Solutions

Print Last Name: ➔	Print First Name: ➔	ID Number: ➔	
COURSE FINANCE	**NUMBER** COMM 308	**SECTIONS: (➔ Circle your section)** CA, CB	
EXAMINATION Final Exam **VERSION BLUE**	**DATE** August 17, 2013	**TIME** 3 hours 14:00 to 17:00	**# OF PAGES 17** Including cover
INSTRUCTOR: **(➔ Underline your instructor's name)** Somayeh Kaviani Hosein Maleki		**DIVISION** John Molson School of Business Concordia University	

READ THESE SPECIAL INSTRUCTIONS CAREFULLY

- **You must submit a BLUE computer answer sheet.**

- **You are allowed to bring/use one or more calculators**

- **You are allowed to bring one language dictionary (no finance/ mathematics/economics etc. dictionary)**

- **For Multiple Choice Questions: All answers must be recorded IN PENCIL on the computer sheet.**

- **For Problems:**
  - **All answers must be recorded IN INK within this exam.**
  - **Show your calculations to earn part marks. Write in the space provided.**
  - **If you are using the back of the exam for answering any question, you should label it clearly**

- **Please ensure you have 17 pages (including the cover page) in this exam.**

- **Fill in your name and other required information IN PENCIL on the Computer Answer sheet as well as IN INK on this cover sheet.**

- **Blank questions or those with multiple answers will not receive any credit.**

SCORES (FOR INTERNAL USE ONLY)

Part I Multiple Choice Questions	**Part II Long Answer Questions**				
	Question 1	Question 2	Question 3	Question 4	
(Max: 70 Points)	(Max: 8 Points)	(Max: 7 Points)	(Max: 7 Points)	(Max: 8 Points)	**Total**

Part I: Multiple Choice Questions (28 Questions, 70 Points Total):

- This part consists of 28 Multiple Choice Questions.
- Each question counts 2.5 points for a total of 70 points.
  - **Only answers on the computer answer sheet will be graded.**
  - **Use a pencil to mark your answers on the Computer Sheet.**

1. The cost of monitoring management is considered to be a (an):

   A) Bankruptcy cost.
   B) Transaction cost
   C) Agency cost
   D) Institutional cost
   E) Operating cost

2. If you place $50 in a savings account with an interest rate of 7% APR compounded annually, what will the investment be worth at the end of four and a half years (round up to the nearest dollar)?

   A) $68
   B) $69
   C) $70
   D) $71
   E) None of the above.

   $FV: 50*(1.07)^{4.5} = \$67.79 \approx \$68$

3. You are considering two investments: A & B. Both investments provide a cash flow of $100 per year for n years. However, investment A receives the cash flows at the beginning of each year, while investment B receives the cash flows at the end of each year. If the present value of cash flows from investment B is P, and the discount rate is r, what is the future value at time n of the cash flows from investment A?

   A) $P/(1+r)$
   B) $P/(1+r)^n$
   C) $P\times(1+r)^n$
   D) $P\times(1+r)^{n+1}$
   E) $P\times(1+r)^{n-1}$

4. What is the value on 31/01/2004 of the following cash flows (Assume 10% EAR discount rate)? Note: Assume there were 365 days in 2004.

Date Cash received	Amount of Cash
31/12/2004	$100
31/12/2005	$100
31/12/2006	$100
31/12/2007	$100
31/12/2008	$100

A) $292.60
B) $321.86
C) $379.08
D) $382.16
E) None of the above.

$PV(31/12/2003) = \frac{100}{0.1} * \left[1 - \frac{1}{(1.1)^5}\right] = \$379.0788$

$PV(31/01/2004) = 379.0788 * (1.1)^{\frac{31}{365}} = \$382.16$

5. You are going to deposit $800 into an account at the beginning of each year for the next 20 years (First payment is today). Starting in year 21, you will begin receiving perpetuity from the account. First payment from the perpetuity will be at the beginning of year 21. If the account pays 14% (EAR), how much will you receive in each year from this perpetuity?

