READ THE FOLLOWING DIRECTIONS VERY CAREFULLY. FAILURE TO FOLLOW THESE DIRECTIONS WILL ALMOST CERTAINLY RESULT IN YOUR EXAM BEING MIS- GRADED WHICH WILL ADVERSELY AFFECT YOUR GRADE. IF THERE IS ANYTHING ABOUT THE DIRECTIONS THAT YOU DO NOT UNDERSTAND, ASK YOUR INSTRUCTOR IMMEDIATELY.

1. Fill in your name, student number, and the days and time of the class for which you are registered (for example, Th at 7:15 p.m.) on the Answer Sheet as well as on the lines above.

2. Read each question very carefully. Consider all of the answer items and then select the best correct answer - there is only one best answer per question. Circle the letter answer on the exam and record your answers on the Answer Sheet (last page).

NOTE WELL: ONLY THE ANSWER SHEET (page 10) WILL BE GRADED!!!

3. You may use a financial calculator. No scratch paper (use back pages of exam if necessary), or stored formulae allowed.

The exam consists of 25 multiple choice questions each worth 4.0 points. Your score will be computed as: [100 - (number missed X 4.0)]. You will have 120 minutes to complete the exam. Do not leave any answers blank - an unanswered question will be graded as a wrong answer. Good Luck!
1. Which of the following is the best description of the **overall goal of the financial manager** in a corporation where shares are publicly traded?

   a. Maximize earnings per share
   b. Maximize operating income
   c. Maximize operating cash flows
   d. Maximize the value of outstanding shares
   e. Maximize the number of outstanding shares

2. Stock A has a beta of 1.5 and a standard deviation of returns of 21.5%. Stock B has a beta of 2.5 and a standard deviation of returns of 16.5%. The risk-free rate is 5%. The expected return on the market is 11% and the standard deviation of the return on the market is 9%.
   You invest 40% in A and 60% in B. What is the required return on the portfolio?

   a. 28.1%
   b. 21.5%
   c. 16.5%
   d. 9.0%
   e. 17.6%

3. You form a portfolio by buying 1400 shares of Microsoft at $50/share and 1000 shares of Intel at $30/share. Microsoft’s beta is 2.0 and its standard deviation of returns is 30%. Intel’s beta is 1.5 and its standard deviation of returns is 20%. The expected return on the market is 11% and the standard deviation of the return on the market is 9%. The correlation coefficients between the 2 securities and the market are given below. What is the standard deviation of returns of the portfolio?

<table>
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<tr>
<th></th>
<th>Microsoft</th>
<th>Intel</th>
<th>Market</th>
</tr>
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<tbody>
<tr>
<td>Microsoft</td>
<td>1.0</td>
<td>0.9</td>
<td>1.5</td>
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<tr>
<td>Intel</td>
<td>0.9</td>
<td>1.0</td>
<td>1.6</td>
</tr>
<tr>
<td>Market</td>
<td>1.5</td>
<td>1.6</td>
<td>1.0</td>
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</table>

   a. 25.26%
   b. 26.53%
   c. 3.30%
   d. 21.85%
   e. 25.71%
4. Which of the following is false?
   a. The return on a portfolio of securities is always the weighted average of the return of the individual securities
   b. The standard deviation of return on a portfolio of securities is always the weighted average of the standard deviation of return of the individual securities
   c. The beta of a portfolio of securities is always the weighted average of the betas of the individual securities
   d. The beta of the market is always equal to 1
   e. None of the above

5. Maximum risk reduction is obtained by combining two stocks (50% invested in each of them) with a correlation coefficient equal to
   a. +1.0
   b. 0.0
   c. 0.5
   d. -1.0
   e. -0.5

6. Two 6 year, 8% nominal rate savings certificates (initial investment = $1,000) are available with the exception that interest is compounded annually for one certificate and semiannually for the other certificate. What is the difference between the ending value of the savings certificate compounded semiannually and the one compounded annually? (Hint: A savings certificate pays out all the interest accrued over time at maturity, together with the initial investment)
   a. The semiannual is worth $14.16 more than the annual
   b. The semiannual is worth $14.16 less than the annual
   c. The semiannual is worth $21.54 more than the annual
   d. The semiannual is worth $21.54 less than the annual
   e. The semiannual is worth the same as the annual
7. Suppose someone offered you the choice of two equally risky annuities, each paying $10,000 per year for five years. One is an ordinary (or deferred) annuity, the other is an annuity due. Which of the following statements is correct?
   a. The present value of the ordinary annuity exceeds the present value of the annuity due, and the future value of an ordinary annuity exceeds the future value of the annuity due
   b. The present value of the ordinary annuity exceeds the present value of the annuity due, but the future value of an ordinary annuity is less than the future value of the annuity due
   c. The present value of the annuity due exceeds the present value of the ordinary annuity, while the future value of the annuity due is less than the future value of the ordinary annuity
   d. The present value of the annuity due exceeds the present value of the ordinary annuity, and the future value of the annuity due also exceeds the future value of the ordinary annuity
   e. If interest rates increase, the difference between the present value of the ordinary annuity and the present value of the annuity due remains the same

