Introduction to Finance Problem Set 3

Question 1

Your company is preparing a new product line. The production process requires an immediate investment of \$75,000, and you plan to sell the entire inventory exactly one year from now. Given that your company's cost of capital is 5.8%, what's the minimum revenue you need to generate from these sales to ensure the project breaks even in terms of Net Present Value (NPV)?

Question 2

You are the CEO of of a tech company specializing in high-performance processors for Al-driven devices. You are evaluating whether to launch a new product line. The development of the new processor will require an upfront investment of \$1.1 million (in year 0). You anticipate generating revenues of \$901,000 in the first year, which will increase to \$1.57 million in the second year. However, starting in the third year, revenues are expected to decline by 35% annually for the next 3 years until the product becomes fully obsolete. During years 1 through 5, you will face fixed costs of \$107,000 per year and variable costs amounting to 57% of revenues.

- a. What are the cash flows for the project in years 0 through 5?
- b. What is the project's NPV if the project's cost of capital is 8.4%?

Question 3

Innovatech, Inc. is funded by 35% debt, 11% preferred shares, and 54% common equity. The cost of its debt is 6.1%, and its preferred stock provides an annual dividend of \$2.01, with a current market price of \$35 per share. The company also pays \$1.9 per share in dividends to common shareholders, and these dividends are expected to grow by 2.5% annually. Innovatech's tax rate is 31%.

What is its after-tax WACC?

[Note: Assume that the firm will always be able to utilize its full interest tax shield.]

Question 4

TechVision Corp. has a budget of \$1 billion set aside for capital investments. Which projects should TechVision pursue in order to remain within this limit? Additionally, what is the impact of this budget constraint on the company in terms of missed NPV opportunities? The opportunity cost of capital for each project is 11%.

[Hint: You need to rank projects by their profitability (NPV/Investment).]

Project	Investment (in million USD)	NPV (in million USD)
1	270	60
2	250	-7
3	290	40
4	90	15
5	110	9
6	350	63
7	400	45