A) $10,194.79
B) $11,622.06
C) $13,249.15
D) $94,636.80
E) $592,962.39

$FV_{19} = \frac{800}{0.14} * \left[1 - \frac{1}{1.14^{20}}\right] * (1.14) * (1.14)^{19} = \$72819.94$

Let the payment from perpetuity be x

$FV_{19} = \frac{x}{0.14} \Rightarrow x = 0.14 * 72819.94 = \$10194.79$

6. Which of the following provides the lowest annual interest?

A) 21% Effective two-year rate → 10% EAR
B) 10% APR compounded annually → 10% EAR
C) 9 % APR compounded semi-annually → 9.20 EAR
D) 8.5% APR compounded daily (Assume 365 days in a year) → 8.87 EAR
E) Both A and B.

7. The greater the agency problem in a corporation, _____

A) the lower the discount rate investors will apply when discounting its expected future cash flows.
B) the higher the discount rate investors will apply when discounting its expected future cash flows.
C) the lower the coupon rate investors will demand from the corporation's bonds.
D) Both A and C
E) The difference in agency problem will not affect the discount rate.

8. With respect to a company that has issued a callable bond, the value of the callability feature is likely to be high when_____

A) interest rates are volatile.
B) interest rates are low and expected to remain low.
C) interest rates are high and expected to remain high.
D) markets are inefficient.
E) None of the above.

9. Rank the interest sensitivity of the following from least sensitive (to an interest rate change) to the most sensitive.

I. 8% coupon, 20 year maturity, par bond $\Rightarrow YTM = 8\%$.
II. 8% coupon, 20 year maturity, premium bond $\Rightarrow YTM < 8\%$.
III. 8% coupon, 20 year maturity, discount bond $\Rightarrow YTM > 8\%$.

Lower YTM is more sensitive

A) I, II, III
B I, III, II
C II, I, III
D) II, III, I
E) III, I, II

Lower YTM is more sensitive (Refer to plot 6-3 on page 214 of the 3rd edition of Booth book) At lower YTM, a small change in YTM will result in greater change in the bond price. At higher YTM the plot becomes flat, suggesting that the price change is small for the same change in YTM.

10. Stock X and Stock Y sell for the same price in today's market. Stock X has a required return of 12 percent. Stock Y has a required return of 10 percent. Stock X's dividend is expected to grow at a constant rate of 5 percent a year, while Stock Y's dividend is expected to grow at a constant rate of 4 percent. Assume that the market is in equilibrium and expected returns equal required returns. Which of the following statements is most correct?

Same price today $\Rightarrow Div_X > Div_Y$
g = Capital gains yield

A) Stock X has a higher dividend yield than Stock Y
B) Stock Y has a higher dividend yield than Stock X.
C) One year from now, Stock X's price is expected to be higher than Stock Y's price.
D) Statements a and c are correct.
E) Statements b and c are correct.

11. Which of the following statements is correct?

A) The slope of the security market line is beta
B) Market participants are able to eliminate virtually all market risk if they hold a large diversified portfolio of stocks.
C) If a stock's beta doubles, its required rate of return must double
D) Sharpe ratio is the slope of the capital allocation line
E) None of the above statements is correct.

12. You are a recycler of spent plutonium rods from nuclear reactors, and a new government mandate requires you to purchase a filtration system for your wastewater. The new machine will cost 1.2 million to buy and $10,000 to have it delivered and installed. Buying an adjoining plot of land to install the filtration system will cost additional $100,000. The machine falls under asset class 22 and has a capital cost allowance (CCA) rate of 50%. What will be the un-depreciated capital cost of the new machine in the end of year 2?

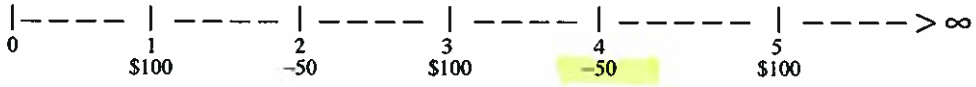
A) $302,500.00
B) $327,500.00
C) $453,750.00
D) $605,000.00
E) $907,500.00

depreciable capital cost $(1.2 + 0.01)$ million
(Land does not depreciate) $= \$1.21$ million.
year 1 UCC $= 1.21 - 0.5 * 0.5 * 1.21 = \$907500$
year UCC $= 0.5 * 907500 = \$453750$

13. Which of the following statements is CORRECT?

A) One of the advantages of the corporate form of organization is that it avoids double taxation.
B) It is easier to transfer one's ownership interest in a partnership than in a corporation.
C) One of the disadvantages of a sole proprietorship is that the proprietor is exposed to unlimited liability.
D) One of the advantages of a partnership is that every partner has equal say in the decision making process of the firm.
E) Corporations are subject to the corporate income tax while partnerships are subject to partnership income tax.