8. Today is your 21st birthday, and you are opening up an investment account. Your plan is to contribute $2,000 per year on your birthday and the first contribution will be made today. Your 45th, and final, contribution will be made on your 65th birthday. If you earn 10 percent a year on your investments, how much money will you have in the account on your 65th birthday, immediately after making your final contribution?
   a. $1,581,590.64
   b. $1,739,749.71
   c. $1,579,590.64
   d. $1,387,809.67
   e. $1,437,809.67

9. Foster Industries has a project that has the following cash flows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash Flow</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td>-$300.00</td>
</tr>
<tr>
<td>1</td>
<td>100.00</td>
</tr>
<tr>
<td>2</td>
<td>125.43</td>
</tr>
<tr>
<td>3</td>
<td>90.12</td>
</tr>
<tr>
<td>4</td>
<td>?</td>
</tr>
</tbody>
</table>

What cash flow will the project have to generate in the fourth year in order for the project to have a 15 percent rate of return?
   a. $ 15.55
   b. $ 58.95
   c. $100.25
   d. $103.10
   e. $150.75
10. You purchased a bond (with $1,000 principal value) five years ago at a price of $990.50. At the time of purchase, this bond had 20 years to maturity and a coupon rate of 8 percent with coupon payments made twice every year. Today, the nominal annual yield to maturity on similar bonds is one percent lower than when you purchased the bond five years ago. What is the market price of the bond today?
   a. $1,113.20
   b. $1,082.57
   c. $1,185.37
   d. $1,110.91
   e. $1,062.91

11. You have two bonds A and B (with $1,000 principal value) and both have the same yield to maturity of 10 percent, have 20 years to maturity, and the coupon is paid annually. The only difference is that A has coupon of 12 percent ($120 per year) and B has a coupon of 8 percent ($80 per year). If the market interest rates increase to make the yield to maturity on these bonds to be 11 percent, which one of the following statements is true?
   a. The prices of both bonds go down but the decrease for A is greater in dollar terms
   b. The price of A decreases but that of B remains the same
   c. The prices of both bonds go up but the increase for B is greater in dollar terms
   d. The price of B decreases and the price of A increases
   e. The prices of both bonds go down but the decrease for B is greater in dollar terms.

12. ZInc is expected to pay a dividend of $1 at t = 1. The growth rate for the next two dividends is expected to be 20% per year and the growth rate for the following two years (to compute dividends at t = 4 and t = 5) is expected to be 15%. After that the growth rate will be 6 percent per year for ever. If the investors require a return of 13 percent from this stock, what should be the stock price today?
   a. $21.50
   b. $33.71
   c. $20.52
   d. $18.72
   e. $4.87

13. TransTech is expected to pay no dividends for the next two years. After that, it will pay a dividend of $2 at the end of each of the next three years. Subsequent dividends are expected to grow at the rate of 5 percent per year for ever. If the investor's required rate of return from this stock is 11 percent, what is the price of the stock today?
   a. $22.68
   b. $30.48
   c. $27.44
   d. $22.29
   e. $24.74
USE THE FOLLOWING INFORMATION TO ANSWER QUESTIONS 14 - 16

Montafiori Inc. has a target capital structure of 60% debt and 40% equity. The firm’s debt consists of 8 year, annually payable bonds with a coupon rate of 7%, and the bonds are actually traded at 106% of par value. Montafiori’s stock currently sells for $100 per share and the last dividend paid (=D_0) was $5.00. Investors expect the dividend to grow indefinitely at a constant rate of 10% per year. The company’s tax rate is 40%.

