1. You are trying to value ListoFact, a data processing company. The company generated $1 billion in revenues in the most recent financial year and expects revenues to grow 3% a year in perpetuity. It generated $30 million in after-tax operating income in the most recent financial year and expects after-tax operating margin to double over the next 3 years (in equal annual increments). After year 3, the margin will stabilize at year 3 levels forever. The firm is expected to have depreciation of $20 million and capital expenditures of $15 million each year for the next 3 years and to earn a 10% return on capital in perpetuity after that. There are no working capital requirements. The cost of capital will be 12% for the next 3 years and 10% thereafter.

   a. Estimate the free cashflows to the firm each year for the next 3 years. (2 points)
b. Estimate the value of the firm at the end of the third year (terminal value)  
   (2 points)

c. Estimate the value of equity per share today, if the firm has $150 million in debt outstanding, $25 million as a cash balance and 10 million shares.  
   (2 points)
2. You have been asked to assess what value you would attach to Springbok Enterprises, a manufacturer of sports equipment that is planning a public offering next year. You have collected information on publicly traded sports equipment companies and have regressed enterprise value/sales ratios against after-tax operating margins:

\[ \text{EV/Sales} = 0.25 + 0.10 \text{ (After-tax Operating Margin)} \]

(For example, the EV/Sales with a 10% after-tax margin would be 0.25 + 0.10(10) = 1.25)

Springbok Enterprises is expected to generate $15 million in after-tax operating income on revenues of $100 million next year.

a. Given your regression and Springbok’s estimated margin, estimate the value you would put on Springbok today. (2 points)

b. You feel that this regression is understating Springbok’s enterprise value, largely because it does not factor in revenue growth into the prediction. If you wanted to add a proxy for growth into the regression above, which of the following would you use? (1 point)

i. Expected growth rate in book value of equity
ii. Expected growth rate in earnings per share
iii. Expected growth rate in revenues
iv. Expected growth rate in net income
v. Historical growth rate in net income
vi. Historical growth rate in revenues
vii. Whichever growth rate gives me the highest R-squared
c. Assume that Springbok has the option of remaining a private business and raising equity from a private equity investor. The private equity investor is willing to invest $40 million in the firm in exchange for a 33.33% share of the equity in the firm. What value is the private equity investor attaching to the firm, if Springbok has $30 million in debt outstanding and no cash?

(1 point)

d. Assume now that the private equity investor invests $40 million in exchange for a 33.33% share of the equity in the firm and that Springbok will go public in three years. If you assume that the firm’s margins will remain unchanged, that revenues will go up by 10% a year over the next 3 years and that there will be $50 million in debt outstanding at the end of year 3, estimate the annual return that will be earned by the private equity investor over the 3 years. (You can assume that the regression in part a will continue to hold)

(2 points)
3. Vapono Cheese manufactures cheese and frozen pizzas and is publicly traded. The firm is in stable growth, with $15 million in after-tax operating income in the most recent financial year growing 3% a year in perpetuity. There are 15 million shares outstanding, trading at $5 a share and $25 million in debt (book value as well as market value). There is no cash balance and the cost of capital for the firm is 9%.

a. Assuming that the market is correctly pricing the equity in this firm today, what return on capital is Vapono expected to make in perpetuity? (2 points)

b. Now assume that the optimal debt ratio for Vapono is 40% and that the cost of capital at that debt ratio is 8%. If Vapono can move to its optimal and raise the return on capital on new investments to 8%, estimate the value of equity per share in the firm. (Leave the stable growth rate unchanged at 3%) (2 points)
c. Assume now that there is only a 20% chance that the firm will be run optimally. Of the 15 million shares, 5 million are voting shares and 10 million are non-voting shares. Estimate the value of a voting share. (2 points)
4. You have been asked to assess the value of synergy in a merger between two firms and the information on each firm is provided below:
   - Ludmilla Enterprises is a small chemical firm with an enterprise market value of $1 billion, an after-tax return on capital of 12% and a cost of capital of 8%.
   - Lybov Inc. is a multi-business company with an enterprise market value of $1.5 billion, an after-tax return on capital of 10% and a cost of capital of 8%.

Both firms are in stable growth and are fairly priced before the acquisition, with after-tax operating income and cashflows growing at 4% a year. The tax rate for both firm is 40%.

a. If Lybov acquires Ludmilla for $1.25 billion, the tax laws will allow it to write up Ludmilla’s assets from their existing book value to the acquisition value (of $1.25 billion). If you assume that the assets will be depreciated straight line over the next 10 years to a salvage value of zero (both pre and post acquisition), estimate the present value of the additional tax benefits that will accrue from this acquisition. (4 points)
b. If Lybov has $250 million in debt and 100 million shares outstanding, estimate the value of equity per share in Lybov after this transaction. (2 points)
e. A telecommunications company has the exclusive rights to a technology for the next 10 years. If developed today, it would require an upfront investment of $1.2 billion and will generate after-tax cashflows of $120 million each year for the next 10 years and $80 million a year for the following 10 years. Each year of waiting is expected to reduce the present value of the cashflows on the investment by $40 million. The riskless rate is 4% and the cost of capital for the technology firm is 10%. Though you cannot do a simulation, you have estimated that the standard deviation in stock prices of the firm is 50%, the standard deviation in bond prices is 10% and that the average debt to capital ratio for the firm over the period of estimation was 40%. (The correlation between stocks and bond is 0.30).

a. Estimate the net present value of developing the technology today.

(2 points)
b. Viewed as an option, what value would you attach to the technology. 
(4 points) (2 points for getting the inputs rights and 2 points for the right option value)

\[ S = \]

\[ K = \]

\[ T = \]

\[ R = \]

Standard deviation =

Cost of delay (Dividend yield) = \( \text{(if any)} \)