

UCLA

Introduction to Finance for Engineers

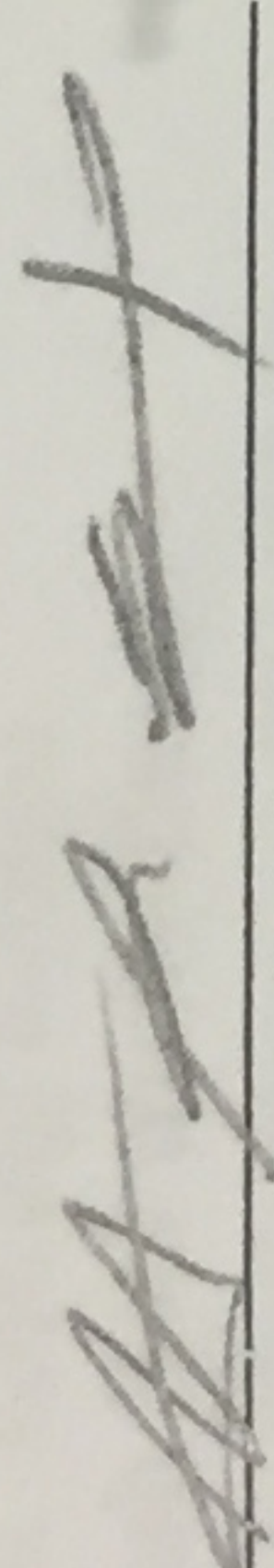
ENGE111

Midterm Exam

Winter 2014

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Last Name, First Name: August-Schmidt, Alexander

Signature   
above listed person and this is my individual work.

Today's date is: 2/3/2014

This is a closed-book and closed-notes exam; you may use the formula sheet provided. Only one student may go to the restroom at a time; if you go, leave your cell phone with the proctor. Select your answer based solely on what you think is the best answer possible given the question as written. If you use the back of the exam, write "answer on back" on the front of that page. All comments will be considered when grading the exam. The exams will be collected in 2 hours.

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Good luck!

Last and First Name: Alex August - Schmidt AMA

### Multiple Choice Questions (3 points each)

- Which of the following is NOT a mechanism that helps aligning management and owner interests?
  - Possibility of a hostile takeover
  - Possibility of a proxy fight
  - Manager's reputation within the financial community
  - Tying managerial pay to the stock price of the company
  - Buying back company's stocks
- \_\_\_\_\_ refers to the firm's interest payments less any net new borrowing.
  - Operating Cash Flow
  - Capital Spending
  - Net working capital
  - Cash flow to creditors
  - Cash flow from shareholders
- According to the guest lecturer, Tamra Johnson, which of the following was not a justification for becoming an entrepreneur right out of college?
  - Having fewer responsibilities
  - Being cheaper by the hour
  - Being ready to try things that would be found too adventurous by the establishment
  - Availability of resources for the young entrepreneurs
  - Statistically proven scientific result indicating high success rate of young entrepreneurs
- Which of the following is NOT a reasonable action for a company that is trying to introduce a new product to the market (e.g. Tesla)?
  - Get ahead of the competition by borrowing.
  - Until making positive profit, rely on internal funds.
  - Increase the financial leverage as the market demand and the production process require.
  - Keep a high equity multiplier according to the needs of the company.
  - Allow borrowing a long as it helps boost company's market share.
- If the dividend payout ratio is 1, you can say for sure that
  - Sustainable growth rate is at its maximum.
  - Internal growth rate is at its maximum.
  - External financing need is zero.
  - Internal growth rate is zero
  - Debt to Equity ratio cannot stay the same.

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Last and First Name: AM A

**Short Answer Questions:**

13. Income Statement for 2014 and Balance Sheets for 2013 and 2014 for Alsu Corporation are given below:

~~225~~

Alsu Corp., Balance Sheet					
Current Assets	2013	2014	Current Liabilities	2013	2014
Cash	160	<del>180</del> 180	Accounts Payable	300	192
Accounts Receivable	440	<del>278</del> 560	Notes Payable	100	200
Inventory	600	<del>1678</del> 700	Total Current Liabilities	400	392
Total Current Assets	1,200	1,440	Long-Term Debt	800	?
Net Fixed Assets	1,800	<del>1516</del> ?	Owners' Equity		
			Stock	800	840
			Retained Earnings	1,000	<u>1288</u>
Total Assets	3,000	?	Total Liabilities and Owners' Equity	3,000	<del>?</del> 4396

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	<u>288</u>

$= 432 - 144 =$

a) (2 points) What is the Cash Flow from Operations?

