FIN2004/X

MID-TERM

Semester I, 2017/2018

SOLUTIONS

INSTRUCTIONS:

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

Boon Peng Pte Ltd
2016 and 2017 Balance Sheet

	2017	*2016*		*2017*	*2016*
Cash	$240,000	$180,000	Accounts Payable	$155,000	$135,000
Accounts Receivable	115,000	145,000	Notes Payable	125,000	115,000
Inventory	95,000	75,000	Total CL	$280,000	$250,000
Total CA	450,000	$400,000			
			Long-Term Debt	305,000	270,000
Net Fixed Assets	510,000	425,000	Common Stock	150,000	130,000
			Retained Earnings	225,000	175,000
Total Assets	960,000	$825,000	Total Liab & Equity	960,000	$825,000

Boon Peng Pte Ltd
2017 Income Statement

Sales	$	1,500,000
Cost of Goods Sold		1,200,000
Depreciation Expense		135,000
Earnings before Interest and Tax		165,000
Interest Expense		25,000
Taxable Income		140,000
Less: Taxes (40%)		56,000
Net Income	$	84,000

You have obtained the financial statements of Boon Peng Pte Ltd. Some of the firm's financial ratios include:

I. Return on Equity in 2017 = 22.40%
II. Cash Coverage Ratio in 2017 = 12 times

1. What is the amount of "Interest Tax Shield" for 2017 (please refer to interest tax shield as defined and applied in your class notes)?

   A. $5,500
   B. $7,500
   C. $10,000
   D. $15,500
   E. None of the above choices are correct

Answer: C
Interest expense 2017 = (165,000 + 135,000)/12 = $25,000
Interest tax Shield 2017 = $25,000*0.4 = $10,000

2. What is amount of Cashflow to Creditors for 2017 (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

Answer: B
Cashflow to Creditors = Interest Expense – Net New Borrowing
= 25,000 – [(125,000+305,000) – (115,000+270,000)] = -$20,000

3. What is amount of Cashflow to Stockholders for 2017 (please refer to Cashflow to Stockholders as defined and applied in your class notes)?

   A. - $34,000
   B. - $14,000
   C. $34,000
   D. $14,000
   E. None of the above choices are correct

Answer: D
Net Income = 0.6*(165,000 – 25,000) = $84,000
Dividends = $84,000 – ($225,000 - $175,000) = $34,000
Common Stock 2017 = $84,000/22.40% – $225,000 = $150,000
Cashflow to Stockholders = Dividends – Net New Equity
= $34,000 – (150,000 – 130,000) = $14,000

4. What is the amount of "Change in NOWC" for 2017 (please refer to NOWC as defined and applied in your class notes)?

   A. $20,000
   B. - $30,000
   C. $30,000
   D. - $20,000
   E. None of the above choices are correct

Answer: C
Current Assets 2017 = (280,000 + 305,000 + 150,000 + 225,000) – 510,000 = $450,000
Change in NOWC 2017 = (450,000 – 155,000) – (400,000 – 135,000) = $30,000

5. 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. $21,000
B. - $16,000
C. - $4,000
D. - $41,000
E. None of the above choices are correct

Answer: B

CFFA = OCF – NCS – Change in NOWC
= [(165,000)*(1-0.4) + 135,000] – (510,000 – 425,000 + 135,000) – 30,000
= 234,000 – 220,000 – 30,000 = - $16,000
***or* CFFA = Cashflow to Creditors + Cashflow to Shareholders – Interest tax shield**
= -$20,000 + 14,000 – 10,000 = - $16,000

6. A firm currently has $700 in total debt for every $300 in equity. If the firm increases short term Notes Payable by 20%, which one of the following ratios will **always** increase as a result of this action?