14. Consider a project with the following cashflows: (It pays $100 in year 1, followed by a cost of $50 in year 2, and again $100 in year 3, followed by a cost of $50 in year 4, … the pattern continues forever)



If the appropriate discount rate for this project is 5% (EAR), then the net present value of this project is equal to_____.

A) $512.20
B) $536.58
C) $550
D) $1512.20
E) None of the above

Eff 2 year rate $= 1.05^2 - 1 = 10.25\%$

$$PV_0 = \frac{-50}{0.1025} + \frac{100}{0.1025} * 1.05^{-}$$

$= \$536.58$

15. Which of the following statements is/are true?

I. When IRR, PI, Payback period, discounted payback period and NPV decision rules give conflicting answers, then decision should be based on the PI.
II. IRR decision rule can be reliably used to choose between mutually exclusive projects.
III. Discounted payback period can be reliably used to choose between mutually exclusive projects.

A) I
B) I and II
C) II and III
D) I, II, and III
E) None of the above

16. When the cost of capital is less than IRR for two independent projects, then: (Assume both projects have conventional cash-flows, i.e. one cash outflow at time zero followed by a series of cash inflows)

A) The NPV and IRR methods will always result in the same accept and reject decisions.
B) The project with the highest equivalent NPV should be chosen.
C) The project with the highest IRR should be chosen.
D) The project with the highest PI should be chosen.
E) All of the above.

17. XYZ has a cost of equity (Ke) of 18% and a cost of debt (Kd) of 6%. Equity to debt ratio in it capital structure is 1.5. It has two investment opportunities of similar risk to its existing business. A costs $4m, will yield 9% and B costs $6m will yield 15%. XYZ should:

A) Accept A alone
B) Accept B alone
C) Accept both projects
D) Accept neither project
E) Insufficient information for making any decision.

$\frac{E}{D} = 1.5 \Rightarrow \frac{D}{V} = \frac{1}{2.5}$ and $\frac{E}{V} = \frac{1.5}{2.5}$

$WACC = \frac{1.5}{2.5} * 0.18 + \frac{1}{2.5} * 0.06 * T_c > 10.8\%$

$< 13.2\%$

$\therefore$ Reject A accept B

18. If a project has a discounted payback period within the acceptable time, and it has conventional cash flows

A) It cannot have a negative NPV
B) It must be the best alternative available
C) It can't possibly fail
D) It could still have a negative NPV
E) Choices A and C are correct.

$\sigma_i^2 = \beta^2 \sigma_m^2 + \sigma_{\varepsilon_i}^2$

$\because \sigma_{\varepsilon_i}^2 \geq 0$

$\therefore \sigma_i^2 \geq \sigma_m^2$

19. If a company's shares have a β of 1.0 this means that:

A) The volatility of the share is greater than or equal to the market volatility.
B) The volatility of the share is equal to the market volatility.
C) The volatility of the share is less than or equal to the market volatility.
D) The systematic risk of the share will be zero.
E) None of the above statements are correct.

20. Stock A has a beta of 0.8, while stock B has a beta of 1.6. Which of the following statements is most correct?

$E(r_i) = r_f + \beta_i (E(r_m) - r_f)$

A) Stock B's required return is double that of stock A's.
B) An equally weighted portfolio of stock A and stock B will have a beta less than 1.2. ($= 1.2$)
C) A will outperform B when the market is rising.
D) B will always outperform A. (on average)
E) None of the above statements are correct.

21. Jane holds a large diversified portfolio of 100 randomly selected stocks and the portfolio's beta is 1. Each of the individual stocks in her portfolio has a standard deviation of 20%. John has the same amount of money invested in a single stock with a beta equal to 1.6 and a standard deviation of 20%. Which of the following statements is most correct?

