2018 Pre-Super Week Question Guide

Yale SCHOOL OF MANAGEMENT

Student Organizations

Finance Club

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Technical Questions

Sample Questions

Question #1A: On January 1st, 2017 you purchase a factory for $400, salvage value $100, depreciable life of 6 years. Purchase made using $200 cash on-hand and $200 in new debt (10% interest). Assume tax rate of 20%. What is the impact on the 3 financial statements?

Answer #1A:

I/S	B/S		C/S
no change	+400 ppe	+200 debt	*CFO*
	-200 cash		*CFI*
	+200	+200	-400 capex
			CFF
			+200 debt
			-200 cash

Question #1B: At the end of Year 1, what is the impact on the 3 financial statements?

Answer #1B:

I/S	B/S		C/S
-50 D&A	-50 ppe	0 debt	*CFO*
-20 interest	-6 cash	-56 RE	-56 NI
-70 EBT	-56	-56	+50 D&A
+14 taxes			-6 cash
-56 NI			

Question #1C: At the end of Year 2, you sell the factory for $400 and pay back the debt in full early without incurring interest. What is the impact on the 3 financial statements?

Answer #1C: Book value of the factory is now $300 (depreciated over 2 years), and so a gain of $100 is realized when it is sold.

I/S	B/S		C/S
-50 D&A	+190 cash		+40 NI
+100 Gain	-50 ppe	-200 debt	+50 D&A
+50 EBT	-300 ppe	+40 RE	-100 Gain
-10 taxes	-160	-160	-10 CFO
+40 NI			+400 Proceeds
			-200 CFF
			+190 cash

Question #2: Given these statistics of a company:

- **$2000 Revenue**
- **12x EV/EBITDA**
- **50% Gross Margin**
- **$500 SG&A Expense**
- **$1000 Debt (10% interest rate)**
- **25% Tax Rate**
- **100 Shares Outstanding**
- **$1000 Cash**

Assuming no D&A, what is its share price?

Answer #2:

I/S
+2000 revenue
-1000 COGS
+1000 Gross Profit
- 500 SG&A
+500 EBITDA
-100 interest
+400 EBT
-100 taxes
+300 NI

500 EBITDA x12 = 6000 EV
6000 EV – (0 Net Debt) = 6000 EQ
6000 EQ / 100 shares = $60/share

Note: This question gives more information than is required to solve it, and you may encounter scenarios like these in interviews.

Question #3A: A company reports $100 D&A for GAAP accounting, but reports $200 D&A for tax purposes. Why might this be the case?

Answer #3A: This company is using accelerated depreciation for tax purposes, so that it may lower its taxable income further than for GAAP, thereby paying less taxes. This creates (or adds to) a DTL, since the company will need to pay those taxes in the future.

Addition to DTL = ($200 - $100) * (40% tax rate) = $40

Question #3B: Walk through what happens on the financial statements

Answer #3B:

I/S	B/S		C/S
-100 D&A	-100 ppe	+40 DTL	-60 NI
-100 EBT	+80 cash	-60 RE	+100 D&A
+40 taxes	-20	-20	+40 DTL
-60 NI			+80 CFO

Question #5: A company has these statistics:

- **$50 EBITDA**
- **4x EV/EBITDA**
- **100 Senior Debt**
- **200 Junior Debt**
- **$0 Cash**

What is its market cap?

Answer #5:
$50 EBITDA x4 = $200 EV
$200 EV – ($100 + $200 - $0) net debt = -$100 EQ
Equity value is negative but since market cap cannot be negative, the market cap is $0

Question #6: Is this deal accretive or dilutive?

- **Acquirer P/E 10**
- **Target P/E 12**
- **50% debt (8% interest rate)**
- **50% stock**
- **40% tax rate**

Answer #6: Compare the earnings yield of the target to the cost of the acquisition.

