Fall 2011 Name:

Valuation: Final Exam

Answer all questions and show necessary work. Please be brief. This is an open books, open notes exam.

1. BigDiscount inc. is a retail firm with a hundred stores, many of which are not very profitable. The company reported $15 million in after-tax operating income on revenues of $ 500 million and total capital invested of $ 200 million in the most recent year. You can assume that both revenues and capital are spread equally across the hundred stores; each store accounts for $ 5 million in revenues and has $2 million in capital invested. The company currently has a high debt ratio (70% of capital, in market value terms) and a cost of capital of 10%.
   a. Assume that the firm plans to shut down ten unprofitable stores each year and fully recover the capital invested in these stores. Also assume that the unprofitable stores generate an after-tax operating margin of only 1.2%. Estimate the free cash flows to the firm each year for the next 5 years, assuming that revenues per store and the current margin at each store that remains open does not change. (2 points)

b. At the end of year 5, BigDiscount Inc, expects to be a mature company, growing 3% a year in perpetuity and to maintain the margin and after-tax return on capital from year 5 (part a). It also hopes to bring its debt ratio down to 40% and have a cost of capital of 8% in perpetuity, after year 5. Estimate the terminal value for the operating assets. (2 points)

c. Given the high debt ratio, if there is a 30% probability that the firm will default sometime over the next five years. If is does default, you can expect to get only half of your invested capital back as divestiture proceeds. Assuming that the cost of capital will stay at 10% for the next five years, estimate the value of the operating assets today. (2 points)

2. United Holdings Inc. is a company in four different businesses and you have been asked to do a relative valuation of the company. You have collected the following information on United's performance in each business for the most recent year.

Business	*Revenues*	*EBITDA*	*Net Interest Expense*	*Net Income*
Steel	$ 2 billion	$ 100 million	$ 20 million	$ 30 million
Technology	$ 1 billion	$ 100 million	$ 10 million	$ 60 million
Chemicals	$ 1 billion	$ 50 million	$ 20 million	$ 5 million
Financial Svcs	$ 1 billion	NA	$ 50 million	$ 50 million

The company has $ 1.2 billion in debt outstanding and a cash balance of $ 200 million. <u>The net interest expense is allocated to each of the divisions, based upon the estimated net debt of that division</u>. There are 100 million shares outstanding.

a. You find comparable firms within each business and estimate the median values for different multiples for each business:

Business	Multiple used	Median value
Steel	EV/EBITDA	6.00
Technology	EV/Revenues	1.25
Chemicals	EV/EBITDA	5.00
Financial Services	PE	12

Assuming that each business of United should trade at the median value for other companies in that business, estimate the <u>value of equity per share</u> in United Holdings. (3 points)

b. Now assume that you were told that the United Holdings is trading at \$25/share and that you believe that this is because the steel business at United Holdings has a much higher return on capital than the rest of the peer group. You have run a regression of EV/EBITDA for the peer group and arrived at the following:
Steel: EV/EBITDA = 3.0+ 30 (Return on capital)
(The regression is run with decimals; a 10% growth rate is input as 0.10)
Estimate what the return on capital at United Holdings' steel business will have to be to justify the price of \$25/share. (You can assume that the other businesses at United Holdings should continue to trade at peer group medians). (3 points)

3. Celio Inc., a music production company, is considering acquiring Dellwood Inc, a manufacturer of musical instruments. Dellwood reported $ 15 million in after-tax operating income on revenues of $ 200 million in the most recent year and had invested capital of $150 million at the end of the prior year. Dellwood is all equity funded and has a cost of equity of 9% (Risk free rate is 4%, the equity risk premium is 5% and the marginal tax rate is 40%.). The firm is in stable growth, expected to grow 3% a year in perpetuity.
    a. Value Dellwood as a stand alone firm, run by its existing management. (2 points)

    b. Now assume that Celio is planning to fund half the acquisition with debt and that Celio's pre-tax cost of debt is 4%. Dellwood's optimal debt ratio is 20% and the firm's pre-tax cost of debt at that level will be 5%. If this is only change you see yourself making in Dellwood's operations, estimate the value of control in this acquisition. (3 points)

c. You expect to be able to write up the book value of Dellwood's assets from $125 million to $ 150 million, after the acquisition. Assuming that you have ten years of depreciable life left in these assets, that you use straight line depreciation and that the marginal tax rate for all corporations is 40%, estimate the value of synergy from this asset write up. (2 points)

4. Sonicare is a manufacturer of electric toothbrushes and other dental appliances. In the most recent year, the firm reported after-tax operating income of \$ 20 million on total capital invested of \$250 million; the firm had capital expenditures of \$ 25 million, depreciation of \$ 15 million and non-cash working capital increased by \$ 5 million during the year. The firm is expected to maintain its existing reinvestment rate and return on capital, at least for the next five years after which the expected growth rate is expected to drop to 2% in perpetuity (with return on capital staying unchanged). The cost of capital in perpetuity for the company is 10%, it is all equity funded, and there are 10 million shares outstanding. There is no cash balance.
   a. Estimate the status quo value per share for the firm. (3 points)

b. Now assume that if you ran the firm, you would dial down growth expectations immediately, and settle for stable growth in perpetuity starting now, while lowering the reinvestment rate to 20% and increasing the return on capital to 12%. You also plan to borrow $ 120 million and buy back shares, lowering your cost of capital in perpetuity to 9%. Estimate the value of equity per share with you in charge. (3 points)

