FIN2004/X
MID-TERM

Semester II, 2016/2017

INSTRUCTIONS:

1. This is a restricted open-book examination, consisting of 30 Multiple Choice Questions on **TWELVE** printed pages. You are allowed to refer to ONE A4-sized sheet of printed/written materials and up to two calculators.
2. You are given **80 MINUTES** to complete the test.
3. Use a **PENCIL** to fully shade the most appropriate answer for each question in the answer sheet provided.
4. Remember to **WRITE ONLY YOUR MATRICULATION NUMBER AND SHADE THE APPROPRIATE BUBBLES** on the MCQ answer sheet as previously instructed.
5. **ANSWER ALL QUESTIONS**. There are no penalties for wrong answers.
6. **NO "SMART" DEVICES OF ANY FORM ARE PERMITTED**.

Use the following information to answer questions #1 – #6:

Aphrodite Ltd.
2016 and 2017 Balance Sheet

	2017	***2016***		***2017***	***2016***
Cash	$312,000	$220,000	Accounts Payable	$?	$150,000
Accounts Receivable	150,000	190,000	Notes Payable	150,000	120,000
Inventory	?	95,000	Total CL	330,000	$270,000
Total CA	587,000	$505,000			
			Long-Term Debt	157,000	130,000
Net Fixed Assets	455,000	375,000	Common Stock	100,000	100,000
			Retained Earnings	455,000	380,000
Total Assets	1,042,000	$880,000	Total Liab & Equity	1,042,000	$880,000

Aprodite Ltd.
2017 Income Statement

Sales	$ 1,350,000
Cost of Goods Sold	965,000
Depreciation Expense	125,000
Earnings before Interest and Tax	260,000
Interest Expense	?
Taxable Income	?
Less: Taxes (40%)	?
Net Income	$?

You have obtained Aphrodite Ltd's financial statements. However, some pieces of information in the statements are missing. Additionally, you have been given the following ratio:

Dividend Payout Ratio in 2017 = 50%

1. What is the amount of "Change in NOWC" for 2017 (please refer to NOWC as defined and applied in your class notes)?
   A. $22,000
   B. - $52,000
   C. $52,000
   D. - $22,000
   E. None of the above choices are correct

Answer:
C. $52,000

Change in NOWC 2017 = (587,000 – 180,000) – (505,000 – 150,000) = $52,000

2. What is the amount of Cash Flow From Assets (CFFA) for 2017 (please refer to CFFA as defined and applied in your class notes)?
   a. $288,000
   b. $128,000
   c. $54,000
   d. $24,000
   e. None of the above choices are correct

Answer:
D. $24,000

Cashflow From Assets = OCF – NCS – Change in NOWC
= [(260,000)*(1-0.4) + 125,000] – (455,000 – 375,000 + 125,000) – 52,000
= 281,000 – 205,000 – 52,000 = $24,000

As the Dividend Payout Ratio was not specifically defined in your notes, all answers were accepted for questions #3-#6.

3. What is the amount of Dividends paid to Stockholders for 2017?
   a. - $75,000
   b. $75,000
   c. - $100,000
   d. $100,000
   e. None of the above choices are correct

Answer:
B. $75,000

Change in Retained Earnings = $455,000 – 380,000 = $75,000
Since Dividend Payout is 50% of Net Income, then Change in RE is also 50% of Net Income.
Thus Dividend Payout is $75,000 and Net Income is $150,000.

4. What is the amount of Cashflow to Stockholders for 2017 (please refer to Cashflow to Stockholders as defined and applied in your class notes)?
   a. - $75,000
   b. $75,000
   c. - $100,000
   d. $100,000

e. None of the above choices are correct

Answer:
B. $75,000

Cashflow to Stockholders = Dividends – Net New Equity
= (455,000 – 380,000) – (100,000 – 100,000) = $75,000

5. What is the amount of Interest Tax Shield for 2017?
   a. $20,000
   b. $14,000
   c. $10,000
   d. $4,000
   e. None of the above choices are correct

Answer:
Net Income = 75,000/0.5 = $150,000
Taxable Income = 150,000/0.6 = $250,000
Interest Expense = 260,000 – 250,000 = $10,000
Interest Tax Shield = 40%*$10,000 = 4,000

D. $4,000

6. What is amount of Cashflow to Creditors for 2017 (please refer to Cashflow to Creditors as defined and applied in your class notes)?
   a. $57,000
   b. - $47,000
   c. - $57,000
   d. $47,000
   e. None of the above choices are correct

Answer:
B. - $47,000

Net Income = 75,000/0.5 = $150,000
Taxable Income = 150,000/0.6 = $250,000
Interest Expense = 260,000 – 250,000 = $10,000
Cashflow to Creditors = Interest Expense – Net New Borrowing
= 10,000 – [(150,000+157,000) – (120,000+130,000)] = -$47,000

7. Adonis' portfolio is composed of only two assets: the market portfolio and the risk-free asset. Adonis has invested $100,000 of his own money in the market portfolio. His portfolio has a beta of 1.5. How much has Adonis borrowed at the risk-free rate?