- Earnings yield of the target: 1/(P/E)= 8.33%
- Cost of Acquisition:
  - The cost of equity = the earnings yield of the acquirer = 1/(P/E)= 10%
  - The cost of debt = the after tax cost of debt = 8%*(1-40%)
  - 50% equity*(10%) + 50% debt*(8%)*(1-40%) =
  - 5% +2.4% = 7.4%

Since the cost of the acquisition (7.4%) is lower than the earnings yield of the target (8.33%), this deal is accretive.
Note – there are no synergies in this case.

Question #7: What happens to enterprise value if a dividend is issued?

Answer #7: EQ adjusts (usually upward, potentially downward), cash goes down, depends on magnitude but often balances out to no impact.

Question #8: What happens to enterprise value if a cash capex charge (e.g. factory) is made?

Answer #8: Cash decreases, Operating Assets (EV) increases

Question #9: A company has 1 million shares outstanding, and its current share price is $100. It also has $10 million of convertible bonds, with a par value of $1,000 and a conversion price of $50.00. What are its diluted shares outstanding?

Answer #9: First, note that the bonds are in the money so you count them as additional shares rather than Debt. Next, you divide the value of the convertible bonds – $10 million – by the par value – $1,000 – to figure out how many individual bonds there are: $10 million / $1,000 = 10,000 convertible bonds. Next, the number of shares per bond is the par value divided by the conversion price: $1,000 / $50.00 = 20 shares per bond. So, the convertibles create 20 * 10,000, or 200,000 new shares, and the diluted share count is 1.2 million. You don't use the Treasury Stock Method with convertibles because the investors don't pay the company anything to convert the bonds into shares.

Question #10: What's an alternate way to calculate Free Cash Flow aside from taking Net Income, adding back Depreciation, and subtracting Changes in Operating Assets / Liabilities and CapEx?

Answer #10: Take Cash Flow From Operations and subtract CapEx – that gets you to Levered Cash Flow. To get to Unlevered Cash Flow, you then need to add back the tax-adjusted Interest Expense and subtract the tax-adjusted Interest Income.

Question #11: How can we calculate Cost of Equity WITHOUT using CAPM?

Answer #11: There is an alternate formula: Cost of Equity = (Dividends per Share / Share Price) + Growth Rate of Dividends This is less common than the "standard" formula but sometimes you use it for companies where dividends are more important or when you lack proper information on Beta and the other variables that go into calculating Cost of Equity with CAPM.

Question #12: How does the terminal value calculation change when we use the mid-year convention?

Answer #12: When you're discounting the terminal value back to the present value, you use different numbers for the discount period depending on whether you're using the Multiples Method or Gordon Growth Method:
Multiples Method: You add 0.5 to the final year discount number to reflect the fact that you're assuming the company gets sold at the end of the year.

Gordon Growth Method: You use the final year discount number as is, because you're assuming the cash flows grow into perpetuity and that they are still received throughout the year rather than just at the end.

Question #13: Use the spreadsheet to generate more merger math problems

Sample Case

Prompt: Here are the financial statements for a company, take 5 minutes to familiarize yourself with it, and then you will be asked to draw conclusions.

UNITED PARCEL SERVICE, INC.
Income Statement

Years Ended December 31 ($ millions)	2014	2013	2012
Revenue	$58,232	$55,438	$54,127
Compensation and benefits	32,045	28,557	33,102
Other operating expenses	21,219	19,847	19,682
Operating profit	4,968	7,034	1,343
Investment income	22	20	24
Interest expense	353	380	393
Income before income taxes	4,637	6,674	974
Income tax expense	1,605	2,302	167
Net income	$ 3,032	$ 4,372	$ 807