A) Jane's portfolio has a larger amount of systematic risk since she has diversified most of her firm specific risk.
B) Both portfolios will have the same total risk because all of Jane's and John's stocks have the same standard deviation of 20%.
C) Jane's portfolio can be used as a proxy for the market portfolio because its beta is equal to 1 . $\sigma_m^2 \neq \sigma_{Jane}^2$
D) By combining Jane's and John's portfolios in equal proportion a new portfolio can be created whose beta will be 1.3. $0.5 * 1 + 0.5 * 1.6 = 1.3$
E) Statements C and D are correct.

22. The constant growth rate model of the DDM implies that

A) earnings are not relevant to stock prices.
B) dividends remain constant from now to infinity.
C) the stock price grows at the same rate as dividends.
D) Both B and C
E) all of the above are implied by the model

23. WWW Company currently (t = 0) earns $4.00 per share, and has a payout of 40 percent. Dividends are expected to grow at a constant rate of 8 percent per year. The required rate of return is 15 percent. The price of this stock would be estimated at

A) $57.14
B) $22.86
C) $10.67
D) $24.69
E) $11.52

$D_0 = 0.4 * 4 = \$1.6 \Rightarrow D_1 = 1.6 \times 1.08 = \$1.728$

$P_0 = \frac{1.728}{0.15 - 0.08} = \$24.687 \approx \$24.69$

24. You have reason to believe that a company's share price could well increase as the result of a contract it is bidding for. Why might you decide to buy options rather than the shares themselves?

A) There is no risk if you buy options.
B) It is easier to buy options than shares.
C) It is cheaper to buy options than shares.
D) It is tax efficient.
E) Both B and C.

25. When valuing a preferred stock, the type of security that we treat the preferred stock like, for valuation purposes, is

$P_0 = \frac{D}{k_p}$

A) a bond.
B) a perpetuity.
C) a common stock.
D) a non-secured bond
E) None of the above.

26. What is the holding period return of a 9% annual coupon bond with a face value of $1000 and with five years to maturity if it is purchased at the beginning of year 1 at a Yield-to-Maturity (market rate) of 6.0% and sold at the beginning of year 2? Assume that rates do not change.

A) 6%.
B) 7.1%.
C) 6.8%.
D) 7.4%.
E) None of the above.

Equally weighted.

27. Suppose you hold a diversified portfolio consisting of a $10,000 investment in each of 12 different common stocks. The portfolio's beta is 1.25. Now suppose you decided to sell one of your stocks that has a beta of 1.00 and to use the proceeds to buy a replacement stock with a beta of 1.34. What would the portfolio's new beta be? (Assume portfolio is equally weighted)

A) 1.15
B) 1.21
C) 1.28
D) 1.34
E) None of the above.

28. Your subscription to Jogger's World Monthly is about to run out and you have the choice of renewing it by sending in the $10 a year regular rate or of getting a lifetime subscription to the magazine by paying $100. Your cost of capital is 7 percent. How many years would you have to live to make the lifetime subscription the better buy? Payments for the regular subscription are made at the beginning of each year. (Round up if necessary to obtain a whole number of years.):

A) 7 years.
B) 8 years.
C) 10 Years.
D) 16 years.
E) 18 years.

$$\frac{10}{0.07} * \left[1 - \frac{1}{1.07^n}\right] * (1.07) = 100$$

$$1 - \frac{1}{1.07^n} = \frac{100 \times 0.07}{1.07 * 10}$$

$$n \ln(1.07) = \ln(1.07) - \ln(0.33)$$

$$n = 15.695 \text{ years} \approx 16 \text{ years}$$

Part II: Problems (30 Points Total)

- Answer on this document, in the space provided. Use the back of the sheet if you need additional space. Label it clearly. Any work on the back of the sheet, which is not labeled clearly, will not be graded.

Q1. **(8 Points):** The following cash flows are estimated for two projects:

	Project A	Project B
Cost (at t=0)	$2,000,000	$3,000,000
PV of expected future cash flow @ k=15%	$2,500,000	$3,600,000

a) (3 Points) Calculate the net present value for each service. Which is more desirable according to the NPV criterion?

$NPV_A = 2.5 - 2 = 0.5\text{-mill}$ --- 1 Point

$NPV_B = 3.6 - 3 = 0.6\text{ mill}$ --- 1 Point

$\therefore$ Project B is more desirable. --- 1 Point

b) (3 Points) Calculate the profitability index for each service. Which is more desirable according to the PI criterion?