   A. $150,000
   B. $100,000
   C. $50,000
   D. $25,000
   E. None of the above

   150,000/100,000 *(Beta of Market = 1) + -50,000/100,000 *(Beta = 0) = 1.5

8. Athena is an analyst considering the following three firms. Which of the statements about the below stocks is correct?

	Beta	Standard Deviation
Stock A	0.50	30%
Stock B	1.00	30%
Stock C	1.50	30%

A. Firm A has the highest amount of systematic risk and the least diversifiable risk
B. Firm B has the highest amount of systematic risk and the least diversifiable risk
C. Firm C has the highest amount of systematic risk and the least diversifiable risk
D. Firms A, B and C all have the same amount of diversifiable risk
E. None of the above statements are correct.

9. Which of the following statements is **TRUE**?

A) The CML shows the SML to be false
B) The SML relates expected return to total risk
C) The slope of the SML is different for every stock
D) The SML relates measures of market risk to required return
E) All of the above are true

10. You have just charged your entire Athens holiday expenses of $3,500 to your credit card, which charges a 24% APR, with monthly compounding. Today you receive a call from a rival bank offering you the chance to transfer this outstanding balance to their company, which charges only 6% APR, with monthly compounding. If you can only afford to make $150 payments every month, how many months sooner will you be able to pay off this debt using this new rival bank's offer?

a. 2.36 months
b. 3.18 months
c. 4.63 months
d. 5.24 months
e. 6.87 months

Answer:
E. 6.87 months

N	**I/Y**	**PV**	**PMT**	**FV**
Cpt = 31.744	**24/12**	**$3,500**	**-$150**	

N	**I/Y**	**PV**	**PMT**	**FV**
Cpt = 24.873	**6/12**	**$3,500**	**-$150**	

Difference = 31.744 – 24.873 = 6.87 months

11. Which one of the following statements is correct concerning portfolio betas?

I. Portfolio betas range between -1.0 and +1.0.
II. A portfolio beta is a weighted average of the betas of the individual securities contained in the portfolio.
III. A portfolio of Singapore Government Security 3-Mth Bills will have a beta of at least +1.0.
IV. A portfolio with a beta of zero will always also have a standard deviation of zero.

a. I only
b. II only
c. I and II only
d. II and IV only
e. III and IV only

Answer:
B. II only

12. Which of the following is/are the most likely reason/s why a stock price might **not** react at all on the day that news related to the stock issuer is released?

I. Management knew the information prior to the announcement, although the public did not know
II. Investors need time (sometimes weeks) to digest the information prior to reacting
III. The information only impacts the firm's long-term cash flow projections and does not affect its short-term cash flow projections.
IV. The information was widely anticipated

a. I and II only
b. III only
c. II and III only
d. IV only
e. III and IV only

Answer:
D. IV only

13. Assuming all four data items listed below (I, II, III, IV) are available for an asset, which of the following would you **NOT *need*** to know to estimate the amount of additional reward you will receive for purchasing a risky asset instead of a risk-free asset?

I. Asset's standard deviation
II. Asset's beta
III. Risk-free rate of return
IV. Market risk premium

a. I and III only
b. II and IV only
c. III and IV only
d. I, III, and IV only
e. I, II, III, and IV

Answer:
A. I and III only

14. A firm has a return on total assets of 8 percent and a return on total equity of 13 percent. What is the firm's debt ratio?

a. 38 percent
b. 50 percent
c. 62 percent
d. 163 percent
e. 260 percent

Answer:
A. 38 percent

NI/TA = 0.08; NI/TE = 0.13
→ TE/TA = 0.08/0.13 = 0.62
→ TD/TA = 1 – TE/TA = 0.38

15. An investment pays you 9% nominal annual interest compounded semiannually. A second investment of the same risk level, pays interest compounded quarterly. What nominal annual rate of interest would you have to receive on the second investment in order to make you indifferent between the two investments?

16.

A. 8.71%
B. 8.85%
C. 8.90%
D. 9.31%
E. 9.20%

Since the two investment have the same risk, they must achieve the same EAR:
EAR = $(1 + 9\%/2)^2 - 1 = 9.2025\%$
$(1 + I/4)^4 - 1 = 9.2025\%$ ➔ $I = 8.90\%$

16. Which of the following statements is most CORRECT?
A. The slope of the security market line is equal to the market risk premium.
B. The slope of the security market line is equal to the market return.
C. The slope of the security market line is equal to the beta of the market portfolio.
D. If investors are less risk-averse, the slope of the security market line will increase.
E. If the risk-free rate rises, the slope of the security market line will also rise.

