Curriculum and Sample Exam for the Core Finance Exemption Exam

The book we use for the core finance class at Johnson is “Corporate Finance” (tenth edition) by Ross, Westerfield, and Jaffe. The coverage of the core finance class is roughly equivalent to the following chapters in the book:

Chapter 4 (Discounted Cash Flow Valuation)
Chapter 5 (Net Present Value and Other Investment Rules)
Chapter 6 (Making Capital Investment Decisions)
Chapter 7.1 (Sensitivity Analysis, Scenario Analysis, and Break-Even Analysis)
Chapter 8 (Interest Rates and Bond Valuation)
Chapter 9 (Stock Valuation)
Chapter 10 (Risk and Return: Lessons from Market History)
Chapter 11 (Risk and Return: The Capital Asset Pricing Model)
Chapter 13 (Risk, Cost of Capital, and Valuation)
Chapter 22 (Options and Corporate Finance)
Chapter 25 (Derivatives and Hedging Risk)

The questions on the exemption exam are taken only from material covered in these chapters in the book. I strongly suggest that you review this material before taking the exam.

The exemption exam will take place immediately upon your arrival to Johnson. The exam is comprised of 30 multiple choice questions, and you have 2.5 hours to answer the questions. The exam is closed book but you can bring one 8.5" x 11" sheet with your choice of material on both sides (you would need to submit your sheet together with the exam at the end). You need to bring a calculator (e.g., regular, financial, or scientific) to the exam. The use of laptop computers, tablets, or smartphones is not allowed.
1. Your uncle dies and leaves you as the beneficiary of a life insurance policy. The insurance company informs you that you have two options for receiving the insurance proceeds: a lump sum of $60,000 today or payments of $730 a month for ten years. You believe that you can earn 6.5% annually by investing your money. Which option should you take and why?
   a. You should accept the monthly payments because they are worth $64,590 today.
   b. You should accept the monthly payments because they are worth $64,361 today.
   c. You should accept the monthly payments because they are worth $64,290 today.
   d. You should accept the $60,000 because the payments are only worth $56,737 today.
   e. You should accept the $60,000 because the payments are only worth $56,453 today.

2. Smith and Johnson Corp is buying a piece of property for $1.5 million. It plans on a down payment of 20% in cash and financing the balance. The loan terms require monthly payments for 15 years at an annual percentage rate of 6.70% compounded monthly. What is the amount of each mortgage payment?
   a. $9,871.04
   b. $10,528.69
   c. $10,585.68
   d. $10,885.21
   e. $10,913.42

3. Emerson LLC has an $11,500 liability it must pay three years from today. The company is opening a special savings account with Tompkins Trust Company so that the entire amount will be available when this debt needs to be paid. Emerson’s plan is to make an initial deposit when opening the account and then deposit an additional $3,000 at the end of the year for the next three years (starting one year from today). The account pays a 3% rate of return. How much does the Emerson LLC need to deposit today?
   a. $2,038.30
   b. $1,769.64
   c. $3,115.08
   d. $4,500.12
   e. $3,952.89
4. When using the profitability index to analyze projects,
a. the results are often difficult to comprehend or apply.
b. one utilizes the same basic variables as those used in the average accounting return.
c. the results cannot be used to aid capital rationing.
d. the conclusions are useful for decision making when investment funds are limited.
e. the conclusions frequently conflict with the conclusions generated by the application of the net present value rule.

5. Your boss asked you to analyze a potential project, and you generated various analytics to help with decision making:
Net present value -$403
Profitability ratio .96
Internal rate of return 7.5%
Payback period 3.5 years
Required return 8%
Which one of the following statements is correct given this information?
a. The discounted payback period will have to be less than 3.5 years.
b. This project should be rejected based on the internal rate of return rule.
c. The discount rate used in computing the net present value must have been less than 7.5%.
d. This project should be accepted based on the profitability ratio rule.
e. The discount rate used to compute the profitability ratio was equal to the internal rate of return.

6. Consider the following two mutually exclusive projects:
<table>
<thead>
<tr>
<th>Year</th>
<th>Project A Cash Flows</th>
<th>Project B Cash Flows</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-$198,000</td>
<td>-$240,000</td>
</tr>
<tr>
<td>1</td>
<td>$110,800</td>
<td>$0</td>
</tr>
<tr>
<td>2</td>
<td>$82,500</td>
<td>$0</td>
</tr>
<tr>
<td>3</td>
<td>$45,000</td>
<td>$325,000</td>
</tr>
</tbody>
</table>
Will your choice between the two projects differ if the required rate of return is 8% rather than 11%? If so, which project should you choose?
a. no; Irrespective of the required rate, Project A always has the higher NPV.
b. no; Irrespective of the required rate, Project B always has the higher NPV.
c. yes; Choose Project A at 8%; don’t invest in either project at 11%.
d. yes; Choose Project A at 8% but choose Project B at 11%.
e. yes; Choose Project B at 8% but choose Project A at 11%. 
7. Ithaca Sails currently produces boat sails and is considering expanding its operations to include awnings for general use. The company hired you as a finance consultant to conduct a net present value (NPV) analysis of the expansion project. The company owns land that could be used for the expansion, which was bought during the 2008-2009 financial crisis at a cost of $1,250,000. Today, the land is valued at $1,550,000. The grading and excavation work necessary to build on the land will cost $40,000. The company owns some unused equipment valued at $160,000 that could be used for producing awnings if $15,000 is spent on equipment modifications. To expand the operations, Ithaca Sails will also need to buy additional equipment costing $650,000. What is the initial cash flow for this expansion project that is relevant for the economic analysis of whether to expand?
   a. $705,000
   b. $1,900,000
   c. $1,815,000
   d. $2,415,000
   e. $2,100,000

