



COURSE COMM	NUMBER 308	SECTION DD/J	
EXAMINATION MIDTERM	DATE November 9, 2014	TIME 10:00-12:00	# OF PAGES 6+ cover page
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INSTRUCTIONS: <ol style="list-style-type: none">1. Write your name and student number on the answer sheet.2. Write answers to the part I and part II on the answer sheet.3. Please outline solutions and indicate intermediate steps and calculations. Partial credit will be awarded if you provide sufficient evidence of approaching the problem correctly.4. Notes or texts are not allowed. You can only use calculators during the exam. <p style="text-align: center;">Good Luck!</p>			

Part 1 Multiple Choice (76 Mark)

- Which of the following is **NOT** a true statement of the Net Present Value (NPV) analysis?
 - The NPV of a project is the sum of the present value of all future after-tax incremental cash flows generated by an initial cash outlay, minus the present value of the investment outlays.**
 - Projects that have a positive NPV should be accepted, and projects that have a negative NPV should be rejected.
 - The NPV is the present value of the expected cash flows net of the costs needed to generate them.
 - The firm's after-tax marginal cost of capital is the appropriate discount rate for all projects.
- Suppose the Canadian Space Agency has two mutually exclusive projects: landing a woman on Mars and landing a man on Venus. Project Mars has an IRR of 12 percent and project Venus has an IRR of 15 percent. The crossover rate is 9 percent. The project's appropriate discount rate is 18 percent.
 - Accept project Mars.
 - Accept project Venus.
 - Accept both projects.
 - Accept neither project.**
- Consider a five-year project that costs \$20,000 today, which is expected to generate \$6,000 at the end of the second year and then the cash flows will increase by \$1,000 per year for each of the subsequent years. The cost of capital is 8 percent. What are the project's NPV and IRR?
 - NPV = \$1,083.24; IRR = 8.96%
 - NPV = \$2,706.35; IRR = 11.93%**
 - NPV = \$3,824.56; IRR = 14.87%
 - NPV = \$4,522.85; IRR = 17.09%
- Consider a project that requires an immediate cash outflow of \$100,000 and provides a perpetual annual inflow of \$15,000 starting two years from today. The cost of capital is 12 percent. What is the project's PI?
 - 1.04
 - 1.12**
 - 1.25
 - 1.33
- Fancy Fashions common stock has just paid a dividend of \$1.8 per share and is selling for \$34.48 each. The firm expects its dividend to grow at a constant rate of 6.3 percent a year. What is the risk premium associated with the stock if the risk free rate is 4.25 percent?
 - 7.27%
 - 7.60%**
 - 11.52%

D. 11.85%

6. Never-On-Time Transportation Inc. has issued \$2.5 million in preferred shares with a par value of \$20 each and an annual dividend rate of 8.25 percent. The market value of the preferred shares is _____ if the required rate of return is 12 percent.

A. \$1.72 million
B. \$2.5 million
C. \$3.64 million
D. \$34.38 million

7. Suppose the beta of a four-asset portfolio is 1.8. The portfolio is composed of \$1,500 invested in Stock W, \$2,000 in Stock X, \$2,500 in Stock Y, and \$3,000 in Stock Z. What is the beta of Stock Z if the betas of Stock W, X, and Y are 0.7, 1.3, and 2.5, respectively?

A. 0.7
B. 1.1
C. 1.6
D. 2.1

8. The expected return on the market is 14 percent with a standard deviation of 18 percent and the risk free rate is 5 percent. Which of the following portfolios are underpriced?

Portfolio	Expected Return	Beta
1	18%	1.3
2	14%	1.1
3	12%	0.7
4	8%	0.6

A. 1 and 2 only

B. 1 and 3 only

C. 2 and 3 only

D. 3 and 4 only

9. Which of the following amounts is closest to what should be paid for Overland common stock? Overland has just paid a dividend of \$2.25. These dividends are expected to grow at a rate of 5% in the foreseeable future. The risk of this company suggests that future cash flows should be discounted at a rate of 11%.