$1/ Sales - Cost = 800$

b) (4 points) If the Cash Flow from Assets is \$284, has the firm acquired or sold any fixed assets from 2013 to 2014? By how much?

$C(A) = C(C) + C(CS)$

$492 = (192 + 100 + 60) + (840 - 800)$

$284 - 492 = 284$

It sold 284 of

Fixed Assets

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Last and First Name:

AMA

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

Total Assets = 180 + 560 + 760 + 1440 + 1516 = 4396

4396 = 192 + 200 + 392 + LTDebt + 840 + 1288

LTDebt = 1484

$\Delta$ LTDebt = 1484 - 800 = 684

The company has increased its long term debt by 684

d) (2 points) What is the Retained Earnings number for 2014?

= 1000 + (432 - 144)

Ret. Earnings = 1288

14. (5 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%?

Plan A

Plan B

$10,000 = 8600(1+i)$        $20,000 = (8600 \times 2)(1+i)^2$

$i = \frac{10000}{8600} - 1$

$i = \sqrt{\frac{100}{86}} - 1$

$i = 16.28\%$

$i = 7.83\% \Rightarrow$  invest in market

$\Rightarrow$  invest in A

TAKE PLAN A

Last and First Name: AMA

~~6.~~ Given the tax rates as shown, what is the average tax rate for a firm with taxable income of \$126,500?

Taxable Income	Tax Rate
\$0 - 50,000	15%
50,001 - 75,000	25%
75,001 - 100,000	34%
100,001 - 335,000	39%

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- a) 21.38%
- b) 23.88%
- c) 25.76%
- d) 34.64%
- e) 39.99%

7. Thompson's Jet Skis has operating cash flow of \$218. Depreciation is \$45 and interest paid is \$35. A net total of \$69 was paid on long-term debt. The firm spent \$180 on fixed assets and increased net working capital by \$38. What is the amount of the cash flow to stockholders?

-3

~~218 + 45 - 35 - 69 - 180 - 38~~  
NWC = CA - CL

- a) -\$104
- b) -\$28
- c) \$28
- d) \$114
- e) \$142

8. Occasionally, companies buy back their own stocks. 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 is undervalued
- d) Increase the value of the remaining shares
- e) Increase growth rate

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

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- a) A big difference between the current ratio and quick ratio for a retailer
- b) A high capital intensity ratio for a traditional oil producer
- c) A high financial leverage for a startup
- d) Stabilization of the growth rate for a well-established company
- e) A low price to earnings ratio for a technology company having high growth potential

Last and First Name: AMA

17. (3 points) Apple Inc. shareholders are not in favor of company's holding a big cash account. What may be the shareholders' concern?

The share holders are concerned that they are not getting their fair share of profits on Apple's success.

18. (5 points) You are the financial manager of ALCU Corporation. Company has a 9% ROE, and 12% sustainable growth rate when Debt to Equity ratio is kept at 2/3. What is the maximum growth rate ALCU can achieve if, going forward, ALCU wants to use only its internal funds?