8. Ithaca Shoes & Insoles sells high-quality customized shoes. Currently, it sells 20,000 pairs of shoes annually at an average price of $200 a pair. It is considering adding a lower-priced line of shoes which would sell for $95 a pair. Ithaca Shoes & Insoles estimates it can sell 8,500 pairs of the lower-priced shoes but will sell 2,000 fewer pairs of the higher-priced shoes by doing so. What is the amount of incremental revenue that should be used when evaluating the addition of the lower-priced shoes?
   a. $4,000,000
   b. $2,408,000
   c. $407,500
   d. $607,500
   e. $807,500

9. Consider the following information for Tompkins General Merchandise:
   Sales: $565,000
   Depreciation: $75,000
   Net working capital: $72,000
   Profit margin: 9.5%
   Tax rate: 34%
   The firm has no interest expense. What is the operating cash flow?
   a. $156,000
   b. $128,675
   c. $418,000
   d. $200,675
   e. $194,345
10. Sensitivity analysis is conducted by:
a. changing the value of two variables at the same time to determine their interdependency.
b. holding all variables (except assets) at their base level and changing the required rate of return assigned to a project.
c. changing the value of a single variable and computing the resulting change in the current value of a project.
d. assigning the best possible value to every variable and comparing the results to those achieved by the base case.
e. managers after a project has been implemented to determine how each variable relates to the level of output realized.

11. Three years ago you bought a bond when it was originally issued at par value. It was a 15-year bond with 5.5% coupon. If the current market rate (or yield) for this type and quality of bond is 6.7%, then you would expect:
a. the current yield today to be less than 5.5%.
b. the bond issuer (Tompkins Trust Company) to increase the amount of each interest payment on these bonds.
c. the yield to maturity to remain constant due to the fixed coupon rate.
d. to realize a capital loss if you sold the bond in the market today.
e. today's market price to exceed the face value of the bond.

12. You are analyzing a 5.75% coupon bond with interest paid semiannually that matures in 10 years ($1,000 face value). If the bond’s yield to maturity is 7.1%, what is the current market price of the bond?
a. $1,000.00  
b. $928.87  
c. $735.35  
d. $899.82  
e. $904.50

13. The bonds of Sierra Heating Oil have a face value of $1,000, pay a 7.6% coupon, and have a 7.5% yield to maturity. The current inflation rate is 2%. What is the real rate of return on these bonds?
a. 5.25%  
b. 5.39%  
c. 5.60%  
d. 7.50%  
e. 7.60%
14. You are using the dividend growth model to value stocks. If you expect the required return on all equities to increase (say due to greater risk aversion in the market), then you should also expect the:
   a. dividend growth rates to substantially increase to offset this change.
   b. market values of all stocks to increase (holding everything else constant).
   c. market values of all stocks to remain constant as the dividend growth will offset the increase in the market’s required rate of return.
   d. market values of all stocks to decrease (holding everything else constant).
   e. stocks that do not pay dividends to decrease in price while the dividend-paying stocks maintain a constant price.

15. Johnson and Sons paid a $1.50 dividend yesterday, and is planning to pay an annual dividend of $1.575 on its common stock next year. The company strongly believes in having a policy of constant dividend growth rate. What will one share of Johnson and Sons common stock be worth five years from now if the applicable discount rate is 9%?
   a. $50.25
   b. $73.22
   c. $47.86
   d. $37.50
   e. $39.38

16. The Motorized Paper Drone Company (MPDC) is a new firm in a growing industry, but is nonetheless committed to paying generous dividends. The company is planning to increase its annual dividend by 25% a year for the next five years and then reduce the dividend growth rate to 5% per year. The company just paid its annual dividend in the amount of $1.00 per share. What is the current value of MPDC’s stock if the required rate of return is 12%?
   a. $30.02
   b. $31.20
   c. $33.01
   d. $45.78
   e. $52.81

17. Over the period of 1926 through 2011, the annual return on _____ has been less volatile than the annual return on _____.
   a. long-term government bonds; U.S. Treasury bills
   b. small company stocks; U.S. Treasury bills
   c. small company stocks; large company stocks
   d. long-term corporate bonds; small company stocks
   e. large company stocks; long-term corporate bonds
18. What are the arithmetic and geometric average returns for a stock with annual returns of 25%, -17%, 4%, -1%, and 12%?
   a. 4.6%; 3.65%
   b. 4.6%; 19.64%
   c. 4.6%; 5.65%
   d. 3.7%; 5.75%
   e. 3.7%; 6.4%

19. Which one of the following is an example of a systematic (i.e., nondiversifiable) risk?
   a. A well-managed firm lays off some employees in the processes of automating several jobs.
   b. A poorly managed firm goes out of business due to continuous losses.
   c. A well-respected CEO of a firm suddenly resigns.
   d. A well-respected chairman of the Board of Governors of the Federal Reserve System suddenly resigns.
   e. A key employee suddenly resigns and accepts employment with a competitor in the same three-digit SIC industry code.

