

ENG 111 MIDTERM SUMMER 2015 SOLUTIONS:

MULTIPLE CHOICE QUESTIONS (3 points each):

1. Managers are encouraged to act in owners' interests by:
 - A. shareholder election of a board of directors who select management.
 - B. the threat of a takeover by another firm.
 - C. compensation contracts that tie compensation to corporate success.
 - D. Both A and B.
 - E. All of the above.

2. To make sure sustainable growth rate increases in the coming periods, a company can have any of the following except:
 - A. have an increase in profit margin.
 - B. have a decrease in payout ratio.
 - C. have an increase in debt-to-equity ratio.
 - D. have a decrease in capital intensity.
 - E. have an increase in the plowback ratio.

3. If a firm decreases its operating costs, all else constant, then:
 - A. the profit margin increases while the equity multiplier decreases.
 - B. the return on assets increases while the return on equity decreases.
 - C. the total asset turnover rate decreases while the profit margin increases.
 - D. both the profit margin and the equity multiplier increase.
 - E. both the return on assets and the return on equity increase.

4. You are considering two projects with the following cash flows:

	Project A	Project B
Year 1	\$2,500	\$4,000
Year 2	3,000	3,500
Year 3	3,500	3,000
Year 4	4,000	2,500

Which of the following statements are true concerning these two projects?

- I. Both projects have the same future value at the end of year 4, given a positive rate of return.
 - II. Both projects have the same future value given a zero rate of return.
 - III. Both projects have the same future value at any point in time, given a positive rate of return.
 - IV. Project A has a higher future value than project B, given a positive rate of return.
- A. II only
 - B. IV only
 - C. I and III only
 - D. II and IV only
 - E. I, II, and III only

5. Payback period is considered inferior to NPV as a project evaluation method. Which of the following is not a reason for using Payback Period?

- A. easy to implement
- B. can be used to evaluate lower management performance
- C. favors projects returning cash back sooner rather than later
- D. takes into consideration entire cash flow of a project
- E. none of the above

6. A firm has total debt of \$1,200, a debt-equity ratio of 0.30, and a profit margin of 0.10. What is the return on equity if the sales (revenue) is \$1,000?

- A. 0.10
- B. 0.01
- C. 0.02
- D. 0.25
- E. 0.025

7. Which one of the following statements concerning net present value (NPV) is correct?

- A. An investment should be accepted if, and only if, the NPV is exactly equal to zero.
- B. An investment should be accepted only if the NPV is equal to the initial cash flow.
- C. An investment should be accepted if the NPV is positive and rejected if it is negative.
- D. An investment with greater cash inflows than cash outflows, regardless of when the cash flows occur, will always have a positive NPV and therefore should always be accepted.
- E. Any project that has positive cash flows for every time period after the initial period should be accepted.

8. An increase in which one of the following accounts increases a firm's current ratio without affecting its quick ratio?

- A. accounts payable
- B. cash
- C. inventory
- D. accounts receivable
- E. fixed assets

9. The sustainable growth rate:

- A. assumes there is no external financing of any kind.
- B. is normally higher than the internal growth rate.
- C. assumes the debt-equity ratio is variable.
- D. is based on receiving additional external debt and equity financing.
- E. assumes that 100% of all income is retained by the firm.

10. A firm has sales of \$1,200, net income of \$200, net fixed assets of \$500, and current assets of \$300. The firm has \$100 in inventory. What is the common-size statement value of inventory?

- A. 8.3%
- B. 12.5%
- C. 20.0%
- D. 33.3%
- E. 50.0%

11. You want to have \$10,000 saved ten years from now. How much less do you have to deposit today to reach this goal if you can earn 6% compounded monthly rather than compounded annually?

- A. \$89
- B. \$120
- C. \$128.2
- D. \$87.6
- E. \$356.3

12. What is the effective rate of 6% APR compounded monthly?

- A. 6.17%
- B. 6.38%
- C. 5.17%
- D. 5.38%
- E. none of the above

13. ----- refers to the firm's interest payments less any net borrowing.