A. Total Debt Ratio
B. Cash Turnover
C. Current Ratio
D. Return on Assets
E. Return on Equity

Answer: A

7. Which one of the following statements related to cash flows is **NOT CORRECT**?

I. A positive operating cash flow (OCF) must mean the firm had a positive net income for the period.
II. A negative cash flow to creditors must mean the firm had increased net borrowing.
III. A positive cash flow to stockholders reflects either a dividend payment or a stock repurchase or both.

A. I only
B. I and II only
C. II and III only
D. I, II and III only
E. III only

Answer: A

8. You just took a $10,000 5-year interest-only loan. The APR interest rate of the loan is 3.25 percent. The principal is due in full on the date of maturity. Interest is to be paid monthly at the end of each month. What is the total sum of the interest payments made during the life of the loan?

A. $0
B. $325

C. $848
D. $1,625
E. $2,367

Answer: D
Total interest paid = $10,000 × 0.0325/12 × 60 = $1,625

9. You have the ability to choose only one of the following three investments:

   I. An $11,000 annual perpetuity with the first payment today, or
   II. A $15,000 annual ordinary annuity for 30 years, or
   III. A lump sum payment of $998,000 to be received 30 years from now

   All payments have an applicable 5% annual interest rate. All else equal, which payment option would you prefer if you are a value maximizer, indifferent to the timing of receipt of cash flows?

   A. The perpetuity
   B. The ordinary annuity
   C. The lump sum payment
   D. Indifferent, as all give equal value.
   E. Not enough information to comment on preference.

Answer: A

10. You invest (i) in the market portfolio and (ii) the stock of a company run by your favorite celebrity, which has a beta of 1.5. Your total portfolio beta from investing in these two assets is 1.3. After a celebrity scandal, you decide to sell your holding in the celebrity's firm and take those funds and invest them in the risk free asset. What is the beta of your new portfolio?

    A. 0.2
    B. 0.4
    C. 0.6
    D. 0.8
    E. 1.0

    Answer: B

11. Refer to Question #10 above. According to CAPM theory, your initial portfolio is ___ the capital market line (CML); your new portfolio is ___ the capital market line.

    A. On; On
    B. Off; Off
    C. On; Off
    D. Off; On

E. Not enough information

Answer: D

12. Which of the following statements is **NOT CORRECT**?

A. The Cash Flow From Assets (Free Cash Flow) is the amount of cash generated by the firm's operating activities after taking into account that period's investment in fixed assets and working capital needed for continuing operations.
B. The intrinsic value of a stock may not necessarily be equal to the market price of the stock, unless the market is in equilibrium and the stock is fairly priced.
C. According to finance theory, the primary financial goal of a corporation is shareholder wealth maximization.
D. According to finance theory, the primary financial goal of a corporation is to maximize the value of the firm's common stock.
E. Because the stock market is always in equilibrium, the intrinsic value of a stock is usually equal to its market price.

13. Which of the following would be categorized as a *money market* (highly liquid short-term maturity) instrument?

I. 15-year U.S. Treasury Bond
II. 91-day U.S. Treasury Bill
III. 10-year General Motors bond
IV. Shares of IBM's common stock

A. III only
B. **II only**
C. I and II only
D. I and III only
E. I, II, III, and IV

14. Which of the following events will most likely lead to an **INCREASE** in the beta, all else constant?

A. Investors perceive the overall stock market to be riskier.
B. A utility company which used to be a monopoly in its industry now faces deregulation and competition from a number of new market entrants
C. A regulated utility company operating in the East coast of United States takes over another regulated utility company operating in the West coast of United States.
D. The risk free rate increases.
E. A technology firm has been awarded a patent to protect its key technology from being copied by competitors.

15. Assume that the risk-free rate is 3% and the expected market return is 9%. An investor sees a non-dividend paying stock with a beta of 1.0 currently selling for $10. The investor expects the stock to reach $12 at the end of the year. The stock is _____ so the investor

should _____:

A. overpriced, buy it
B. overpriced, sell it
C. underpriced, buy it
D. underpriced, sell it
E. None of the above

Required return = 3% + 1.0(9% – 3%) = 9%
Expected return = ($12 – $10)/$10 = 20%

Expected return > Required return ➔ Stock is undervalued

16. Today is 1 Apr 2017. You are considering between two plans. Plan A gives you a $10,000 yearly perpetuity starting 1 Apr 2018 and Plan B corresponds to a $15,000 annual annuity due starting immediately. At an annual interest rate of 4%, what is the soonest maturity for Plan B before it is preferred to Plan A?