$PI_A = \frac{PV_{inflow}}{PV_{outflow}} = \frac{2.5}{2} = 1.25$ --- 1 Point

$PI_B = \frac{3.6}{3} = 1.2$ --- 1 Point

∴ Project A earns higher return per dollar invested

⇒ A is more desirable according to PI. --- 1 Point

c) (2 Points) Given the following, which project or projects should be chosen?

i. The two projects are mutuall exclusive and the firm does not face any capital constraint

The projects are mutually exclusive and the firm does not face any capital constraint. Therefore pick the project with the higher NPV (Project B). --- 1 Point

ii. The two projects are mutually exclusive however the firm faces capital constraints whereby it has to ensure highest return on invested capital.

To ensure highest return on invested capital, follow the PI Criterion. Pick the firm with higher PI.

--- 1 Point

Select A.

Q2. (7 Points) **This question has two unrelated parts. Information from part (a) should not be used in part (b)**

a) (4 Points) John Doe, a broker with Misery Inc. Investment Company, offers free investment seminars to local PTA groups. On average, John expects 1% of seminar participants to purchase $25,000 in tax-sheltered investments and 5% to purchase $5,000 in stocks and bonds. John earns a 4% net commission on tax shelters and a 1% commission on stocks and bonds. Calculate John's expected net commissions per seminar if attendance averages ten persons.

$E(\text{Net Commission}) = E(\text{Commission on Tax shelters (TS)}) + E(\text{Commission on stocks and Bonds (S\&B)})$

$E(C_{TS}) = 0.01 * 25,000 * 10 * 0.04 = \$100$

$E(C_{S\&B}) = 0.05 * 5000 * 10 * 0.01 = \$25$

$E(NC) = \$100 + \$25 = \underline{\underline{\$125}}$

--- Break down of marks left at instructor's discretion. However if the final answer is incorrect, no more then 2 points must be awarded.

b) (3 Points) XYZ Inc.'s stock has a beta of 1.40, and its required return is 12.00%. ABC Inc.'s stock has a beta of 0.80. If the risk-free rate is 4.75%, what is the required rate of return on Delta stock?

$$E(r_{XYZ}) = 0.12 = r_f + 1.4 * (E(r_m) - r_f)$$

$r_f = 4.75\%$ --- 1 Point

$$\therefore E(r_m) = \frac{(0.12 - 0.0475)}{1.4} + 0.0475$$

$$= 9.929\%$$ --- 1 Point

$$E(r_{ABC}) = 0.0475 + 0.8 * (0.09929 - 0.0475)$$

$$= 8.8932\%$$ --- 1 Point

Q3. (7 Points)

Note: when drawing payoff or profit diagrams, you need to show the location of each important point on the diagram by writing down the relevant numbers next to each point (i.e. indicate intersections with the horizontal and vertical axes and any points where the payoff/profit function changes abruptly).

An investor constructs the following portfolio:

- Short a European Call option with a strike price of \$40.00.
- Short a European Put option with a strike price of \$30.00

This trading strategy is known as a short Strangle.
Assume that the premium on the call is \$3.00 and the premium on the put is \$0.75.

a) (6 Points) Draw the profit diagram for the above short strangle.

--- 0.5 for each axes label (total 1 point)