$$\frac{NI}{E} = ROE \quad SGR = 0.12$$

$$0.12 = \frac{0.09 \times b}{1 - 0.09 \times b}$$

$$(0.12) - (0.12)(0.09)b = 0.09 \times b$$

$$0.12 = 0.1008b$$

$$b = 1.1905$$

$$IGR = \frac{(0.54)(1.1905)}{1 - (0.54)(1.1905)} = 1.8\%$$

$$\frac{D}{E} = \frac{2}{3} = \frac{D}{E} = \frac{A-E}{A} = \frac{A}{E} - 1$$

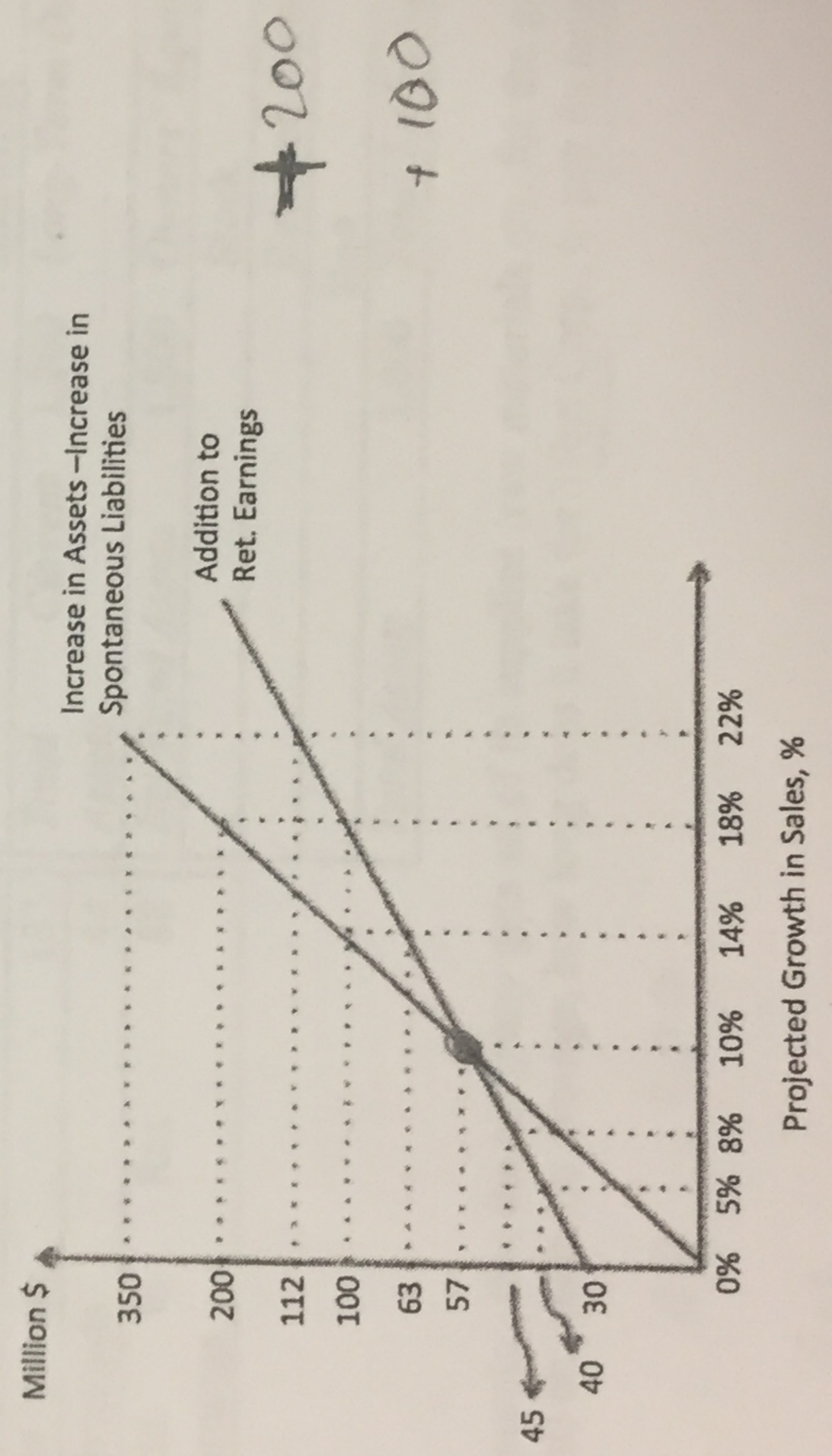
$$\frac{D}{E} + 1 = \frac{A}{E} \Rightarrow \frac{E}{A} = \frac{1}{\frac{D}{E} + 1}$$

$$ROA = ROE \times \frac{E}{A}$$

$$= \frac{0.09}{\frac{2}{3} + 1} = \frac{(0.09)(3)}{5}$$

$$ROA = 0.54$$

19. 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) What is the internal growth rate for Corporation X?

10%

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~~b)~~ (4 points) If the sustainable growth rate is 18%, projected total stockholders' equity is \$800 Million, and projected total debt is \$400 Million, what is the total debt now (before the growth occurs)?

~~SGR = ROE / (1 - ROE)~~

$Equity + Debt = Assets$

$\Delta A - \Delta L = 200 = \frac{A(1.18)}{1.18} - 169$

$RE = 100$

$E = 800 \quad L = 400$

~~c)~~ (3 points) If, instead, the Corporation X management decides to keep the business as before and not to grow over the course of coming year, what will be the total stockholders' equity?

