FIN2004/X

MID-TERM

Semester II, 2017/2018

INSTRUCTIONS:

1. This is a restricted open-book examination, consisting of 30 Multiple Choice Questions on **ELEVEN** printed pages, including this cover page. 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 – #5:

Perfectly-On-Time Pte Ltd
2017 and 2018 Balance Sheet

	2018	***2017***		***2018***	***2017***
Cash	$140,000	$140,000	Accounts Payable	$135,000	$135,000
Accounts Receivable	110,000	125,000	Notes Payable	125,000	105,000
Inventory	75,000	75,000	Total CL	$260,000	$240,000
Total CA	325,000	$340,000			
			Long-Term Debt	255,000	270,000
Net Fixed Assets	520,000	420,000	Common Stock	120,000	130,000
			Retained Earnings	210,000	120,000
Total Assets	845,000	$760,000	Total Liab & Equity	845,000	$760,000

Perfectly-On-Time Ltd
2018 Income Statement

Sales	$	2,500,000
Cost of Goods Sold		1,800,000
Depreciation Expense		350,000
Earnings before Interest and Tax		350,000
Interest Expense		25,000
Taxable Income		325,000
Less: Taxes (40%)		130,000
Net Income	$	195,000

1. What is the amount of "Interest Tax Shield" for 2018 (please refer to interest tax shield as defined and applied in your class notes)?

    a) $8,500
    b) $9,500
    c) $10,000
    d) $12,500
    e) None of the above choices are correct

=25,000*.4 = 10,000

2. What is amount of Cashflow to Creditors for 2018 (please refer to Cashflow to Creditors as defined and applied in your class notes)?

   a) $20, 000
   b) - $20,000
   c) $65,000
   d) - $65,000
   e) None of the above choices are correct

= Interest – New Debt = 25,000 – [125,000 + 255,000 – 105,000 – 270,000] = 20,000

3. What is amount of Cashflow to Stockholders for 2018 (please refer to Cashflow to Stockholders as defined and applied in your class notes)?

   a) - $50,000
   b) - $100,000
   c) $100,000
   d) $115,000
   e) None of the above choices are correct

= Dividends – New Equity = [195,000 – (210,000 – 120,000)] - [120,000 – 130,000] = 115,000

4. What is the amount of "Change in NOWC" for 2018 (please refer to NOWC as defined and applied in your class notes)?

   a) $25,000
   b) - $15,000
   c) $30,000
   d) - $20,000
   e) None of the above choices are correct

=[325,000 – 135,000] - [340,000 – 135,000] = - 15,000

5. What is the amount of Cash Flow From Assets (CFFA) for 2018 (please refer to CFFA as defined and applied in your class notes)?

   a) $125,000
   b) - $125,000
   c) - $100,000
   d) $105,000
   e) None of the above choices are correct

OCF = 350,000 *(1 – 0.4) + 350,000 = 560,000

Change in NOWC = -15,000
Net Capital Spending = [520,000 – 420,000 + 350,000] = 450,000

CFFA = 560,000 - -15,000 – 450,000 = 125,000

6. Today, you sold 100 shares of Kane Inc. stock at $9.10 per share. Your total return on these shares is 12%. You had purchased the shares one year ago at a price of $8.50 per share. How much dividend per share did you receive this year?

   a) $0.58
   b) $0.42
   c) $0.23
   d) $0.14
   e) $0.06

Answer: (B)

(9.10 – 8.50 + Dividend) / 8.50 = 0.12
Dividend = 0.42

7. A firm has a return on equity of 15%. The total asset turnover is 1.25 and the profit margin is 10%. The total equity is $13,200. What is the amount of debt the firm has?

   a) $2,480
   b) $2,400
   c) $2,540
   d) $2,460
   e) $2,640

Answer: (E)

Using the Du Pont identity: ROE = PM*TATO*EM
→ 15% = 10%*1.25*EM; EM = 1.2
D/E = 1.2 – 1 = 0.2; Debt = 0.2*13,200 = $2,640

8. Which of the following statements is CORRECT?

   I. A decrease in the inflation rate, all else unchanged, will cause the slope of the SML line to decrease.
   II. Efficient portfolios are those portfolios that result in the maximum risk for a given level of return.