UNITED PARCEL SERVICE, INC.
Balance Sheet

December 31 ($ millions)	2014	2013	2012
Assets			
Cash and cash equivalents	$ 2,291	$ 4,665	$ 7,327
Marketable securities	992	580	597
Accounts receivable, net	6,661	6,502	6,111
Deferred income tax assets	590	684	583
Other current assets	1,274	956	973
Total current assets	11,808	13,387	15,591
Property, plant & equipment, net	18,281	17,961	17,894
Goodwill and other intangible assets, net	3,031	2,965	2,776
Noncurrent investments and restricted cash	489	444	307
Other noncurrent assets	1,862	1,455	2,295
Total assets	$35,471	$36,212	$38,863
Liabilities and shareowners' equity			
Current maturities of long-term debt and commercial paper	$ 923	$ 48	$ 1,781
Accounts payable	2,754	2,478	2,278
Accrued wages and withholdings	2,373	2,325	1,927
Self-insurance reserves, current portion	656	719	763
Other current liabilities	1,933	1,561	1,641
Total current liabilities	8,639	7,131	8,390
Long-term debt	9,864	10,824	11,089
Pension and postretirement benefit obligations	11,452	7,051	11,068
Deferred income tax liabilities	83	1,244	48
Self-insurance reserves	1,916	2,059	1,980
Other noncurrent liabilities	1,359	1,415	1,555
Total liabilities	33,313	29,724	34,130
Total shareowners' equity	2,158	6,488	4,733
Total liabilities and shareowners' equity	$35,471	$36,212	$38,863

Question #1: Is this company doing well?

Answer #1: You would assess the company on various Key Ratios below. Make note that you would compare with their peers to see how well they're performing relative to their peers. Even if you don't have the peer data available, you should say you would want to compare a company to their peers.

KEY RATIOS

RETURN MEASURES

$$\text{Return on equity (ROE)} = \frac{\text{Net income}}{\text{Average stockholders' equity}}$$

$$\text{Earnings without interest expense (EWI)} = \text{Net income} + [\text{Interest expense} \times (1 - \text{Statutory tax rate})]$$

$$\text{Return on assets (ROA)} = \frac{\text{Earnings without interest expense (EWI)}}{\text{Average total assets}}$$

$$\text{Return on financial leverage (ROFL)} = \text{ROE} - \text{ROA}$$

PROFITABILITY RATIOS

$$\text{Profit margin (PM)} = \frac{\text{Earnings without interest expense (EWI)}}{\text{Sales revenue}}$$

$$\text{Gross profit margin (GPM)} = \frac{\text{Sales revenue} - \text{Cost of goods sold}}{\text{Sales revenue}}$$

$$\text{Expense-to-sales (ETS)} = \frac{\text{Individual expense items}}{\text{Sales revenue}}$$

TURNOVER RATIOS

$$\text{Asset turnover (AT)} = \frac{\text{Sales revenue}}{\text{Average total assets}}$$

$$\text{Accounts receivable turnover (ART)} = \frac{\text{Sales revenue}}{\text{Average accounts receivable}}$$

$$\text{Inventory turnover (INVT)} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

$$\text{Property, plant, and equipment turnover (PPET)} = \frac{\text{Sales revenue}}{\text{Average PP \& E}}$$

LIQUIDITY RATIOS

$$\text{Current ratio (CR)} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$\text{Quick ratio (QR)} = \frac{\text{Cash} + \text{Short-term securities} + \text{Accounts receivable}}{\text{Current liabilities}}$$

$$\text{Operating cash flow to current liabilities (OCFCL)} = \frac{\text{Operating cash flow}}{\text{Average current liabilities}}$$

SOLVENCY RATIOS

$$\text{Times interest earned (TIE)} = \frac{\text{Earnings before interest expense and taxes (EBIT)}}{\text{Interest expense}}$$

$$\text{Debt-to-equity (DE)} = \frac{\text{Total liabilities}}{\text{Total stockholders' equity}}$$

Question #2: Is this company making acquisitions?

Answer #2: Goodwill is increasing, and since goodwill cannot be generated internally, it means they are making acquisitions.

Question #3: How much above the fair value of the acquistion did they pay in 2014?

Answer #3: \$3,031 - \$2,095 = \$66m – assuming no goodwill write-offs or major disposals.

Question #4: Without seeing the Cash Flow statement, is the Financing section of the Cash Flow statement negative or positive?

