Final: Valuation

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

1. You have been asked to review the valuation of Sylvan Enterprises. In arriving at a value of $2 billion for the firm, the analyst has discounted the **expected free cash flows to firm** of $180 million next year, expected to grow 3% a year**, at the cost of equity for the firm (instead of the cost of capital)**. If the after-tax cost of debt is 4.5% and the debt to capital ratio is 20%, **estimate the correct value of firm**. (3 points)

2. You are trying to estimate the free cash flows to equity to First Savings Bank and have been given the following information

	Base year	1	2	3
Risk adjusted assets ($ mil)	$12,000.00	$12,480	$12,979	$13,498
ROE	6.00%	8.00%	9.00%	10.00%
Tier 1 capital (% of Risk-adjusted assets)	15.00%	16.00%	17.00%	18.00%

Assume that tier 1 capital is equal to book value of equity, **estimate the free cash flows to equity each year for the next three years**. (3 points)

3. You have been asked to estimate the expected free cash flows to the firm for Stellar Software, each year for the next three years, and have been given the following information:

	Base year	1	2	3
Revenues (millions)	$20,000.00	$24,000.00	$26,000.00	$28,000.00
Operating margin (pre-tax)	-10%	-5%	5%	15%
Sales to capital =	2.00	2.00	2.00	2.00

If the firm has an expected tax rate of 25% and is carrying an NOL of $3 billion into next year, estimate the expected FCFF for the next three years. (3 points)

4. You are valuing Vivitar Inc., which is expected to generate free cash flows to the firm of $500 million next year, growing at 3% a year in perpetuity, with a cost of capital of 8%. In addition, you have collected the following information:

Item	*Value (in millions)*	*Additional information*
Debt	$3,000.00	Book value = Market value
Cash	$500.00	
Minority holdings	$750.00	Price to book ratio = 2.00
Minority Interest	$1,000.00	Price to book ratio = 2.00

Estimate the value of equity in the company. (3 points)

5. Garda Stores is a mature retail company, that expects earnings to grow 4% a year in perpetuity, while reinvesting 20% of its after-tax operating income, with a cost of capital of 9%. It currently trades at a (fair) enterprise value to sales ratio of 2.40, but it expects to see its operating margin halved because of business disruption. Estimate the **EV to sales after the disruption**. (3 points)

6. Reyna Inc. is a privately owned business that expects to generate \$30 million in free cash flows to equity next year and is an all equity-funded firm. With an expected growth rate in perpetuity of 4%, and after an illiquidity discount of 20% applied to value, the company has been **valued (correctly) at \$200 million to an undiversified buyer**. If the company would be valued at \$500 million to a public (diversified) buyer, estimate the **correlation of the firm with the market**. (The riskfree rate is 4%, and the equity risk premium is 5%). (3 points)

7. Landor Inc. is a struggling chemical company that is expected to earn an after-tax operating margin of 8% on revenues of $100 million next year; the firm is expected to grow 4% a year in perpetuity, while facing a cost of capital of 10%. The company is valued (fairly) at $48 million, but it is considering a restructuring which will **lower it cost of capital to 9% and double its return on capital on new investments**. Estimate the **value gained (or lost) by Landor's stockholders from the restructuring**. (4 points)

8. You have been asked to assess the value of synergy in a merger between two firms, PHR Health and Neo Hospitals, and have collected the following information:

	PHR Health	*Neo Hospitals*
Expected Revenues next year ($ mil)	$1,500.00	$600.00
After-tax operating income next year ($ mil)	$90.00	$90.00
Invested capital ($ mil)	$900.00	$450.00
Expected growth rate	3%	3%
Cost of capital	9%	9%
Tax rate	25%	25%

The merger is expected to create a combined firm that through a quirk in the tax law will face a tax rate of 20% (instead of 25%). Estimate the value of synergy in the merger. (4 points)

9. You have been asked to assess the value of Gould Oil, a small oil company with both developed and undeveloped reserves.
    a. The **developed oil reserves** are expected to **generate $400 million a year** in after-tax cash flows for the next ten years; the **cost of capital is 9%**.
    b. The company has the rights to undeveloped reserves **for 12 years**, and it **will cost $1.5 billion to develop the reserves.**
    c. Using a riskfree rate of 4% and the standard deviation in value, an analyst has very helpfully assessed key numbers for the option pricing model:

d1 =	0.8061	N(d1) =	**0.7899**
d2 =	-0.2332	N(d2) =	**0.4078**

    d. The company is **currently (fairly) valued at $3,176 million**, including the value of both the developed and undeveloped reserves.

Estimate the **current value of the oil in the undeveloped reserves** (you can ignore development lags and the cost of delay.) (4 points)