

- ◇ 計算題務必寫出過程、使用千分位符號(,)以及小數點標示清楚。
- ◇ 滿分 120 分

1. (30分) 代理問題與公司治理。

- (1). (2 分) 誰是公司的所有權人？
- (2). (2 分) What does the phrase *limited liability* mean in a corporate context?
- (3). (2 分) 為什麼公司(股份有限公司)會有代理問題？
- (4). (9 分) 要如何利用公司治理機制的(大股東)以及(專家的監督)來解決股東和經理人之間的代理問題？並請說明公司治理中 free rider 的現象。
- (5). (5 分) What does the phrase *hostile takeover* mean? Are hostile takeovers necessarily bad for firms or their investors? Explain.
- (6). (5 分) 當敵意接管發生後，目標公司的可能抵抗策略有哪些（至少寫出五個策略，並簡述這些策略的意義）？
- (7). (5 分) 請說明控制股東質押股票所產生的問題。

2. (10分) 財務槓桿

- (1). (4 分) 請問公司的財務槓桿 (leverage) 的意義為何？
- (2). (6 分) 一般會使用負債權益比率定義財務槓桿，為什麼負債權益比率的分子不應該包括應付帳款卻包含一年內到期之長期負債和長期負債？請問向銀行短期借款這個項目要不要納入負債權益比率的分子的計算？為什麼？

3. (8分) In December 2011, high-end retailer Nordstrom had an operating margin of 11.5% over the past year; Wal-Mart Stores had an operating margin of only 5.9%.

- (1). (2 分) 請說明 operating margin 的定義。
- (2). (4 分) 公司之間 operating margin 的差異主要因為哪兩個原因？
- (3). (2 分) 如果你是證券分析師，根據上述資訊，你認為 Wal-Mart Stores 的 operating margin 較其同業公司低的原因為何？

4. (8分) You have just won a radio contest and are disappointed to find out that the prize is four tickets to the Def Leppard reunion tour (face value \$40 each). Not being a fan of 1980s power rock, you have no intention of going to the show. However, there is a second choice: two tickets to your favorite band's sold-out show (face value \$45 each). You notice that on eBay, tickets to the Def Leppard show are being bought and sold for \$30 apiece and tickets to your favorite band's show are being bought and sold at \$50 each. Which prize should you choose? Why?

① Def Leppard ② favorite
\$40 × 4 \$45 × 2 →
on ebay \$30 \$50
① \$120 - \$30 = \$90 ② \$50

5. (14分) Suppose that over the next year the economy is equally likely to strengthen or weaken. The risk-free bond has no risk and will pay \$1,100 whatever the state of the economy. The stock market index will pay investors \$1,400 if the economy is strong and \$800 if it is weak. Today, the market price of the risk-free bond is \$1,058 and the market price of the stock market index is \$1,000. Security A will pay investors \$600 if the economy is strong and nothing if it is weak.

- (1). (2 分) What is the risk-free rate? $\frac{1100 - 1058}{1058} = 0.04$
- (2). (2 分) The average payoff of the stock market index is the same as the risk-free bond. Why the market price of the stock market index is lower than the risk-free bond?

- (3). (4 分) What is the no-arbitrage price of security A? What is its expected return? What is its risk premium? $4\% = \frac{300 - X}{X} = 0.04X = 300 - X \Rightarrow 1.04X = 300 \Rightarrow 288.46$

- (4). (3 分) If the market price of security A is \$225, how could we profit in this situation? $225 \mid 0 \mid 600$ Buy 230.55

- (5). (3 分) If the market price of security A is \$240, how could we profit in this situation? $240 \mid 0 \mid 600$ Sell 230.55

6. (7分) Suppose you started a Web site hosting business and then decided to return to school. Now that you are back in school, you are considering selling the business within the next year. An investor has offered to buy the business for \$200,000 whenever you are ready.

- A. Sell the business now.
- B. Scale back the business and continue running it while you are in school for one more year, and then sell the business (requiring you to spend \$30,000 on expenses now, but generating \$50,000 in profit at the end of the year).
- C. Hire someone to manage the business while you are in school for one more year, and then sell the business (requiring you to spend \$50,000 on expenses now, but generating \$100,000 in profit at the end of the year).

- (1). (4 分) If the interest rate is 10%, which of the following three alternatives is the best choices? Why?
- (2). (3 分) If you need \$60,000 in cash now to pay for school and other expenses, would selling the business be a better choice in that case? Why?

now one year

$\frac{1}{1.1} \leftarrow 200,000$

$\frac{1}{1.1} \leftarrow 50,000$

$$11B - 8A = 11C$$

2475

$$2A + C = 2B$$

$$2A + B = C$$

$$2200 + 0 = 1600$$

$$11000 - 8464 = 11C$$

7. (16分) Apple公司現在買轎車一部，總價\$2,500,000，除支付頭期款375,000，其餘款項向銀行借入並分期付款攤還，第一筆錢於一年後開始支付，分5年本利平均償還（每年付款一次），利率10%，每年須償還多少？並作分期付款攤銷表。（四捨五入至整數位，表頭範例如下）

期數	期初餘額	每期償還	利息部份	本金部份	期末餘額
----	------	------	------	------	------

8. (6分) You are saving for retirement. To live comfortably, you decide you will need to save \$1 million by the time you are 65. Today is your 23rd birthday, and you decide, starting today and continuing on every birthday up to and including your 65th birthday, that you will put the same amount into a savings account. If the interest rate is 5%, how much must you set aside each year to make sure that you will have \$1 million in the account on your 65th birthday? $A \cdot FVIFA = FV$

$$n = 65 - 23 = 42$$

FV.