17. Stock A has a beta of 1.5 and Stock B has a beta of 0.5. Which of the following statements is most CORRECT?
A. When held in isolation, Stock A has more risk than Stock B.
B. In equilibrium, the expected return on Stock A will be greater than that on Stock B.
C. In equilibrium, the expected return on Stock B will be greater than that on Stock A.
D. Stock A would be a more desirable addition to a portfolio than Stock B.
E. Stock B would be a more desirable addition to a portfolio than Stock A.

18. You observe the following information regarding Company X and Company Y:

- Company X has a higher expected return than Company Y.
- Company X has a lower standard deviation of returns than Company Y.
- Company X has a higher beta than Company Y.

Given this information, which of the following statements is most CORRECT?
A. Company X has more company-specific risk than Company Y.
B. Company X has a lower coefficient of variation than Company Y.
C. Company X's stock is a better buy than Company Y's stock.
D. Company X has less market risk than Company Y.
E. Company X's returns will be negative when Y's returns are positive.

19. You want to borrow $1,000 from a friend for one year, and you propose to pay her $1,120 at the end of the year. She agrees to lend you the $1,000, but she wants you to pay her $10 of interest at the end of each of the first 11 months plus $1,010 at the end of the 12th month. How much higher is the effective annual rate under your friend's proposal than under your proposal?
A. 0.00 percentage point
B. 0.45 percentage point
C. 0.68 percentage point
D. 0.89 percentage point
E. 1.00 percentage point

For monthly payment, EAR = $(1 + 1\%)^{12} - 1 = 12.68\%$

$12.68\% - 12\% = 0.68\%$

20. An investment pays $5,000 at the end of each of the next five years. You plan to invest the money in an account paying 8% interest, compounded monthly. The amount you will have in the account after receiving the final $5,000 payment in 5 years is closest to:
A. $29,333
B. $29,509
C. $367,384
D. $304,970
E. $25,348

EAR = $(1 + 8\%/12)^{12} - 1 = 8.29995\%$

N = 5, I = 8.29995, PV = 0, PMT = 5000 ➔ FV = $29,509

21. Your Dad has $722,985.95 in his bank account earning at 5.5% annual interest (compounded annually), and he now wants to retire. He wants to withdraw $45,000 at the end of each year, the first withdrawal starts one year from now. He also wants to have $50,000 left to give you at the time he makes the last withdrawal. For how many years can he make the $45,000 withdrawals and still have $50,000 left for you immediately after the last withdrawal?
A. 37
B. 38
C. 39
D. 40
E. 41

I = 5.5, PV = 722.985.95, PMT = -45,000, FV = -50000 ➔ N = 39

22. You are willing to pay $15,625 to purchase a perpetuity that will pay you and your heirs $1,250 each year, forever, with the first payment at the end of this year. If your required rate of return does not change, how much would you be willing to pay if this were a 20-year annual payment of $1,250, ordinary annuity instead of the perpetuity?

A. $12,273
B. $11,931
C. $10,342
D. $13,922
E. $17,157

$1,250 / r = $15,625 ➔ r = 8%

N = 20, I = 8, PMT = 1250, FV = 0 ➔ PV = $12,273

23. Srinivasan Co.'s stock has a beta of 1.50, its required return is 14%, its expected return is 11%, and the risk-free rate is 5%. What is the required rate of return on the stock market?

A. 11%
B. 9%
C. 9.5%
D. 6%
E. 6.5%

$14\% = 5\% + 1.50(r_M - 5\%)$ ➔ $r_M = 11\%$

24. A firm wants to strengthen its financial position. Which of the following actions would increase its quick ratio?

A. Offer price reductions along with generous credit terms that enable the firm to (1) sell some of its excess inventory and (2) increase in accounts receivable.
B. Collect some of its receivables and use the cash generated to increase its inventories.
C. Use some of its cash to purchase additional inventories.
D. Issue new common stock and use the proceeds to acquire additional fixed assets.
E. Issue new common stock and use the proceeds to increase inventories.

25. Which of the following statements is most CORRECT?

A. An increase in the DSO, other things held constant, could be expected to increase the ROE.
B. An increase in the DSO, other things held constant, could be expected to increase the total assets turnover ratio.
C. An increase in a firm's debt ratio, with no changes in its sales or operating costs, could be expected to lower the profit margin.
D. The ratio of long-term debt to total equity is more likely to experience seasonal fluctuations than is either the DSO or the inventory turnover ratio.
E. If two firms have the same ROA, the firm with more debt can be expected to have the lower ROE.