A) \$ 39.375. B) \$ 37.50 C) \$ 21.48 D) \$ 20.45

E) None of the above.

10. Which of the following is a FALSE statement of the security market line (SML)?

A. It is upward sloping, which indicates that investors require a higher expected return on riskier securities.

B. It represents the trade off between total risk and the required rate of return for any risky security.

C. It indicates that the size of risk premium varies directly with a security's market risk, as measured by beta.

D. It implies that securities with betas less than the market beta of 1.0 are less risky than the "average" stock and will therefore have lower required rates of return.

E. None of the above

11. Fizzy Drinks has just announced a dividend of \$0.80 for this year and \$0.835 for the next year. Dividends are expected to grow at a constant rate indefinitely. What is the current stock price if the required return is 13.1 percent?

- A. \$8.55
- B. \$9.35
- C. \$9.57**
- D. \$10.37

12. Use the following two statements to answer this question:

- I. The CAPM points out that rational investors should be compensated for unique risk.
- II. The CAPM implies that unsystematic risk is the appropriate measure of risk to determine the risk premium required by investors for holding a risky security.

- A. I and II are correct.
- B. I and II are incorrect.**
- C. I is correct, II is incorrect.
- D. I is incorrect, II is correct.

13. Which of the following is NOT a correct statement of the Constant Growth DDM?

- A. It holds only when growth in dividends is expected to occur at the same rate indefinitely.
- B. It holds only when $k_e < g$.**
- C. It is a version of the dividend discount model for valuing common shares that assumes that dividends grow at a constant rate indefinitely.
- D. Only future estimated cash flows and estimated growth in these cash flows are relevant.

14. Given the following information, what is the beta of Stock X?

Month	Stock X Return	S&P/TSX Return
January	10%	8%
February	8%	12%
March	-5%	5%
April	-10%	-2%
May	9%	5%
June	15%	10%

- A. 0.08
- B. 0.41
- C. 0.62
- D. 1.61**

15. Which of the following investments would a risk averse investor prefer if the risk free rate is zero?

Investment	Cost Today	Value of Investment if:	
		Market Return > 0% Probability: 40%	Market Return < 0% Probability: 60%
I	\$20	\$20	\$20
II	\$15	\$30	\$0
III	\$0	-\$10	\$10

- A. I only
- B. II only
- C. III only**
- D. I and III only

16. The Sunshine Bathing Suit Company is considering investing in a project to develop a self-cooling bathing suit. This bathing suit will keep people cool without them having to go for a swim—great for parties. The marketing department feels this will be a great addition to their thermal bathing suit product (“keeps you warm for winter swims”). The managers have developed the following cash flow estimates (assume the firm pays no taxes)”

- Annual sales of self-cooling bathing suits=\$25,000
- Annual production costs of self-cooling bathing suits=\$19,000
- Annual loss of sales of thermal bathing suits=\$15,000
- Annual reduction in production costs of thermal bathing suits due to loss of sales=\$10,000
- Research and development costs incurred over the last 4 years to develop the self-cooling bathing suit=\$4,000

The relevant annual cash flow to be used in evaluating the investment in self-cooling bathing suits is:

- A. -\$9,000
- B. \$6,000
- C. \$5,600
- D. \$1,000**
- E. \$400

17. You have observed the following information about the two stocks you hold in your portfolio:

	Stock X	Stock Y
Expected return	10%	5%
Standard deviation of returns	8%	2%
Value	\$15,000	\$25,000

The correlation between X and Y is 0.45. The expected return and standard deviation of your portfolio are closest to:

- | Expected return; | Standard deviation |
|------------------|--------------------|
| A. 6.88% | ; 3.25% |
| B. 6.88% | ; 3.73% |
| C. 8.13% | ; 5.06% |
| D. 8.13% | ; 5.38% |

18. You observe the following:

- I. You use a simple trading rule; buy every stock that has gone up three days in a row, hold the stock for 2 days and then sell. On average, you make an unusual profit using this strategy.
- II. On average, the CEO of XYZ corporation does not make unusual profits trading the stock of XYZ corporation.