A. Immediately following receipt on 1 Apr 2040
B. Immediately following receipt on 1 Apr 2041
C. Immediately following receipt on 1 Apr 2042
D. Immediately following receipt on 1 Apr 2043
E. Immediately following receipt on 1 Apr 2044

Answer: D
PV of perpetuity = 10,000/0.04 = $250,000

N	**I/Y**	**PV**	**PMT**	**FV**
Cpt = 25.12	**4**	**235,000**	**-15,000**	

➔ Need 26 years from today, hence 1 Apr 2043.

17. Daniel sold a stock today for $2 a share less than what he had paid for it last year. He received a $2 dividend at year end. Which one of the following statements is **CORRECT** in relation to this investment?

    A. The dividend yield would have fallen below the capital gains yield if he had received less dividends.
    B. The dividend yield is equal to the capital gains yield.
    C. The total percentage return per share is 0%.
    D. The dividend yield is 20%.
    E. The dividend yield is expressed as a percentage of the selling price.

Answer: C

18. If the real discount rate is 0.85 percent and the inflation rate is 1.4 percent. What is the nominal rate of interest?

    A. 1.922%
    B. 2.262%
    C. 2.396%
    D. 2.513%
    E. 2.888%

Answer: B
Nominal Interest Rate = [(1 + 0.85%)*(1 + 1.4%)] – 1 = 2.262%

19. Stock Z has an average return of 0.0175 and a standard deviation of 0.0776. What is Stock Z's coefficient of variation (CV)?

    A. 1.49
    B. 1.73
    C. 2.93
    D. 3.77
    E. 4.43

Answer: E

=0.0776/0.0175 = 4.43

20. You have just contracted for a 25-year monthly mortgage loan for 80 percent of the $1.8 million purchase price for your new condominium unit. The effective annual rate of this loan is 1.572%. What is the monthly instalment amount?

    A. $4,809
    B. $5,800
    C. $5,834
    D. $22,682
    E. $22,849

Answer: B

Period rate = $[(1 + 1.572\%)^{1/12} - 1] = 0.13\%$
N = 300; I/Y = 0.13; PV = 0.8*1,800,000; cpt PMT = $5,800

21. A stock has the following year-end prices and dividends.

Year	Price	Year End Dividends
0	$169.00	
1	$171.60	$3.80
2	$170.85	$3.90
3	$169.20	$4.00
4	$172.55	$3.75

Based on this information, what is the average annual return for this stock?

A. 0.02799
B. 0.03577
C. 0.03941
D. 0.04495
E. 0.05691

Answer: A

R1 = (171.60 – 169.00 + 3.80)/169.00 = 0.03787
R2 = (170.85 – 171.60 + 3.90)/171.60 = 0.01836
R3 = (169.20 – 170.85 + 4.00)/170.85 = 0.01375
R4 = (172.55 – 169.20 + 3.75)/169.20 = 0.04196
Average return = (0.03787 + 0.01836 + 0.01375 + 0.04196)/4 = 0.02799
σ = SQRT{$[(0.03787 - 0.02799)^2 + (0.01836 - 0.02799)^2 + (0.01375 - 0.02799)^2 + (0.04196 - 0.02799)^2]/3\}$ = 0.01400

22. Which of the following inputs can be used in order to directly calculate the Beta of an asset?

I. The asset's standard deviation
II. The market portfolio's standard deviation
III. The asset's correlation coefficient with the market portfolio
IV. The asset's correlation coefficient with its main industry competitor

A. I only
B. II only
C. III only
D. I, II, and III only
E. I, II, III and IV only

23. Which one of the following statements concerning interest rates is correct?

I. For any given positive interest rate, borrowers would prefer quarterly compounding to monthly compounding.
II. For any given positive interest rate, the effective annual rate equals the annual percentage rate when interest is compounded annually.
III. For any given positive interest rate, the effective annual rate increases as the number of compounding periods per year decreases.
IV. For any given positive interest rate, savers would prefer monthly compounding to daily compounding.