14. Calculate Montafiori’s **after-tax cost of debt** (in %, 2 decimal places)?

   a. 7.57%
   b. 6.47%
   c. 6.03%
   d. 3.62%
   e. 2.41%

15. Calculate Montafiori’s **cost of equity** (in %, 2 decimal places)?

   a. 11.50%
   b. 12.75%
   c. 15.00%
   d. 15.50%
   e. 16.25%

16. Calculate Montafiori’s **WACC** (in %, 2 decimal places)?

   a. 8.17%
   b. 8.37%
   c. 9.62%
   d. 9.82%
   e. 10.74%
17. Scientific Games Inc. (SGI) is trying to estimate its optimal capital structure. Presently, SGI has a capital structure that consists of 100% equity. The risk-free rate is 6% and the market risk premium is 5%. Currently the company’s cost of equity, which is based on the CAPM, is 12% and its tax rate is 40%. What would be SGI’s estimated cost of equity if it were to change its capital structure to 50% debt and 50% equity?

a. 15.6%
b. 20.0%
c. 14.4%
d. 16.5%
e. 21.8%

18. Two normal projects A and B are mutually exclusive. Project A has a higher net present value if the WACC is less than 14 percent, whereas Project B has a higher net present value if the WACC exceeds 14 percent. The NPV’s of both projects are identical (and positive, i.e. greater than Zero) if the WACC equals 14 percent. Which of the following statements is most correct:

a. Project B has a higher internal rate of return (IRR) than Project A
b. The crossover-rate is higher than 14 percent
c. Project B must be larger in scale than Project A
d. Project A must have a faster payback than Project B
e. The project’s profitability index is less than Zero if the WACC equals 14%

19. A real estate developer wants to use a corner lot she owns, to either set up a gas station or construct an apartment building. Using a four-year planning horizon, she does a comparative cashflow analysis of the two alternatives:

<table>
<thead>
<tr>
<th>Year</th>
<th>Gas Station</th>
<th>Apartment building</th>
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<tr>
<td>0</td>
<td>- $100</td>
<td>- $100</td>
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The opportunity cost of capital is 10%. These are mutually exclusive projects. The real estate developer should

a. Choose the gas station [IRR = 24%], not the apartment building [IRR = 21%].
b. Choose the apartment building [NPV = $29.79], not the gas station [NPV = $29.06].
c. Choose the gas station over the apartment, since the payback period is better
d. Choose the gas station over the apartment, since profitability index is lower
e. Choose the gas station over the apartment, since discounted payback is better
20. A normal project which has a NPV greater than zero will also
   I. have a discounted payback period less than its life.
   II. Have an IRR greater than the required return.
   III. Have a profitability index (PI) greater than one.

a. I and III only
b. II and III only
c. I, II and III
d. II only
e. None of the above

21. Which of the following statements is most correct?
   a. Since debt financing raises the firm's financial risk, raising a company's debt
      ratio will always increase the company's WACC
   b. Since debt financing is cheaper than equity financing, raising a company's debt
      ratio will always reduce the company's WACC
   c. Increasing a company’s debt ratio will typically reduce the component cost of
      both debt and equity [i.e. of both k(s) and k(d)]
   d. Increasing a company’s debt ratio will typically reduce the company’s Beta
   e. None of the statements above is correct
USE THE FOLLOWING INFORMATION TO ANSWER QUESTIONS 22 - 25

The CEO of Tatra Air is considering the purchase of a new commercial airplane. The airplane will cost $100 million and it is classified in the 7-year MACRS class. The purchase of the plane will require an increase in net working capital of $10 million (in year 0), which is recovered in the final year (i.e. the third year) of the project. The plane will increase the firm's sales by $90 million per year, but will also increase costs (excluding depreciation) by $50 million per year. The plane is expected to be used for 3 years, and then sold for 70% of the purchase price. The firm's marginal tax rate is 30% and the project's cost of capital is 16%. Use the following MACRS rates for 7-year property: 14%, 24%, 17%, 12%, 10%, 9%, 9%, 5%

22. What is the net cash flow at the beginning of the project (year 0)?
   a. -$110 million
   b. -$100 million
   c. -$90 million
   d. -$70 million
   e. -$60 million

23. What is the net cash flow in year 2 (rounded off to 1 decimal)?
   a. $32.2 million
   b. $35.2 million
   c. $46.2 million
   d. $47.2 million
   e. $59.2 million

24. What is the net cash flow (i.e. operating plus non-operating) in year 3 (rounded off to 1 decimal)?
   a. $125.1 million
   b. $113.1 million
   c. $105.6 million
   d. $73.6 million
   e. $122.6 million

25. What is the NPV of the project (rounded off to 2 decimals)?
   a. $5.07 million
   b. $11.57 million
   c. $13.49 million
   d. $16.38 million
   e. $45.96 million
# MBA 8622 - CORPORATION FINANCE
## Summer Semester 2002
### Final Exam - Version A

**ANSWER SHEET**

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