--- 1 Point for identifying 26.25

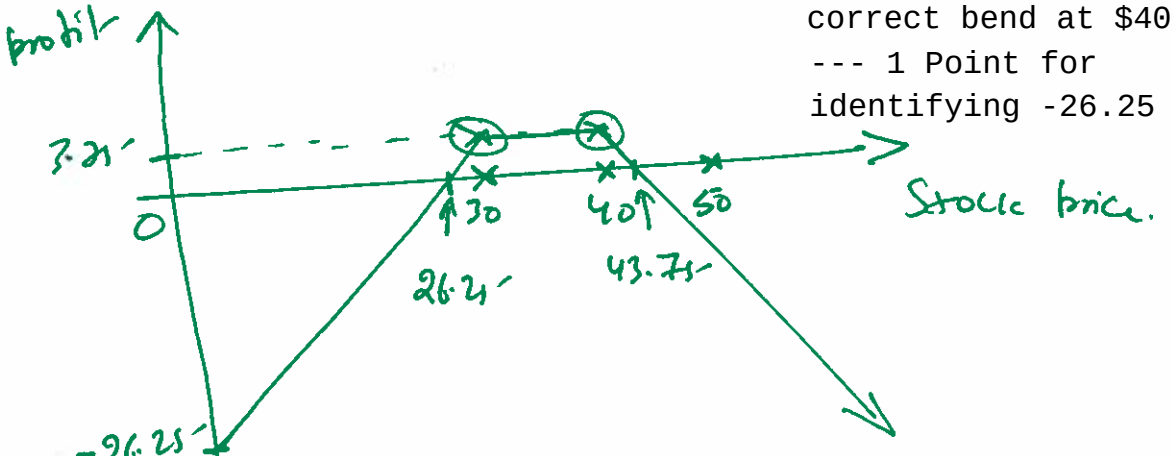
--- 1 Point for identifying 43.75

--- 1 Point for correct bend at \$30

--- 1 Point for correct bend at \$40

--- 1 Point for identifying -26.25

Stock price	∅	\$30	\$40	\$50
Short Call 40	∅	∅	∅	−10
Short Put 30	−30	∅	∅	∅
Cost	3.75	3.75	3.75	3.75
Profit	−26.25	3.75	3.75	−6.25



--- If a student has only drawn the given long and short call options instead of the strategy, award 1 point for each correctly drawn option (Thus maximum 2 points)

b) (1 Point) What is the above short-strangle investor betting on?

Stock price will remain between \$26.25 and \$43.75

Q4. **(8 Points) Short Answers:** --- Part marks at Instructor's discretion

a) (2 Points) The standard deviation measure of risk implicitly gives equal weight to variations on both sides of the expected value. Discuss a potential limitation of this measure of risk?

Standard deviation measures the dispersion around the Expected value (mean). However, if the realised return is above the mean, it is not considered a risk in reality. ∴ The standard deviation, potentially overestimates the risk.

b) (6 Points) In each of the following, describe (with an example) how someone with the stated view on market efficiency would try to make abnormal returns (i.e. "beat the market) in the stock market:

i. Weak form efficiency --- 2 Points

- He believes in weak form Efficiency.
  ∴ he will try to trade using (either/and)
  - firm information from its financial statements etc
  - Insider information.

ii. Semi-strong form efficiency --- 2 Points

- He believes in semi-strong form Efficiency.
  ∴ he will try to trade on insider information in order to beat the market.

iii. Strong form efficiency --- 2 Points

- He believes that the market cannot be beaten. He will not trade.

Equation List - Comm 308 - Booth-Cleary Text

5.3	Present Value of FV_n : $PV_0 = \frac{FV_n}{(1+k)^n}$
5.4	Future value of an annuity: $FV_n = \frac{PMT}{k}\left[(1+k)^n - 1\right]$
5.5	Present Value of an annuity: $PV_n = \frac{PMT}{k}\left[1 - \frac{1}{(1+k)^n}\right]$
5.8	Present value of perpetuity: $PV_0 = \frac{PMT}{k}$
5.10	Effective rate with continuous compounding: $k = e^{QR} - 1$
5.11	Effective rate: $k = \left(1 + \frac{QR}{m}\right)^{\frac{m}{f}} - 1$
5A-2	Present value of growing perpetuity: $PV_0 = \frac{PMT_0(1+g)}{k-g} = \frac{PMT_1}{k-g}$
5A-4	Present value of growing annuity: $PV_0 = \frac{PMT_1}{k-g}\left[1 - \left(\frac{1+g}{1+k}\right)^n\right]$
6.3	Current Yield: $CY = \frac{Annual\ Interest}{B}$
6.6	Price of T-Bill given BEY: $P = \frac{F}{\left(1 + k_{BEY} \times \frac{n}{365}\right)}$
7.10	Share price with growth opportunities: $P_0 = \frac{EPS_1}{k_c} + PVGO$
7.11	Growth rate: $g = b * ROE$
8.3	Total return = Income yield + Capital gain (loss) yield = $\frac{CF_1}{P_0} + \frac{P_1 - P_0}{P_0}$
8.5	Geometric average (GM) $= \left[(1+r_1)(1+r_2)(1+r_3)\times(1+r_n)\right]^{1/n} - 1 = \left(\prod_{i=1}^{n}(1+r_i)\right)^{\frac{1}{n}} - 1$
8.6	Expected return: $ER = \sum_{i=1}^{n}(r_i * \text{Prob}_i)$
8.7	Ex-post $\sigma = \sqrt{\frac{\sum_{i=1}^{n}(r_i - \bar{r})^2}{n-1}}$
8.8	Ex-ante $\sigma = \sqrt{\sum_{i=1}^{n}(\text{Prob}_i)(r_i - ER)^2}$
8.9	Expected portfolio return: $ER_p = \sum_{i=1}^{n}(w_i * ER_i)$
8.11	Portfolio standard deviation: $\sigma_P = \sqrt{(w_A)^2(\sigma_A)^2 + (w_B)^2(\sigma_B)^2 + 2(w_A)(w_B)(COV_{A,B})}$
8.12	$COV_{A,B} = \sum_{i=1}^{n}\text{Prob}_i(r_{A,i} - \bar{r_a})(r_{B,i} - \bar{r_b})$