20. According to the Capital Asset Pricing Model (CAPM),
   a. the expected return on a security can be negative, and this is always the case when beta is very large.
   b. the expected return on a security is negatively related to the security's beta, and positively relate to the security’s variance.
   c. the expected return on a security is completely determined by the excess return on the market, irrespective of whether beta is high or low.
   d. the expected return on a security is positively and linearly related to the security's beta.
   e. the expected return on a security is positively and linearly related to the security's variance.

21. You hold a $100,000 portfolio with two stocks, XYZ and ABC, as well as the risk-free asset. Specifically, you invest $60,000 in stock XYZ, which has a beta of 1.4. Stock ABC has a beta of 0.9. How much needs to be invested in stock ABC if you want a portfolio beta of 1.1?
   a. It is impossible to answer this question without information about the return of the risk-free asset.
   b. $11,111
   c. $55,111
   d. $40,000
   e. $28,889
22. A macro analyst provides you with the following scenarios for the state of the economy next year:

<table>
<thead>
<tr>
<th>State of Economy</th>
<th>Probability</th>
<th>Return on Stock XYZ</th>
<th>Return on Stock ABC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid Expansion</td>
<td>20%</td>
<td>25%</td>
<td>15%</td>
</tr>
<tr>
<td>Normal Growth</td>
<td>80%</td>
<td>10%</td>
<td>5%</td>
</tr>
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</table>

What is your forecasted standard deviation for a portfolio consisting of $40,000 in XYZ and $60,000 in ABC?

a. 0.0024  
b. 0.0067  
c. 4.8%    
d. 7.2%    
e. 12%

23. Consider a firm with several subsidiaries (in different industries). If a project's beta is different from that of the overall firm, then:

a. NPV analysis should use a rate commensurate with the project’s own beta to discount the cash flows.  
b. NPV analysis should use a rate commensurate with the overall firm’s beta to discount the cash flows.  
c. the project should not be pursued by the firm.  
d. NPV analysis should use the T-bill rate to discount the project’s cash flows.  
e. CAPM can no longer be used.

24. Comparing two firms that are identical in all aspects except for capital structure, the beta of the common stock of the unlevered firm is ________ than the beta of the common stock of the levered firm.

a. equal to  
b. significantly larger  
c. slightly larger  
d. smaller  
e. None of the above.

25. Danby Manufacturing Co. has 100,000 bonds outstanding with coupon rate 8% that are trading in the market at a price that is equal to the par value ($1,000). The firm has five million shares of common stock outstanding with a current market price of $50 and a beta of 1.2. The yield on U.S. Treasuries is 3% and the market risk premium is 6%. Danby's tax rate is 35%. What is Danby's weighted average cost of capital (WACC)?

a. 8.00%  
b. 8.77%  
c. 9.10%  
d. 9.64%  
e. 10.20%
26. Which one of the following will increase the value of a call option?
   a. decreasing the risk-free rate.
   b. setting a higher exercise price.
   c. decreasing the time to expiration.
   d. decreasing the stock price.
   e. an increase in the volatility of the underlying asset.

27. You bought ten XYZ call option contracts with strike price of $30 at a quoted option price of $0.65. What is your net gain or loss on this investment if the price of XYZ on the option expiration date is $35?
   a. $4,350
   b. -$650
   c. $5,000
   d. $50
   e. $1,875

28. Dryden Electric common stock is currently trading at $60 a share. You expect the stock price one year from now to be either $70 or $55. The risk-free rate is 5%. Using the binomial option pricing model, the price of a one-year call option on Dryden Electric stock with an exercise price of $60 is:
   a. $0 (the option is at the money)
   b. $0.47
   c. $4.33
   d. $5.08
   e. $5.92

29. You hold a forward contract to take delivery of U.S. Treasury bonds in 6 months (i.e., you are the long position). If the entire yield curve shifts down over the next six months, the value of the forward contract will be _____ on the date of delivery.
   a. unchanged
   b. either higher or lower (depending on the coupons of the U.S. Treasury bonds)
   c. zero
   d. higher
   e. lower

30. What is the duration of a three-year bond with face value of $1,000, 6% coupon rate (where the coupons are paid annually), and yield to maturity of 10%?
   a. 3 years
   b. 2.57 years
   c. 2.82 years
   d. 2.98 years
   e. 3.10 years
Core Finance Sample Exemption Exam

Name________________________ Exam #_______

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