A. I only.
B. I and II only.
C. II only.
D. III and IV only.
E. All of the above.

Answer: B

24. What is the expected return of this portfolio comprising stocks in A, B and C?

Stock	Expected Return	Number of Shares	Original Purchase Price	Current Market Price
A	-7%	200	$25.80	$23.50
B	6%	150	$7.70	$8.10
C	12%	150	$13.40	$14.70

A. 10.468 percent
B. 3.667 percent
C. 2.600 percent
D. 0.105 percent
E. - 0.609 percent

Answer: D

Portfolio value = (200 × $23.50) + (150 × $8.10) + (150 × $14.70) = $4,700 + $1,215 + $2,205
= $8,120
E(r) = ($4,700/$8,120)*(-0.07) + ($1,215/$8,120)*(0.06) + ($2,205/$8,120)*(0.12)
= 0.105 percent

25. 2 years ago, you borrowed a $150,000 5-year equal annual installment amortized loan for your further education. The interest rate of this loan was 4.5%, annual compounding. Today, you received an offer to refinance the remaining principal of the loan (in other

words, you borrow the remaining principal of the original loan) with a 3-year equal annual installment amortized loan at a lower rate of 3.6%, annual compounding. You agree to the refinancing offer. How much interest will you pay in total over the 5 years, on the original loan (for 2 years) and the refinanced load (for 3 years)?

A. $27,686.30
B. $24,367.48
C. $19,108.73
D. $17,253.21
E. $13,814.79

Answer: C

N = 5; I = 4.5%; PV = 150,000; Cpt PMT = 34,168.75

	beg prin	instalment	int	prin	end prin
1	$150,000.00	$34,168.75	$6,750.00	$27,418.75	$122,581.25
2	$122,581.25	$34,168.75	$5,516.16	$28,652.59	$93,928.66

N = 3; I = 3.6%; PV = 93,928.66; Cpt PMT = 33,590.41

	beg prin	instalment	int	prin	end prin
1	$93,928.66	$33,590.41	$3,381.43	$30,208.98	$63,719.68
2	$63,719.68	$33,590.41	$2,293.91	$31,296.50	$32,423.18
3	$32,423.18	$33,590.41	$1,167.23	$32,423.18	$0.00

Total Interest = $6,750 + 5,516.16 + 3,381.43 + 2,293.91 + 1,167.23 = $19,108.73

26. Ukea Furniture has sales of $12.5 million; fixed asset turnover ratio of 4.0; current ratio of 1.6; net working capital of $515,625; and an equity multiplier of 2.25. What is the amount of the firm's Long Term Debt?

A. 1,250,050
B. 1,460,775
C. 1,500,635
D. 1,530,750
E. 1,640,625

Answer: E

NFA = $12.5 million/4 = $3,125,000
($515,625 + CL)/CL = 1.6 → CL = $859,375 and CA = $1,375,000
TA = $3,125,000 + $1,375,000 = $4,500,000
TE = 4,500,000/2.25 = $2,000,000
→ LTD = $4,500,000 - $2,000,000 - $859,375 = $1,640,625

27. Ruchira needs $6,000 in two years' time from today. Currently she has $1,500 in her savings account. The account pays a 6% nominal annual interest rate, compounded

monthly. To reach her goal, Ruchira decides to deposit $150 each month into the savings account, with the first deposit made at the end of the month. For the final month's deposit (2 years from now) however, she will make a larger deposit to reach $6,000. How large will the last deposit be? (Round to the nearest dollar)