9. (6分) You realize that the plan in Problem 8 has a flaw. Because your income will increase over your lifetime, it would be more realistic to save less now and more later. Instead of putting the same amount aside each year, you decide to let the amount that you set aside grow by 3% per year. Under this plan, how much will you put into the account today? (Recall that you are planning to make the first contribution to the account today.) $\frac{C}{r-g} \left(1 - \left(\frac{1+r}{1+g}\right)^n\right)$

$$\frac{C}{2\%} = 1M$$

10. (15分) See Table 2.5 (See next page) showing financial statement data and stock price data for Mydeco Corp.

(1). (3分) What is Mydeco's market capitalization at the end of each year?

(2). (3分) What is Mydeco's market-to-book ratio at the end of each year?

(3). (3分) Using the data from 2012, what was Mydeco's total stockholders' equity in 2011?

What were Mydeco's gross margins each year? $\frac{\text{gross profit}}{\text{sales}}$

(4). (3分) Compute Mydeco's PE ratio each year from 2012 to 2016. In which year was it the highest?

(5). (3分) Compute Mydeco's ROE each year from 2012 to 2016.

$$\frac{NI}{TE}$$

$$0.428$$

$$A \cdot (1.05 + 1.05^2 + \dots + 1.05^{42}) = 1 \text{ million}$$

TABLE 2.5

2012–2016 Financial Statement Data and Stock Price Data
for Mydeco Corp.

Mydeco Corp. 2012–2016

(All data as of fiscal year end; in \$ million)

	2012	2013	2014	2015	2016
Income Statement					
Revenue	401.9	361.6	429.6	513.6	602.6
Cost of Goods Sold	(192.1)	(175.4)	(207.1)	(248.3)	(295.8)
Gross Profit	209.8	186.2	222.5	265.3	306.8
Sales and Marketing	(65.0)	(64.4)	(84.3)	(104.9)	(121.1)
Administration	(61.8)	(57.1)	(59.0)	(66.9)	(79.8)
Depreciation & Amortization	(27.5)	(26.3)	(32.5)	(38.3)	(40.1)
EBIT	55.5	38.4	46.7	55.2	65.8
Interest Income (Expense)	(32.4)	(31.8)	(32.0)	(37.0)	(40.9)
Pretax Income	23.1	6.6	14.7	18.2	24.9
Income Tax	(8.1)	(2.3)	(5.1)	(6.4)	(8.7)
Net Income	15.0	4.3	9.6	11.8	16.2
Shares outstanding (millions)	56.8	56.8	56.8	56.8	56.8
Earnings per share	\$0.26	\$0.08	\$0.17	\$0.21	\$0.29
Balance Sheet					
Assets					
Cash	49.4	68.0	91.7	80.4	83.6
Accounts Receivable	87.6	70.6	69.3	77.4	84.2
Inventory	33.5	32.2	27.3	30.2	35.8
Total Current Assets	170.5	170.8	188.3	188.0	203.6
Net Property, Plant & Equip.	244.3	243.3	306.1	349.6	347.9
Goodwill & Intangibles	365.5	365.5	365.5	365.5	365.5
Total Assets	780.3	779.6	859.9	903.1	917.0
Liabilities & Stockholders' Equity					
Accounts Payable	18.8	18.8	22.4	27.1	30.3
Accrued Compensation	7.6	6.3	7.5	7.7	9.4
Total Current Liabilities	26.4	25.1	29.9	34.8	39.7
Long-term Debt	498.9	498.9	572.2	597.5	597.5
Total Liabilities	525.3	524	602.1	632.3	637.2
Stockholders' Equity	255.0	255.6	257.8	270.8	279.8
Total Liabilities & Stockholders' Equity	780.3	779.6	859.9	903.1	917.0
Statement of Cash Flows					
Net Income	15.0	4.3	9.6	11.8	16.2
Depreciation & Amortization	27.5	26.3	32.5	38.3	40.1
Chg. in Accounts Receivable	3.9	17.0	1.3	(8.1)	(6.8)
Chg. in Inventory	(2.9)	1.3	4.9	(2.9)	(5.6)
Chg. in Payables & Accrued Comp.	1.7	(1.3)	4.8	4.9	4.9
Cash from Operations	45.2	47.6	53.1	44.0	48.8
Capital Expenditures	(26.6)	(23.8)	(97.5)	(75.4)	(40.0)
Cash from Investing Activities	(26.6)	(23.8)	(97.5)	(75.4)	(40.0)
Dividends Paid	(5.2)	(5.2)	(5.2)	(5.2)	(5.6)
Sale (or purchase) of stock	—	—	—	—	—
Debt Issuance (Pay Down)	—	—	73.3	25.3	—
Cash from Financing Activities	(5.2)	(5.2)	68.1	20.1	(5.6)
Change in Cash	13.4	18.6	23.7	(11.3)	3.2
Mydeco Stock Price	\$7.02	\$3.55	\$5.86	\$8.33	\$11.57