5. Please pick only one answer to the multiple choice questions (and provide a very, very short explanation, if needed) (Each is worth one point)
    a. You are valuing drug patents as options in two pharmaceutical companies. The patents both have 12 years left to expiration and roughly the same characteristics (similar present values if developed today, similar initial development costs and similar standard deviations). However, one of the companies is in a competitive environment and the other is a monopoly. In which company would you expect the patent be valued more highly (as an option) and why?
        i. The company in the competitive environment
        ii. The monopolist
        iii. It will be valued the same at both companies

    Explanation:

    b. A gold mining company has substantial undeveloped reserves. Under which of the following scenarios would you expect the company to most quickly exploit these reserves.
        i. If gold prices go up and gold price volatility increases
        ii. If gold prices go down and gold price volatility increases
        iii. If gold prices go up and gold price volatility decreases
        iv. If gold prices go down and gold price volatility decreases

    Explanation:

    c. Companies hold back on using debt capacity because they value financial flexibility, i.e., the ability to use the debt capacity to take advantage of unexpected investment opportunities. In which of the following companies does this action make the most sense?
        i. Companies that earn low excess returns in businesses with predictable reinvestment needs
        ii. Companies that earn high excess returns in businesses with predictable reinvestment needs.
        iii. Companies that earn low excess returns in businesses with unpredictable reinvestment needs
        iv. Companies that earn high excess returns in businesses with unpredictable reinvestment needs.

    Explanation:

d. You are interested in investing in the securities of Ajax Airlines, a money losing company with significant debt obligations. You estimate that the firm generated $8 million in EBITDA last year and that airlines typically trade at 5 times EBITDA. The average duration of the debt is 5 years and the total payments (interest and principal) on the debt (corporate bonds) are expected to amount to $ 60 million over that period. If the risk free rate is 2% and the standard deviation in firm value for airlines is 30%, would you buy bonds in Ajax Airlines, if the market interest rate on the bonds is 11%? (3 points)

Cumulative Normal Distribution

d	N(d)	d	N(d)	d	N(d)
−2.95	.0016	−1.00	.1587	1.00	.8413
−2.90	.0019	−.95	.1711	1.05	.8531
−2.85	.0022	−.90	.1841	1.10	.8643
−2.80	.0026	−.85	.1977	1.15	.8749
−2.75	.0030	−.80	.2119	1.20	.8849
−2.70	.0035	−.75	.2266	1.25	.8944
−2.65	.0040	−.70	.2420	1.30	.9032
−2.60	.0047	−.65	.2578	1.35	.9115
−2.55	.0054	−.60	.2743	1.40	.9192
−2.50	.0062	−.55	.2912	1.45	.9265
−2.45	.0071	−.50	.3085	1.50	.9332
−2.40	.0082	−.45	.3264	1.55	.9394
−2.35	.0094	−.40	.3446	1.60	.9452
−2.30	.0107	−.35	.3632	1.65	.9505
−2.25	.0122	−.30	.3821	1.70	.9554
−2.20	.0139	−.25	.4013	1.75	.9599
−2.15	.0158	−.20	.4207	1.80	.9641
−2.10	.0179	−.15	.4404	1.85	.9678
−2.05	.0202	−.10	.4602	1.90	.9713
−2.00	.0228	−.05	.4801	1.95	.9744
−1.95	.0256	.00	.5000	2.00	.9773
−1.90	.0287	.05	.5199	2.05	.9798
−1.85	.0322	.10	.5398	2.10	.9821
−1.80	.0359	.15	.5596	2.15	.9842
−1.75	.0401	.20	.5793	2.20	.9861
−1.70	.0446	.25	.5987	2.25	.9878
−1.65	.0495	.30	.6179	2.30	.9893
−1.60	.0548	.35	.6368	2.35	.9906
−1.55	.0606	.40	.6554	2.40	.9918
−1.50	.0668	.45	.6736	2.45	.9929
−1.45	.0735	.50	.6915	2.50	.9938
−1.40	.0808	.55	.7088	2.55	.9946
−1.35	.0885	.60	.7257	2.60	.9953
−1.30	.0968	.65	.7422	2.65	.9960
−1.25	.1057	.70	.7580	2.70	.9965
−1.20	.1151	.75	.7734	2.75	.9970
−1.15	.1251	.80	.7881	2.80	.9974
−1.10	.1357	.85	.8023	2.85	.9978
−1.05	.1469	.90	.8159	2.90	.9981
		.95	.8289	2.95	.9984