Answer #4:

- Long Term Debt: They are paying down their debt, so this is a negative cash flow
- Dividends: They are paying dividends, which is a negative cash flow. You can calculate dividends by:

  Retained Earnings Beginning Balance
  + Net Income
  – Dividends
  = Retained Earnings Ending Balance

- Based on these two items, it might be reasonable to say Financing section is negative

Purchase of marketable securities are an investing activity, not financing

Behavioral Questions

Guidance

Approach: Think about several stories/experiences you want to tell. Spend a lot of time to really think through your stories as deeply and then as widely as possible, and for each one try to identify the situation, your thought process, your actions, other people's thoughts/actions, the outcome, what you learned, what you would do differently next time, and what you still need to work on. Then, spend a lot of time thinking about how to succinctly and linearly communicate that.

Stories:

- Leadership: Stories that demonstrate your ability to influence a person, group or organization
- Teamwork: Stories that demonstrate your ability to build and maintain professional relationships
- Accomplishment: Stories that demonstrate your ability to set an objective and achieve it

Each story should generally include several aspects to it:

- A challenge/difficulty
- A success story
- Feedback
- Weakness
- Failure
- Influence/Initiative
- Motivation

Many stories can then be used to answer a variety of interview questions.

Sample Questions:

ID	Type	Question
1	Challenge/Difficulty	Tell me about a challenging situation you faced.
2	Challenge/Difficulty	Describe a time when you were part of a particularly difficult team. What was the situation? What'd role did you play? How did you handle it? And, what was the outcome?

3	Success Story	Give me an example of a time when you successfully worked within a team. What was your role? What was the outcome?
4	Success Story	Tell me about the last time you had to take the initiative to move a project forward. What happened?
5	Feedback	Tell me how you reacted to feedback on one of your projects/responsibilities that wasn't going as well as others had expected. Who was providing the feedback?
6	Success Story	What have been your major successes and accomplishments? How did you achieve those?
7	Weakness	What is your major weakness (or an area of development)? Another one?
8	Failure	Tell me about a time when you missed an obvious solution to a problem at work.
9	Influence/Initiative	Describe a time when you have had to influence the actions or decisions of more senior people, yet did not have the authority to dictate the behavior. How did you handle it? What was the outcome?
10	Challenge/Difficulty	Give me an example of a leadership role you have played in an event, meeting, presentation, or project, when everything did not go as planned. How did you handle it? What was the outcome? What did you learn from this experience? What might you do differently next time?
11	Challenge/Difficulty	What was the most difficult decision you've ever had to make?
12	Failure	Discuss a major setback that you have had to overcome.
13	Challenge/Difficulty	Describe a problem/situation where you had to seek out and prioritize relevant information. How did you define key issues, decide which steps to take to achieve the desired results, and gain approval to implement them?
14	Challenge/Difficulty	Tell me about a time when you have successfully resolved a conflict. What was your role in the situation? How did you handle it?
15	Influence/Initiative	Give me an example where you sought out a problem to solve because it represented a challenge for you.
16	Motivation	What motivates you?
17	Influence/Initiative	Give me an example of a creative or innovative idea you have had recently. What was the context? What made your idea innovative? What did you do with this idea? Where does it stand today?
18	Information	How do you stay abreast of industry/functional news?

19	Success Story	Describe a project in which you went beyond what was expected of you.
20	Challenge/Difficulty	Give me an example of how you assessed a situation and achieved good results by focusing on the most important priorities. How did you determine what the priorities were? What was your strategy and plan to achieve the desired outcome?
21	Challenge/Difficulty	Is there anything else you would like to tell me about yourself?
22	Influence/Initiative	Tell me about a time when you mentored someone professionally?
23	Challenge/Difficulty	Tell me something that's not on your resume?
24		If you weren’t doing investment banking recruiting, what would you be going for?
25		Where do you see yourself in 3 years, 5 years, 10 years?
26		What book have you read recently?
27		Tell me your biggest regret.