III. All portfolios along the CML have a lower beta than all portfolios along the efficient frontier.

a) I and II only
b) II only
c) II and III only
d) III only
e) None of the above statements are correct

Answer: (E)

9. What is the arithmetic average return for the below considered stock? Dividend Yield for Year 5 is 3.5%.

Year	End of Year Price	Dividends Received
1	$12.30	
2	13.21	$0.30
3	11.79	0.40
4	12.86	0.40
5	11.82	**?**

a) 1.5%
b) 1.8%
c) 2.0%
d) 2.5%
e) 2.9%

Answer: (D)

Y = $12.86*0.035 = $0.45
Arithmetic Average Return
= [(13.21-12.30+0.30)/12.30+(11.79-13.21+0.40)/13.21+(12.86-11.79+0.40)/11.79+(11.82-12.86+0.45)/12.86]/4 = 0.025

10. You currently have an outstanding balance of $4,200 on your credit card that charges 24% APR, monthly compounding. You are evaluating doing a balance transfer to a rival credit loan of a lower interest rate. You currently only pay down $200 every month for your credit card bill. You want to continue paying $200 per month for this new credit loan. Based on your calculations, you can pay off the full outstanding amount 3 months faster with the credit loan. What APR does the new credit loan charge?

a) 15%
b) 18%
c) 12%
d) 9%
e) Insufficient information to derive

Answer: (A)

N	I/Y	PV	PMT	FV
Cpt = 27.5078	24/12	$4,200	-$200	

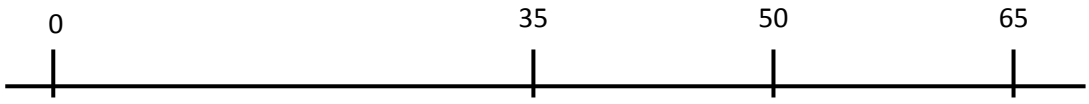
N	I/Y	PV	PMT	FV
24.5078	Cpt = 1.249	$4,200	-$200	

→ **APR = 12*1.249 = 15%**

11. Annie is 25 years old today and she is planning to save, starting immediately, for the next 35 years toward retirement. She expects to live for 30 years after retirement. Annie would like to withdraw $3,000 at the end of each month for the first 15 years after retirement and then $2,500 at the end of each month for the remaining 15 years. Assuming an APR interest rate of 4.5% compounded monthly, find how much Annie will need to have saved on the day of retirement (in 35 years).

    a) $500,423.64
    b) $558,762.94
    c) $479,596.82
    d) $622,218.36
    e) $509,265.13

Answer: (B)



Find PV of the final 15-year annuity:
N = 180; I = 4.5/12; PMT = $2,500; cpt PV_{50} = $326,800.25

PV to period 35:
N = 180; I = 4.5/12; FV = $326,800.25; cpt PV_{35} = $166,602.64

Find PV of the first 15-year annuity:
N = 180; I = 4.5/12; PMT = $3,000; cpt PV_{35} = $392,160.30.

Total funds required on retirement (period 35) = $166,602.64 + $392,160.30 = $558,762.94

12. Given the information below, and assuming that Stocks A and B are priced correctly, what is the return on the market (r_m)?

	Expected return	Beta
Stock A	13.9%	1.3
Stock B	10.7%	0.9

The Risk Free Rate = 3.5%

a) 8.0%
b) 12.4%
c) 12.8%
d) 11.1%
e) 11.5%

Answer: (E)

Gradient of SML= mkt risk premium = (0.139-0.107)/(1.3-0.9) = 8% → Mkt return = 8% + 3.5% = 11.5%

13. You observe the following information regarding the returns of stocks of Company X and Company Y:

i. Company X's expected return is half that of Company Y's.
ii. Company X's standard deviation of returns is slightly more than half that of Company Y's.
iii. Company X's beta is twice that of Company Y's.

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 has less market risk than Company Y.
d) Company X's stock is overpriced if Company Y's stock is fairly priced.
e) Company X's correlation with the market is slightly more than 4 times that of Company Y's correlation with the market.

Answer: (D)

14. Which of the following statements below is most CORRECT?

a) The nominal rate must be higher than the real rate given a positive rate of inflation.
b) The nominal risk-free rate represents the change in purchasing power.
c) The inflation rate represents the risk premium.
d) Statements A and B are both correct.
e) None of the statements above are correct.