- A. Operating Cash Flow
- B. Capital Spending
- C. Net Working Capital
- D. Cash Flow to Creditors
- E. Cash Flow From Shareholders

14. If the dividend payout ratio is 1, you can say for sure that:

- A. Sustainable growth rate is at its maximum.
- B. Internal growth rate is at its maximum.
- C. External financing need is zero.
- D. Internal growth rate is zero.
- E. Debt to Equity ratio cannot stay the same.

15. Occasionally companies buyback their own stock. Which of the following is the least likely reason for a stock buyback?

- A. Trying to hit earnings per share target
- B. Not having a better investment opportunity
- C. Sending a signal to the market that company's stock is undervalued
- D. Increase growth rate

16. Which of the following is least likely to happen?

- A. A big difference between the current ratio and the quick ratio for a retailer
- B. A high capital intensity ratio for a jet engine producer
- C. A high financial leverage for a startup
- D. Stabilization of the growth rate for a well-established company
- E. A low P/E ratio for a tech company with high growth potential

17. Which two of the following represent the most effective methods of directly evaluating the financial performance of a firm?

- I. comparing the current financial ratios to those of the same firm from prior time periods
- II. comparing a firm's financial ratios to those of other firms in the firm's peer group who have similar operations
- III. comparing the financial statements of the firm to the financial statements of similar firms operating in other countries
- IV. comparing the financial ratios of the firm to the average ratios of all firms located in the same geographic area

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

18. Which one of the following assets is generally the most liquid?

- A. inventory
- B. buildings
- C. accounts receivables
- D. equipment
- E. patents

NUMERIC/SHORT ANSWER QUESTIONS:

19. (8 points) Income Statement for 2014 and Balance Sheets for 2013 and 2014 for Alsu Corporation are given below:

Alsu Corp., Balance Sheet					
Current Assets	2013	2014	Current Liabilities	2013	2014
Cash	160	180	Accounts Payable	300	192
Accounts Receivable	440	560	Notes Payable	100	200
Inventory	600	700	Total Current Liabilities	400	392
Total Current Assets	1,200	1,440	Long-Term Debt	800	?
Net Fixed Assets	1,800	?	Owners' Equity		
			Stock	800	840
			Retained Earnings	1,000	?
Total Assets	3,000	?	Total Liabilities and Owners' Equity	3,000	?

Alsu Corp., Income Statement, 2014	
Sales	\$1,600
Cost of Goods Sold	800
Depreciation	20
EBIT	780
Interest	60
Pretax Income	720
Taxes(40%)	288
Net Income	432
Dividends	144
Add. to Ret. Earnings	?

a) What is the Cash Flow from Operations?

$$EBIT + Depreciation - Tax = 780 + 20 - 288 = 512$$

b) If the Cash Flow from Assets is \$284, has the firm acquired or sold any fixed assets from 2013 to 2014? By how much?

Cash Flow from Assets = Cash Flow from Operations – Cash Flow to Net Working Capital (NWC) – Cash Flow to Capital Spending

$$284 = 512 - ((1440 - 392) - (1200 - 400)) - (Ending Net Fixed Assets - 1800 + 20)$$

Ending Net Fixed Assets = 1760.

According to this, Fixed assets are reduced, hence the company has NOT acquired any new fixed assets but SOLD some.

- c) Has the company reduced or increased its long-term debt from 2013 to 2014? By how much?

There are several ways of finding this. One way would be:

Total assets in 2014 = 1440+1760 = 3200.

Total Owners' Equity in 2014 = 840+1000+(432-144) = 2128

Total Liabilities = Total Assets – Total Owners' Equity = 3200 – 2128 = 1072

Long-Term Debt = 1072 – 392 = 680

Long-Term Debt went down. This means, the company paid off some of its long-term debt from 2013 to 2014.

- d) What is the Retained Earnings number for 2014?

Accumulated Retained Earnings + Addition to Retained Earnings = 1000 + (432 – 144) = 1288.

20. (6 points) A company is expecting to get \$10,000 a year from today if it invests \$8,600 now on project A. Alternatively, project B asks for twice the cost of A now and promises twice what A provides, but two years from today.

Should the company take any of these projects if the best return that can be obtained in the market is 15%?

We can calculate the Net Present Value (NPV) of each project.

