Directions:
This take-home problem set (THPS) is due on, or before, 10 pm, Thursday April 27, 2006. You may turn in the assignment in any of three ways; 1. The preferred choice is to fax to either 770-832-8309 (Home fax) or 678-839-5041 (Office fax), 2. The second choice is to scan your answer sheets, convert to .pdf using Adobe Acrobat, and email me at mba8622@hotmail.com. Please do not send .jpg files as these are often difficult to correctly size and print, 3. The third choice is to snail-mail me, Charles Hodges, 465 Bethesda Church Road, Carrollton, GA 30117.

Though you may use your book, notes, etc., all work on this THPS is to be yours alone - any discussion of either the questions on the assignment or your answers with anyone other than the instructor will be considered as cheating and, thus, as a violation of the GSU honor code. You are allowed to ask questions in chat sessions.

The assignment consists of 15 multiple choice questions, for which you have to record the letter of the correct multiple choice answer directly on the answer sheet on the last page (do not show any intermediate steps, there will be no partial credit assigned). The questions were chosen as they were representative of the more difficult exam level questions from past Final Exams.

The grade on any assignment turned in after 10 pm on April 27 will be reduced at a daily compounded rate of 10% per day (begin mode). I will release the solution and answers as soon as I receive everyone’s Problem Set, but in any case before noon on April 30.

1. Suppose you own a risky asset with an expected return of 12% and a standard deviation of 20%. If the returns are normally distributed, the approximate probability of receiving a return greater than 72%, or less than -48% is
   A) greater than 99%.
   B) greater than 95%.
   C) less than 5%.
   D) less than 1%.
   E) Cannot be determined.

2. The return pattern on your favorite stock has been 5%, 8%, -12%, 15%, 21% over the last five years. What has your average return and holding period return over the last 5 years?
   A) 4.5%; 6.5%
   B) 7.4%; 38.9%
   C) 7.4%; 7.76%
   D) 7.4%; 76.73%
   E) None of the above.
Use the following to answer questions 3-4:
The Quick-Start Company has the following pattern of potential cash flows with their planned investment in a new cold weather starting system for fuel injected cars.

3. If the company has a discount rate of 17%, what is the value closest to time 1 net present value?
   A) $ 48.6 million
   B) $ 80.9 million
   C) $108.2 million
   D) $181.4 million
   E) None of the above.

4. If the company has a discount rate of 17%, should they decide to invest?
   A) yes, NPV = $ 2.2 million
   B) yes, NPV = $ 21.6 million
   C) no, NPV = $-1.9 million
   D) yes, NPV = $ 8.6 million
   E) No, since more than one branch is NPV = 0 or negative you must reject.

Use the following to answer questions 5-6:
GenLabs has been a hot stock the last few years, but is risky. The expected returns for GenLabs are highly dependent on the state of the economy as follows:

<table>
<thead>
<tr>
<th>State of Economy</th>
<th>Probability</th>
<th>GenLabs Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>.05</td>
<td>-50%</td>
</tr>
<tr>
<td>Recession</td>
<td>.10</td>
<td>-15</td>
</tr>
<tr>
<td>Mild Slowdown</td>
<td>.20</td>
<td>5</td>
</tr>
<tr>
<td>Normal</td>
<td>.30</td>
<td>15%</td>
</tr>
<tr>
<td>Broad Expansion</td>
<td>.20</td>
<td>25</td>
</tr>
<tr>
<td>Strong Expansion</td>
<td>.15</td>
<td>40</td>
</tr>
</tbody>
</table>

5. The expected return on GenLabs is:
   A) 3.3%
   B) 8.5%
   C) 12.5%
   D) 20.5%
   E) None of the above.
6. The standard deviation of GenLabs returns is
   A) .0845
   B) .2069
   C) .3065
   D) .3358
   E) None of the above.