A. $150
B. $644
C. $685
D. $835
E. $859

N=24, I= 6%/12, PV=-1500, PMT=-150, Compute FV = 5505.53
Shortfall of 6000 – 5505.53 = 494.47
Therefore, the last deposit must be 150 + 494.47 = $644

28. John bought a car which requires him to make equal end-of-month mortgage payments over 10 years at a nominal annual interest rate of 12%, compounded monthly. There is no down payment for this car. After 4 years (or 48 payments), the principal outstanding on the loan is $50,000. What is the price of the car when he bought it? (Round to the nearest dollar)

A. $50,000
B. $67,349
C. $68,133
D. $78,371
E. $91,774

Step 1: Find the payment per month.
N=120–48=72, I=12%/12, PV=50000, FV = 0, Compute PMT = 977.51
Step2: Find the principal borrowed at the beginning
N=120, I=12%/12, PMT=977.51, FV=0, Compute PV = 68,133

29. Suppose you observe the following situation:

State of Economy	Probability of State of Economy	Rate of Return if State Occurs	
		Stock G	Stock H
Bust	0.3	-0.08	-0.05
Normal	0.45	0.02	0.06
Boom	0.25	0.13	0.20

Assume the stocks are correctly (fairly) priced and the risk-free rate is 1.5%. Stock H has a beta that is 0.5 higher than Stock G's beta (the difference between H and G's beta is 0.5). Use this information to find the market risk premium (i.e., the slope of the SML line)?

A. 8.9%
B. 10.4%
C. 11.5%
D. 12.0%
E. 12.7%

Answer: A

$E(R_G) = 0.3(-0.08) + 0.45(0.02) + 0.25(0.13) = 0.0175$
$E(R_H) = 0.3(-0.05) + 0.45(0.06) + 0.25(0.20) = 0.062$
Market Risk Premium = $(0.062 - 0.0175)/0.50 = 0.089 \rightarrow R_m = 10.4\%$
$\sigma_G = \sqrt{[0.3*(-0.08 - 0.0175)^2 + 0.45*(0.02 - 0.0175)^2 + 0.25*(0.13 - 0.0175)^2]} = 0.0776$
$\sigma_H = \sqrt{[0.3*(-0.05 - 0.062)^2 + 0.45*(0.06 - 0.062)^2 + 0.25*(0.20 - 0.062)^2]} = 0.0923$
$CV_G = 0.0776/0.0175 = 4.43$
$CV_H = 0.0923/0.062 = 1.49$

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

	Expected Return	Beta	Correlation with Market
Stock S	7.0%	0.75	0.5
Stock T	17.5%	2.25	0.9

Risk Free Rate = 2.5%; Market Risk Premium = 6.5%; Standard Deviation of Market Return = 20%

I. Stock S is overpriced.
II. Stock T has higher total risk than Stock S.
III. The expected Risk Premium-to-Systematic Risk ratio (otherwise referred to as Reward-to-Systematic Risk ratio) of Stock T is higher than that of Stock S.
IV. Stock S has higher CV than Stock T.

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: E

Required Return for Stock S = 2.5% + 0.75*6.5% = 7.375% → overpriced (below SML)
Required Return for Stock T = 2.5% + 2.25*6.5% = 17.125% → underpriced (above SML)
$\sigma_S\rho_{S,M}/\sigma_M$ = 0.75; → σ_S = 0.75*0.2/0.5 = 30%
$\sigma_T\rho_{T,M}/\sigma_M$ = 2.25; → σ_T = 2.25*0.2/0.9 = 50%
CV for Stock S = 30%/7.0% = 4.29
CV for Stock T = 50%/17.5% = 2.86
Reward-to-Systematic risk ratio for Stock S = (7.0%-2.5%)/0.75 = 0.060
Reward-to-Systematic risk ratio for Stock T = (17.5%-2.5%)/2.25 = 0.067