Which of the following statements is most correct?

A. I is not consistent with weak-form market efficiency while II is consistent with strong form efficiency.

B. I is not consistent with weak-form market efficiency while II is not consistent with strong form efficiency.

C. I is consistent with weak-form market efficiency while II is consistent with strong form efficiency.

D. I is consistent with weak-form market efficiency while II is not consistent with strong form efficiency.

19. What is the discounted payback period of a five-year project that costs \$18,000 today and pays an annual cash flow of \$7,500? Assume the cost of capital is 15%.

- A. 2.40
- B. 3.12
- C. 3.20**
- D. 3.80

Part 2 Problem Solving (24Mark)

1. MacLean, Inc. currently pays no dividends. Today, the firm announced that it will pay its first dividend of \$1 per share in four years, then \$1.5 in each of the following three years, and the subsequent dividends are expected to grow at a constant rate of 5 percent per year. What is the stock price today if the risk free rate is 4 percent and the risk premium associated with this stock is 6 percent? (6 mark)

Solution:

Discount rate=4%+6%=10%

Dividend at Year 4 \$1

Dividend at Year 5 \$1.5

Dividend at Year 6 \$1.5

Dividend at Year 7 \$1.5

Dividend at Year 8 $\$1.5 \times 1.05 = 1.575$

PV at year 7 $= 1.575 / (10\% - 5\%) = \31.5

PV at year 4 $= 1 + 1.5/1.1 + 1.5/1.1^2 + (1.5 + 31.5)/1.1^3 = 1 + 1.36 + 1.24 + 24.79 = 28.39$

PV at year 0 $= 28.39 / 1.1^4 = 19.40$

2. ABC Inc. is considering purchasing one machine which costs \$220,000. The useful life is four years and a salvage value is \$8,000. The CCA rate of the machine is 25%. The new machine will increase sales by \$90,000, \$85,000, \$75,000 and \$70,000 in years 1, 2, 3, and 4 respectively. The firm must invest \$5,000 in NWC today, and then NWC must be maintained at 10% of sales revenue. The discount rate is 8% and the tax rate is 40%. (13 mark)

a). You will find below a partially completed cash flow NPV table corresponding to the above problem. (Exclude CCA tax shields) Complete the table by filling in the missing numbers.

Year	0	1	2	3	4
Operating Income		90000	85000	75000	70000
After tax operating income		54000	51000	45000	42000

NWC	5000	9000	8500	7500	7000
Change of NWC	-5000	-4000	500	1000	500
NWC recapture					7000

Investment	-220000				
Salvage value					8000

Total CF	-225000	50000	51500	46000	57500
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PV of CF	-225000	46296.3	44152.95	36516.28	42264.22
NPV	-55770.3				

b). what is the PV of the CCA tax shields of the machine?

$$\text{PV of tax shields} = \frac{220,000 \times 0.25 \times 0.4}{0.08 + 0.25} \times \frac{1 + 0.5 \times 0.08}{1 + 0.08} - \frac{8,000 \times 0.25 \times 0.4}{0.08 + 0.25} \times \frac{1}{(1 + 0.08)^4}$$

= \$62,415

c). what is the NPV of the above project take into account the PV of the CCA tax saving? Should the company implement the project?

$$\text{NPV} = -55,770 + 62,415 = \$6,645.$$

Accept the project.

3. XYZ Inc. must purchase one new machine- choice has been narrowed down to two models, both of which would product the same revenue for the company. The discount rate is 10%. The information for both machines is as follows:

Initial outlay	Operating costs per year	Life
\$500	\$120	3
\$600	\$100	4

Which one should the firm buy? (5 marks)

$$\text{NPV of A} = 798.42$$

$$\text{NPV of B} = 916.99$$

$$\text{EAC of A} = 321.05$$

$$\text{EAC of B} = 289.28$$

Should buy B