$NPV_A = -8,600 + 10,000/1.15 = 96$

$NPV_B = -17,200 + 20,000/(1.15)^2 = -2,077$

*Alternatively, if the company invests in the market, in one year, investment would grow into $\$8,600 * 1.15 = \$9,890$ which is less than what project A offers.*

*In two years, 17,200 would grow into $\$17,200 * 1.15^2 = \$22,747$ which is more than what project B offers.*

Take project A.

21. (6 points) You are analyzing a consumer technology company with the following 2013 financial statements and want to determine the company's EFN for 2014. In 2013, sales were \$150M, assets \$100M, debt \$75M, and total costs \$100M. In 2014, sales are projected to be \$225M. Assume assets and costs are proportional to sales. Assume debt will not change and dividend payout ratio is 1/3. (assume no interest, taxes or depreciation) What is the external financing needed (EFN)?

$$EFN = \left(\frac{\text{Assets}}{\text{Sales}} \right) \times \Delta \text{Sales} - \frac{\text{Spon Liab}}{\text{Sales}} \times \Delta \text{Sales} - (PM \times \text{Projected Sales}) \times (1 - d)$$

$$EFN = (100/150) * 75 - 0 - (50/150 * 225 * 2/3) = 50 - 50$$

$$EFN = 0$$

22. a) (4 points) Frederico's has a profit margin of 6%, a return on assets of 8%, and an equity multiplier of 1.4. What is the return on equity?

$$\text{Profit Margin} = \text{Net Income} / \text{Sales} = 0.06$$

$$\text{ROA} = \text{Net Income} / \text{Assets} = 0.08$$

$$\text{Equity Multiplier} = \text{Total Assets} / \text{Total Equity} = 1.4$$

Form Du Pont Identity:

$$\text{ROE} = (\text{Net Income} / \text{Assets}) \times (\text{Assets} / \text{Equity})$$

$$\text{ROE} = 0.08 \times 1.4 = 11.2\%$$

b) (5 points) The company has renegotiated the terms of its long-term debt payment plan. According to this, Frederico's interest payments will be lower per year but the time to pay off the debt will be extended. How would this affect ROE?

Interest payments will go down in the short run, leading to a higher Profit Margin and higher ROE.

However, in the long run, there will be interest payments that wouldn't have been there, leading to lower Profit Margin and lower ROE.

23. (4 points) Apple Inc. shareholders are not in favor of company's holding a big cash account. What may be the shareholders' concern?

Any one of the following will do:

Company is out of growth opportunities

Company is not earning a higher return on its cash

Company is a candidate for a hostile takeover (very unlikely considering the size of the company)

24. (6 point) You are the financial manager of ALCU Corporation. Company has a 9% ROE, and 8% sustainable growth rate when Debt to Equity ratio is kept at 2/3. What is the maximum growth rate ACLU can achieve if ACLU wants to use only its internal funds?

$$\text{Sustainable Growth Rate} = \text{ROE} * b / (1 - \text{ROE} * b)$$

$$.08 - .08 * .09b = .09b$$

$$b = 0.82$$

$$\text{Internal Growth Rate} = \text{ROA} * b / (1 - \text{ROA} * b)$$

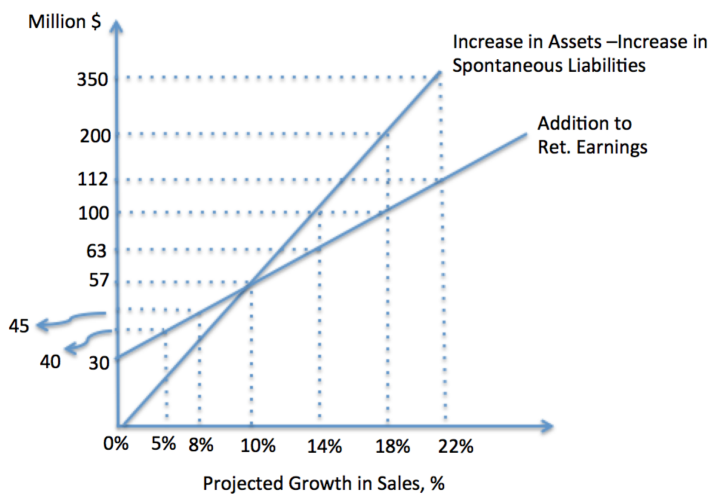
$$\text{ROE} = \text{ROA} * \text{Equity Multiplier}$$

$$0.09 = \text{ROA} * 5/3$$

$$\text{ROA} = 0.054$$

$$\text{Internal Growth Rate} = 0.054 * 0.82 / (1 - 0.054 * 0.82) = 0.046 = 4.6\%$$

25. The following graph shows the difference between the increase in assets minus the increase in spontaneous liabilities as well as the addition to retained earnings for Corporation X.



