1. You have been asked to do a discounted cash flow valuation of Piedmont Coffee, a small publicly traded coffee company. The company earned $20 million in after-tax operating income and reported capital expenditures of $8 million and depreciation of $4 million in the most recent year; non-cash working capital increased by $1 million during the year. It also did a stock acquisition for $5 million. At the start of the year, the book value of debt was $40 million and the book value of equity was $60 million.

a. Assuming that the current return on capital and reinvestment rate continue for the next 5 years, estimate the expected annual growth rate for the next 5 years. (2 points)

b. Based on this expected growth rate, estimate the expected free cash flows to the firm for the next 5 years. (1 point)
c. The firm is expected to have a cost of capital of 10% in perpetuity. At the end of year 5, the return on capital is expected to drop to 12% and the growth rate to 4%. Estimate the terminal value for the firm. (2 points)

d. Assume that the market value of debt is equal to the book value of debt and that the firm has 10 million shares outstanding. Estimate the value of equity per share today. (1 point)
2. You are now trying to value Piedmont Coffee using multiples. A regression of PE ratios against fundamentals for companies in the sector yields the following:
PE = 2.00 + 2.5 (Expected Growth rate : next 5 years) – 5.0 (Beta) R² = 50%
[For example, the PE for a firm with 10% growth and a beta of 0.8 would be 23 = 2 + 2.5 (10) – 5 (0.8)]
Piedmont reported earnings per share of $0.60 in the most recent year and the stock currently trades at $12 a share. The beta for the stock is 1.20.
a. If the market price is right and the sector regression holds, estimate the expected growth in earnings per share for Piedmont over the next 5 years. (2 points)

b. At the end of year 5, Piedmont is expected to become a stable growth firm, growing 4% a year in perpetuity. If the beta for the firm will drop to 1 in stable growth, estimate the expected price at the end of year 5. (You can use the expected growth rate from part a and the sector regression to answer this question) (3 points)
3. Marley Steel is a publicly traded steel company with 20 million shares outstanding, trading at $2 a share, and $60 million in outstanding debt. The cost of capital for the firm was 12%. The firm is expected to generate $16 million in after-tax operating income next year and is considered to be in stable growth, growing 4% a year in perpetuity.

a. Assuming that the firm is correctly valued by the market now, estimate the return on capital that the firm is expected to generate in perpetuity. (2 points)

b. You believe that if you acquire control of the firm, you can sell idle assets (that are not generating operating income) for $40 million and pay down debt. If you do so, your cost of capital will decrease to 10%. Estimate the new value for the firm if you can restructure it. (2 points)
c. How would your answer to b change, if your plan is not to pay down the debt but to redeploy the assets to more productive investments, which will increase the after-tax operating income to $25 million next year. The expected growth rate will remain 4% a year in perpetuity and the cost of capital will continue to be 12%. (2 points)
4. Prius Enterprises, a publicly traded company, is considering acquiring Juniper Inc, a private company in the same business. Assume that both Prius and Juniper are stable growth companies funded entirely with equity, each with expected free cash flows next year of $10 million, and each expected to grow 4% a year in perpetuity. The unlevered beta for the sector is 0.80 but only 40% of the risk in the business is market risk. The riskfree rate is 5% and the equity risk premium is 4%. (Tax rate = 40% for both firms)

a. Prius Enterprises has 5 million shares outstanding. Estimate the value per share for Prius as a stand-alone firm. (1 point)

b. Estimate the value of Juniper as a stand-alone firm to its existing owner (who is not diversified). (2 points)
c. Assume that Prius pays a premium of 50% over the estimated value of Juniper (from part b). Estimate the value per share of Prius after the transaction. (1 point)

d. Now assume that Prius will be able to write up the book value of Juniper’s assets from the existing value of $100 million to $150 million. Assuming that these assets have five years of depreciable life left and that you use straight line depreciation, estimate the value of the additional tax savings that will accrue from the transaction.
5. You have been asked to value a new technology for producing and distributing solar power. You estimate that the technology will need an up-front investment of $1.5 billion and that the expected cash flows will depend on the price of oil. For every dollar that the oil price exceeds $100, the firm expects to generate $20 million in annual after-tax cash flow, each year for 10 years. The expected cash flows are risky and the appropriate discount rate for these cash flows is 12%. The current oil price is $110 and the standard deviation in ln (oil prices) is 30%. The riskless rate is 4%.

a. Estimate the net present value of the solar power investment at the current oil price. (2 points)
b. Now assume that you can get the exclusive rights to this technology for the next 15 years. Estimate how much you would be willing to pay for these exclusive rights? (Show the option pricing inputs below and then the value of the option following the inputs)
   - $S =$
   - $K =$
   - Life of the option =
   - Standard deviation =
   - Riskless rate =
   - Cost of delay (if any) =