Answer: (A)

15. A firm has 1,200,000 shares of stock outstanding, EBIT of $2.15 million, Interest expense of $860,000, a Price-Earnings ratio of 15.7 and a Book Value per share of $9.12. The relevant marginal tax rate is 40%. What is the Earnings Per Share (EPS)?

a) 0.65
b) 0.75
c) 0.83
d) 0.91
e) 1.05

Answer: (A)

Net Income = ($2,150,000 – 860,000)*0.6 = $774,000
EPS = 774,000/1,200,000 = 0.645;

16. Which of the following statement/s about the alternative forms of business organization is/are CORRECT?

I. All partners in a partnership have limited liability
II. In a partnership, if one partner wants to quit, the partnership must be dissolved.
III. In a partnership, there is separation between owners and managers.
IV. Income earned by a sole proprietor is taxed as personal income.
V. For corporations, the separation of owners and managers is always a disadvantage.

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

Answer: (C)

17. Which of the following statement/s below is/are CORRECT?

I. A stock's market price is always equal to its intrinsic value.
II. The three aspects of cash flows that affect stock price are amount, timing and riskiness.
III. Treasury bill transactions are considered Money Market transactions.
IV. The Board of Directors is never able to intervene in the selection of management.
V. The goal of financial management is to maximize retained earnings.

a) I only.
b) II and IV only.
c) III and V only.
d) II and III only.
e) All of the statements are incorrect.

Answer: (D)

18. A firm has a total assets to total equity ratio of 1.667 and a Return on Total Assets of 9%. What is its Return on Total Equity?

a) 7 percent
b) 15 percent
c) 20 percent
d) 28 percent
e) 44 percent

Answer: (B)

ROE = ROA*TA/TE = 0.09*1.667 = 15%

19. Which of the following statement below is **CORRECT**?

a) If 2 portfolios are not on the SML, then they are fairly priced according to CAPM.
b) The slope of the line we get from plotting (regressing) any individual stock's excess return against the market portfolio's excess return is always the market risk premium.
c) If Asset A has a standard deviation of returns of 25% and Asset B has a standard deviation of returns of 25%, and Asset A and Asset B are perfectly positively correlated, then the Minimum Variance Portfolio from the combination of Asset A and B will have a standard deviation of 25%.
d) If a stock plots above the SML, it is overpriced.
e) The best measure of the relevant market risk of a stock in a large diversified portfolio is the Coefficient of Variation.

Answer: (C)

► **Use the below information for Questions #20 and #21**:

You have secured an equal annual payment amortized loan with Bank H. The principal of the loan is $50,000; the interest rate is 4% compounded quarterly and you agree to pay the loan in 3 years

20. What is the interest paid at the end of the first year?

a) $1,052.28
b) $1,514.26
c) $2,030.20
d) $2,582.49
e) $2,671.83

Answer: (C)

21. What is the total amount of interest you pay for this loan over the 3 years?

a) $4,052.28
b) $4,114.26
c) $3,143.17

d) $3,582.49
e) $4,671.83

Answer: (B)

EAR = (1 + 0.4/4)^4 -1 = 0.040604

		4.0604%			
	beg prin	instalment	int	prin	end prin
1	$50,000.00	$18,038.09	$2,030.20	$16,007.89	$33,992.11
2	$33,992.11	$18,038.09	$1,380.22	$16,657.87	$17,334.25
3	$17,334.25	$18,038.09	$703.84	$17,334.25	$0.00
			$4,114.26		

22. Which one of the following statements is correct concerning a portfolio beta?

I. Portfolio betas range between -1.0 and +1.0.
II. A portfolio beta can be less than the beta of each individual security that comprises the portfolio.
III. In general, the higher the portfolio beta, the closer is the portfolio return to the market return.
IV. A portfolio with a standard deviation of zero will have a beta of zero.
V. Portfolio beta can be found by regressing the portfolio excess return against the market portfolio excess return and getting the slope of the best-fit line.

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

Answer: (D)

23. Which of the following cash flow streams will give you the highest Future Value given a positive interest rate?

a) $1,200 every end of the year for 10 years
b) $1,200 every beginning of the year for 10 years
c) $100 every end of the month for 10 years
d) $100 every beginning of the month for 10 years
e) It would depend on the interest rate.

Answer: (E)

We know the annuities due have a higher FV than annuities, hence Option A and C are not considered.
At rates below 16.23%, Option B has a higher FV than Option D.
At rates equal to and above 16.23%, Option D has a higher FV than Option B.

While the PV of Option B will always be higher than the PV of Option D, when we calculate FV, we take $FV=PV*(1+r)^n$.
The reason why FV of Option D can be higher than Option B is because the magnitude of the FVIF increases with higher interest rate, r, since we will compound this to the power of 120 for Option D as opposed to only power of 10 for Option B.