-3

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~~20.~~ (4 points) The most recent Income Statement and the Balance Sheet for Tibet Corporation are given below:

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Tibet Corp., Income Statement, end of year 2013	
Sales	\$1,000
Cost of Goods Sold	800
Taxable Income	200
Taxes (34%)	68
Net Income	132
Dividends	44
Add. to Ret. Earnings	88

Tibet Corp., Balance Sheet, end of year 2013	
<b>Current Assets</b>	
Cash	160
Accounts Receivable	440
Inventory	600
<b>Total Current Assets</b>	<b>1,200</b>
<b>Current Liabilities</b>	
Accounts Payable	300
Notes Payable	100
<b>Total Current Liabilities</b>	<b>400</b>
<b>Long-Term Debt</b>	
	800
<b>Net Fixed Assets</b>	<b>1,800</b>
<b>Owners' Equity</b>	
Stock	800
Retained Earnings	1,000
<b>Total Liabilities and Total Assets</b>	<b>3,000</b>

Assuming that the company gets all of its supplies (raw materials etc. for the goods produced and sold) on credit, on average, how long does it take for Tibet Corp., to pay its suppliers?

$AP = 300$

$AP \text{ turnover} = \frac{Sales}{AP} = \frac{1000}{300} = \frac{10}{3}$

$\frac{365}{10/3} \text{ days}$

$\text{Pays AP} = \frac{365}{AP \text{ turnover}} = 110 \text{ days}$

$109.5 \rightarrow 110 \text{ days}$

-4

(X)

Last and First Name: AMA

10. As seen on an income statement:

- a) interest is deducted from income and increases the total taxes ~~incurred~~.
- b) the tax rate is applied to the earnings before interest and taxes when the firm has both depreciation and interest expenses.
- c) depreciation is shown as an ~~expense~~ but does not affect the taxes ~~payable~~.
- d) depreciation reduces both the pretax income and the net income.
- e) interest expense is added to earnings before interest and taxes to get pretax income.

*Subtracted from*

11. 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

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

- a) inventory
- b) ~~buildings~~
- c) accounts receivables
- d) ~~equipment~~
- e) ~~patents~~



Last and First Name: AMA

15. 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 and costs are proportional to sales. Assume debt will not change and dividend payout ratio is 1/3. (assume no interest, taxes or depreciation)

3 a) (4 points) Construct the company's pro forma balance sheet and income statement for 2014.

	2013	2014
Sales	150	225
Costs	100	150
NI	50	75
Assets	100	150
Debt	75	75
Ret. Earn.	33.33	50
Equity	?	112.5 + EFN
		+ 33.33

Retained Earnings =  $50 \left(\frac{2}{3}\right) = 100/3$

balance sheet? -2

b) (2 points) What is the external financing needed (EFN)?

EFN = 150 - 112.5 - 33.33

EFN = 4.17

16. 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?  $PM = 0.06$   $ROA = 0.08$   $EM = 1.4$

$ROE = PM \times EM \times A \text{ Asset Turnover}$   
 $ROA = PM \times A \text{ Asset Turnover}$   
 $\frac{NI}{A} = \frac{NI}{S} \times \frac{S}{A}$   
 $ROE = 0.06 \times \frac{4}{3} \times 1.4$

$ROE = 0.112$

b) (2 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. What kind of a short term and long term effect will this have on ROE?

The ROE will increase in the short term since NWC will increase, but in the long term, the ROE will not have the opportunity to grow as quickly as if Frederico didn't have to pay so much farther down the line

$$b = 1 - \frac{D}{V} = 1 - \frac{44(1.1)}{132(1.1)} = \frac{2}{3}$$

21. (4 points) For this question, use the income statement and the Balance Sheet given in question 20. Tibet Corporation would like to grow by 10% from 2013 to 2014. What is the External Financing Need?

$$EFN = \left( \frac{3000}{1000} \right) (1000)(1.1) - \frac{(300)(1.1)}{1000} (1000)(1.1) - \frac{132}{1000} \times (1000 \times 1.1) \left( \frac{2}{3} \right)$$

$$EFN = 3300 - 330 - 968$$

$$EFN = 173.2$$

22. (4 points) As a proxy, either the Stockholder's Equity or Market Capitalization is used to measure a company's value. Write down a disadvantage of using each.

Stockholder's Equity does not take

Market Capitalization does not take the size of the firm into account.

23. (3 points) What does an unusually high P/E Ratio (Price to Earnings Ratio) indicate?

This indicates that the market thinks that the firm has a high potential to do well. It also means the stock is overvalued, one example of this is Google.