26. Assume a firm is 100% equity financed. Calculate the return on equity (ROE), given the following information:

Earnings before taxes	$1,500
Sales	$5,000
Dividend payout ratio	60%
Total assets turnover	2.0
Tax rate	30%

A. 25%
B. 30%
C. 35%
D. 42%
E. There is insufficient information to compute the ROE

Net profit margin = $1,500(1 – 0.3) / $5,000 = 21%

100% equity financed ➔ Equity multiplier = 1

ROE = (PM)(TATO)(EM) = (21%)(2)(1) = 42%

27. A company recently reported the following:

Net income	$500,000
ROA	10%
Interest expense	$200,000

The company's tax rate is 40%. What is the company's basic earning power (BEP)?
A. 14.12%
B. 16.67%
C. 17.33%
D. 20.67%
E. 22.50%

ROA = NI / TA ➔ 10% = $500,000 / TA ➔ TA = $5,000,000

EBT = NI / (1 – T) = $500,000/(1 – 0.4) = $833,333.33

EBIT = EBT + Interest = $833,333.33 + $200,000 = $1,033,333.33

BEP = EBIT / TA = $1,033,333.33 / $5,000,000 = 20.67%

28. Today, you are retiring. You have a total of $1,350,000 in your retirement savings account that yields an average of 2.5 percent, compounded monthly, throughout your retirement years. You are deciding between withdrawing an equal monthly amount starting immediately and subsequently at the beginning of every month for the next 20 years or waiting till the end of the month and subsequently at the end of every month for the next 20 years instead. What would be the difference in amount you can withdraw monthly **if you start immediately**?

a. $176.01 less each month
b. $14.87 less each month
c. $14.87 more each month
d. $176.01 more each month
e. No difference

Answer:
B. $14.87 less each month

In END mode

N	I/Y	PV	PMT	FV
240	2.5/12	1,350,000	cpt -$7,153.69	

In BEG mode

N	I/Y	PV	PMT	FV
240	2.5/12	1,350,000	cpt -$7,138.82	

Alternatively, if withdrawal starts immediately, then the PV of the ordinary annuity can be calculated as
$1,350,000/(1+r), where r = 2.5%/12 → $1,347,193.35

In END mode

N	I/Y	PV	PMT	FV
240	2.5/12	1,347,193.35	cpt -$7,138.82	

Difference = $7138.82 - $7153.69 = -$14.87

29. Hwee Hoon is 30 years old today and he is planning to save $2,000 per month for the next 25 years toward retirement, with the first deposit to be made at the end of the month. He expects to live for 35 years after retirement. Hwee Hoon would like to withdraw $3,500 a month starting immediately on retirement for the first 15 years. However, with increasing age, he wants to be able to withdraw a higher amount at the beginning of each month for the remaining 20 years of retirement. If this retirement account earns 4% APR, what is the amount that Matthias can withdraw for the final 20 years of retirement?

a. $5,623.58
b. $6,085.29
c. $4,752.37
d. $6,734.19
e. $5,127.06

Answer:
B. $6,085.29

First, find FV the 25-year annuity of $2,000:
N = 300; I = 4/12; PMT = 2,000 (END); Cpt FV = 1,028,259.10.

Next, find the PV of the first 15 years of withdrawals of $3,500:
N = 180; I = 4/12; PMT = 3,500 (BEG); Cpt PV = 474,749.76.

→ Remaining amount available = $1,028,259.10 - $474,749.76 = $553,509.33

Then, find PV of the 20-year annuity due:
N = 180; I = 4/12; PV = 553,509.33; Cpt FV = $1,007,553.93.

Finally, find PMT of the 20-year annuity due:
N = 240; I = 4/12; PV = 1,007,553.93; Cpt PMT = $6,085.29.

30. Given the information below, which of the following statement/s below is/are true?

	Expected Return	Beta	Standard Deviation
Stock J	14.6%	1.45	14.7%
Stock K	10.8%	0.85	16.2%

Risk Free Rate = 3.5%; Market Risk Premium = 8.0%

I. Stock J will plot below the Security Market Line.
II. Stock K has higher unsystematic risk than Stock J.
III. The Reward-to-Systematic Risk ratio of Stock K is more than that of Stock J.
IV. Stock J has higher CV than Stock K.

a. I only.
b. II and III only.
c. I, II and III only.
d. III and IV only.
e. All of the above statements are true.

Answer:
C. I, II and III only.

Required Return for Stock J = 3.5% + 1.45*8% = 15.1% → overpriced (below SML)
Required Return for Stock K = 3.5% + 0.85*8% = 10.3% → underpriced (above SML)
CV for Stock J = 14.7%/14.6% = 1.01; CV for Stock K = 16.2%/10.8% = 1.50
Stock K has higher total risk but lower market risk → higher unsystematic risk.
Reward-to-Systematic risk ratio for Stock J = (14.6%-3.5%)/1.45 = 0.0766
Reward-to-Systematic risk ratio for Stock K = (10.8%-3.5%)/0.85 = 0.0859