacture the new router, one of the production lines has to be reconfigured. Reconfiguring the existing line will cost $300,000. Of that amount, $100,000 will be spent on a data network to manage the line (CCA class 46, d = 30%). The remaining $200,000 will be allocated to the CCA class 39, d = 25%.

In addition to the $300,000, you must separately consider the aging conveyor belt system that moves parts through the assembly line (also a class 39 asset). Two options are available to you: (1) you could replace the conveyor belt now, or (2) you could use the existing belt for 2 more years and replace it at the end of year 2. Below, are a few more details of these two options.

Option 1. You could sell the existing conveyor belt today for $100,000 and buy a new system that will last for the lifetime of the project at a cost of $400,000.

Option 2. You could keep using the existing conveyor belt, but it will only last another 2 years at which time you will need to replace it at a cost of $450,000. The conveyor will have a salvage value of $0 at this time. Because of the lost production time during replacement, you will need an additional $20,000 in inventory for the first 2 years (at the end of year 2, you will fully recoup the extra inventory costs), and will make $40,000 less in OCF during year 2.

None of the assets in class 39 or 46 will have a salvage value at the end of the project.

URconnected pays taxes at 30% and its WACC is 12%. You realize that new products carry greater risk than most other projects and believe that a WACC premium of 2% should account for this risk.

1. Compute PVATOCFs for Options 1 and 2.

$$PVATOCF1 = \frac{(425{,}000 - 125{,}000) \times (1 - 0.3)}{(0.12 + 0.02)} \times (1 - (1 + (0.12 + 0.02)^{-7}) \approx \$900{,}544$$

$$PVATOCF2 = 900{,}544 + \frac{-40{,}000 \times 0.7}{1.14^2} \approx \$878{,}999$$

2. Compute PVCCATSs for Options 1 and 2.

$$PVCCATS1 = \left(\frac{100{,}000 \times 0.3 \times 0.3}{0.14 + 0.3} + \frac{(200{,}000 + 400{,}000 - 100{,}000) \times 0.25 \times 0.3}{0.14 + 0.25}\right) \times \frac{1.07}{1.14} \approx \$109{,}448$$

$$PVCCATS2 = \left(\frac{100{,}000 \times 0.3 \times 0.3}{0.14 + 0.3} + (200{,}000 + 450{,}000 \times 1.14^{-2}) \times \frac{0.25 \times 0.3}{0.14 + 0.25}\right) \times \frac{1.07}{1.14} \approx \$117{,}798$$

3. Compute the PVNWC for Options 1 and 2.

$$PVNWC1 = -120{,}000 + \frac{30{,}000}{1.14^7} \approx -\$108{,}011$$

$$PVNWC2 = -108{,}011 - 20{,}000 + \frac{20{,}000}{1.14^2} \approx -\$112{,}622$$

4. Compute the NPVs for Options 1 and 2. Should you choose Option 1 or Option 2?

$$NPV1 = -100{,}000 - 200{,}000 - 400{,}000 + 100{,}000 + 900{,}544 + 109{,}448 - 108{,}011 = \$301{,}981$$

$$NPV2 = -100{,}000 - 200{,}000 - \frac{450{,}000}{1.14^2} + 878{,}999 + 117{,}798 - 112{,}622 = \$237{,}915$$

It appears that Option 1 has a higher NPV and should be preferred.