Use the following to answer questions 7-9:
Idaho Slopes (IS) and Dakota Steppes (DS) are both seasonal businesses. IS is a downhill skiing facility, while DS is a tour company that specializes in walking tours and camping. The equally likely returns on each company over the next year is expected to be:

<table>
<thead>
<tr>
<th>Economy</th>
<th>Idaho Slopes</th>
<th>Dakota Steppes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong Downturn</td>
<td>-10%</td>
<td>2%</td>
</tr>
<tr>
<td>Mild Downturn</td>
<td>-4%</td>
<td>7%</td>
</tr>
<tr>
<td>Slow Growth</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td>Moderate Growth</td>
<td>12%</td>
<td>4%</td>
</tr>
<tr>
<td>Strong Growth</td>
<td>20%</td>
<td>4%</td>
</tr>
</tbody>
</table>

7. The variances of Idaho Slopes and Dakota Steppes are
   A) .0145; .00038
   B) .011584; .000304
   C) .006454; .000154
   D) .0008068; .000193
   E) None of the above

8. The covariance between the Idaho Slopes and Dakota Steppes returns is
   A) .00187
   B) .00240
   C) .00028
   D) .000056
   E) None of the above

9. If Idaho Slopes and Dakota Steppes were combined in a portfolio with 50% invested in each, the expected return and risk would be?
   A) 4.5%; 0%
   B) 4.5%; 5.48%
   C) 5.0%; 0%
   D) 5.625%; 37.2%
   E) 8.0%; 8.2%

10. The NuPress Valet Co. has an improved version of its hotel stand. The investment cost is expected to be $72 million and will return $13.5 million for 5 years in net cash flows. The ratio of debt to equity is 1 to 1. The cost of equity is 13%, the cost of debt is 9%, and the tax rate is 34%. What is the NPV of the project?
   A) $-4,500,000
   B) $-19,489,708
   C) $-20,123,870
   D) $-24,517,378
   E) None of the above.
Use the following to answer questions 11-12:

The Jackson Company wants to purchase an asset costing $6 million. The firm just reported a net income (NI0) of $20 million; its payout ratio is 30 percent; and the firm has 8 million shares of stock outstanding. Jackson's market value capital structure, shown below, is considered to be optimal (assume there is no short-term debt):
- Long-term Debt $32,000,000
- Equity 64,000,000
- Total Capital $96,000,000

Jackson expects its earnings (and therefore its dividends) to continue to grow at their historical rate of 6 percent per year for the indefinite future. The current risk free rate is 3 percent and the expected return on the market portfolio is 16 percent. Jackson's long-term debt consists of 20,000 bonds. These annual coupon, $1,000 par value bonds mature in 24 years and have a coupon rate of 18%. Jackson's tax rate is 40 percent.

11. Assuming that the yield to maturity on any new bonds issued today is equal to the yield to maturity on existing bonds, calculate Jackson's current cost of debt (rd) to be used in the calculation of the company's weighted average cost of capital:
   a. 8.14 percent.
   b. 9.00 percent.
   c. 10.88 percent.
   d. 12.75 percent.
   e. There is not enough information given to answer this question.

12. Regardless of your answer to the question 17, assuming that the current cost of new debt to Jackson is 12 percent, calculate Jackson's weighted average cost of capital (round to the nearest whole number):
   a. 9 percent.
   b. 11 percent.
   c. 13 percent.
   d. 15 percent.
   e. 17 percent.

13. A firm has a debt-to-equity ratio of .5. Its cost of equity is 22%, and its cost of debt is 16%. If the corporate tax rate is .40, what would its cost of equity be if the debt-to-equity ratio were 0?
   A) 14.00%
   B) 20.61%
   C) 21.07%
   D) 22.00%
   E) None of the above.
Use the following to answer questions 14-15:
The Windsor Company has perpetual EBIT of $3,000. It has no debt in its capital structure, and its cost of equity is 15%. The corporate tax rate is 40%. There are 300 shares outstanding. Windsor has announced that it will borrow $3,750 in perpetual debt at 8% and use the proceeds to buy up stock.

14. Assume the corporate tax rate is 50%. A firm has perpetual expected EBIT of $100. The firm has no debt in its capital structure. Its cost of equity is 10%. What would be the value of the firm if it issued $400 in perpetual debt?
   A) $700
   B) $800
   C) $900
   D) Insufficient information.
   E) None of the above.

15. What will the stock price now be after the recapitalization?
   A) $35
   B) $40
   C) $45
   D) $50
   E) None of the above.
# MBA 8230–APPLICATIONS IN CORPORATE FINANCE

## Spring 2006

**Take Home Problem Set**

**ANSWER SHEET**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>2)</td>
<td>3)</td>
<td>4)</td>
<td>5)</td>
</tr>
<tr>
<td>6)</td>
<td>7)</td>
<td>8)</td>
<td>9)</td>
<td>10)</td>
</tr>
<tr>
<td>11)</td>
<td>12)</td>
<td>13)</td>
<td>14)</td>
<td>15)</td>
</tr>
</tbody>
</table>

Name: ..................................................................................................