24. You have $100,000 to invest. Asset A has a beta of 1.2 and Asset B has beta of 0.9. You want a portfolio beta of 1.05. How much money do you invest in Asset B?

a) $37,000
b) $58,000
c) $42,000
d) $63,000

e) $50,000

Answer: (E)

$w_A(1.2) + (1 - w_A)(0.9) = 1.05$
→ $w_A = 0.5$

25. You are provided the following information about Firms A and B.

	Firm A	**Firm B**
Debt Ratio	40%	35%
ROA	10%	12%

Which of the following statement/s below must be correct?

I. Firm A has a higher Equity Multiplier than Firm B.
II. Firm A has a higher ROE than Firm B.
III. Firm A has a higher Debt/Equity Ratio than Firm B.

a) I only.
b) II only.
c) I and III only.
d) II and III only.
e) All of the above.

Answer: (C)

Firm A: D/TA = 0.4 → E/TA = 0.6 → EM = 1/0.6 = 1.667 → ROE = 16.67%; D/E = 0.4/0.6 = 0.667
Firm B: D/TA = 0.35 → E/TA = 0.65 → EM = 1/0.65 = 1.5385 → ROE = 18.46%; D/E = 0.35/0.65 = 0.538

► **Use the below information for Questions #26, #27 and #28**:

You are provided the following return information about Stock F and Stock G given the three possible scenarios of Boom, Neutral and Bust.

	Probability	**Stock F**	**Stock G**
Boom	25%	26%	8%
Neutral	45%	12%	5%
Bust	30%	2%	- 5%

26. What is the expected return for Stock F?

a) 0.055
b) 0.105
c) 0.125
d) 0.195
e) 0.250

Answer: (C)

27. What is the standard deviation of Stock G?

a) 0.05214
b) 0.09570
c) 0.10855
d) 0.19559
e) 0.25087

Answer: (A)

28. Find the correlation coefficient of F and G.

a) 1.00
b) 0.90
c) 0.85
d) 0.75
e) 0.70

Answer: (B)

Expected return for Stock F = 0.25*0.26 + 0.45*0.12 + 0.3*0.02 = 0.125
Expected return for Stock G = 0.25*0.08 + 0.45*0.05 - 0.3*0.05 = 0.0275
Stdev Stock F = SQRT(0.25*(0.26-0.125)^2 + 0.45*(0.12-0.125)^2 + 0.3*(0.02-0.125)^2) = 0.08874
Stdev Stock G = SQRT(0.25*(0.08-0.0275)^2 + 0.45*(0.05-0.0275)^2 + 0.3*(-0.05-0.0275)^2) = 0.05214
Covariance
= 0.25*(0.26–0.125)*(0.08–0.0275)+0.45*(0.12–0.125)*(0.05–0.0275)+0.3*(0.02–0.125)*(-0.05–0.0275)
= 0.0041625
Correlation Coefficient = 0.0041625 / (0.08874*0.05214) = 0.8996

29. The beta of Stock Y is 1.28. Based on your scenario analysis, there will only be two potential scenarios: either the stock returns 25% if the economy booms, or the return will be -3% if the economy stagnates. There is a 60% probability that the economy will boom and a 40% probability that the economy will stagnate and the stock is currently priced accordingly in the market. The risk-free rate is 2.5% and the market rate of return is 11.5%. Which one of the following statements is true given this information?

    a) The expected stock return will plot above the Security Market Line.
    b) The expected stock return indicates the stock is currently overpriced.
    c) According to CAPM, the stock should have an expected return of 13.8 percent.
    d) The stock has less systematic risk than the overall market.
    e) Both statement B and C are correct.

Answer: (B)

Expected R = 0.6*25% - 0.4*3% = 13.8%;
Required R = 2.5% + 1.28*(11.5%-2.5%) = 14.02%.
Since Required R > Expected R, it means Stock Y will plot below the SML; Stock Y is overpriced.

30. You make $1,000 contributions every end of month for the first 6 months and $1,500 contributions at the end of every month for the next 12 months. This account earns you 6% compounded yearly. How much do you have at the end of 18 months?

    a) $24,954
    b) $24,928
    c) $22,841
    d) $23,953
    e) $23,167

Answer: (B)

(1 + mthly period rate)^12 – 1 = 6%
→ mthly period rate = 1.06^(1/12) - 1 = 0.4868%

CF1 = 1,000; F01 = 6
CF2 = 1,500; F02 = 12
Cpt NPV given I=0.4868 → NPV = $22,841.3244

PV = 22841.3244; N = 18; I = 0.4868, cpt FV.
→ FV = $24,927.78