- a) (3 points) Is it possible for the company to grow at 14% and have $EFN=0$? Why or why not?

14% is greater than Internal Growth Rate, which is given as 10% in the above graph. Then, maximum growth rate that can be obtained using the internal funds is 10% implying at 14%, EFN cannot be zero.

- b) (4 points) Currently Corporation X has a total of \$700M retained earnings. If management decides not to grow over the course of coming year, what will be the new retained earnings?

\$730.

Market Value Measures	<p>Market Capitalization = Price per share * # Shares Outstanding</p> <p>P/E Ratio = Price Per Share / Earnings Per Share</p>
External Financing Formulas	$EFN = \left(\frac{\text{Assets}}{\text{Sales}} \right) \times \Delta \text{Sales} - \frac{\text{Spon Liab}}{\text{Sales}} \times \Delta \text{Sales} - (PM \times \text{Projected Sales}) \times (1 - d)$ $\text{Internal Growth Rate} = \frac{ROA \times b}{1 - ROA \times b} \qquad \text{Sustainable Growth Rate} = \frac{ROE \times b}{1 - ROE \times b}$
Present Value Formulas	$FV = C_0 \times \left(1 + \frac{r}{m} \right)^{m \times T} \qquad FV = C_0 e^{rT} \qquad PV = C / r \qquad PV = \frac{C}{r - g}$ $PV = \frac{C}{r} \left[1 - \frac{1}{(1 + r)^T} \right] \qquad PV = \frac{C}{r - g} \left[1 - \left(\frac{1 + g}{(1 + r)} \right)^T \right]$
Accounting Ratios	<p>Current Ratio = Current Assets / Current Liabilities</p> <p>Quick Ratio = (Current Assets – Inventory) / Current Liabilities</p> <p>Cash Ratio = Cash / Current Liabilities</p> <p>Total Debt Ratio = (Total Assets – Total Equity) / Total Assets</p> <p>Debt/Equity = Total Debt / Total Equities</p> <p>Equity Multiplier = Total Assets / Total Equity</p> <p>Times Interest Earned = (Earnings Before Interest And Taxes) / Interest</p> <p>Cash Coverage = (EBIT + Depreciation + Amortization) / Interest</p> <p>Inventory Turnover = Cost of Goods Sold / Inventory</p> <p>Days' Sales in Inventory = 365 / (Inventory Turnover)</p> <p>Receivables Turnover = Sales / Accounts Receivable</p> <p>Days' Sales in Receivables = 365 / Receivables Turnover</p> <p>Total Asset Turnover = Sales / Total Assets</p> <p>Profit Margin = Net Income / Sales</p> <p>Return on Assets = Net Income / Total Assets</p> <p>Return on Equity = Net Income / Total Equity</p> <p>EBITDA Margin = EBITDA / Sales</p> <p>Capital Intensity = Total Assets / Sales</p> <p>Du Pont Identity = PM * TAT * EM</p>
Financial Cash Flow	<p>C(A) = C(B) + C(S)</p> <p>C(A) = OCF - Change in NWC – Cash Flow to Fixed Assets</p> <p>OCF = EBIT + Depreciation - Tax</p> <p>Change in NWC = Ending NWC – Beginning NWC</p> <p>Cash Flow to Fixed Assets = Ending NFA - Beginning NFA + Depreciation (if we use the gross fixed assets, then = Ending Gross Fixed Assets – Beginning Gross Fixed Assets)</p> <p>C(B) = Interest - (Ending Long Term Debt – Beginning Long Term Debt)</p> <p>C(S) = Dividends – (Stocks sold - Stocks purchased)</p>