8.14	$COV_{AB} = \rho_{AB}\sigma_A\sigma_B$
8.16	If $\rho_{AB} = -1$, then: $\sigma_P = w\sigma_A - (1-w)\sigma_B$
9.3	$E(R_P) = RF + \left(\frac{E(R_A) - RF}{\sigma_A}\right)\sigma_P$
9.4	Slope of CML $= \frac{ER_M - RF}{\sigma_M}$
9.6	Sharpe Ratio $= \frac{ER_P - RF}{\sigma_P}$
9.7	$\beta_i = \frac{Cov_{i,M}}{\sigma_M^2} = \frac{\rho_{i,M}\sigma_i}{\sigma_M}$
9.8	$\beta_P = w_A\beta_A + w_B\beta_B + \ldots + w_n\beta_n$
9.9	$k_i = RF + (ER_M - RF)\beta_i$
12.2	*Option* Premium $= IV + TV$
12.5	Put Call Parity: $P + S = C + PV(X)$
13.1	$NPV = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + \mathrm{K} + \frac{CF_n}{(1+k)^n} - CF_0 = \sum_{t=1}^{n}\frac{CF_t}{(1+k)^t} - CF_0$
13.3	$PI = \frac{PV(Cash\ \text{inflows})}{PV(Cash\ \text{outflows})}$
14.1	$CF_0 = C_0 + \Delta NWC_0 + OC$
14.2	$CF_t = CFBT_t(1-T) + CCA_t(T)$
14.4	$ECF_n = SV_n + \Delta NWC_n$
14.5	$NPV = PV(CF_t) + PV(ECF_n) - CF_0$
14.6	$PV(Operating\ Cash\ Flows) = \frac{CFBT(1-T)}{k}\left[1 - \frac{1}{(1+k)^n}\right]$
14.7	$PV(CCA\ Tax\ Shield) = \frac{(C_0)(d)(T)}{d+k} * \frac{(1+0.5k)}{(1+k)} - \frac{(SV_n)(d)(T)}{d+k} * \frac{1}{(1+k)^n}$
20.8	Cost of Capital: $K_a = \frac{ROI \times IC}{V} = \frac{K_e S + K_d(1-T)D}{V} = K_e\frac{S}{V} + K_d(1-T)\frac{D}{V}$
20.9	$WACC = K_e\frac{S}{V} + K_p\frac{P}{V} + K_i\frac{D}{V}$, Where: $K_i = K_d(1-T)$
20.10	Market value: $S = P_0 \times n$
20.13	Net proceeds: $NP = \frac{I(1-T)}{K_i}\left[1 - \frac{1}{(1+K_i)^n}\right] + F\left(\frac{1}{(1+K_i)^n}\right)$
20.14	Cost of preferred shares: $K_p = D_p / NP$
20.17	$K_{ne} = \frac{D_1}{NP} + g$
20.21	$K_e = \frac{D_1}{P_0} + g = \frac{X_1(1-b)}{P_0} + b * ROE$
20.27	Cost of new equity: $K_{ne} = K_e * \frac{P_0}{NP}$