CHAPTER #7 – INCOME TAX CONSIDERATIONS

Note: Assume that the Canadian corporate income tax pool system applies in all after-tax exercises using declining-balance depreciation. Unless otherwise specified however, ignore the half-year rule to simplify the solutions.

1. The XYZ Company has currently invested in a $25 000 000 project (assume that the capital expenditure is immediate, i.e. that it is made at time 0). It is estimated that the project will generate annual revenues of $15 000 000 and incur annual operating expenses of $7 000 000 over an eight-year period. The salvage value is negligible. The initial investment is to be depreciated by the declining-balance method at a rate of 30 percent per year and the corporate income tax rate is 45 percent. Determine:

i) the annual corporate income tax payments associated with the project;
ii) the time distribution of after-tax cash flows associated with the project.

2. Rework Exercise 1 of CHAPTER #6 on an after-tax basis, given that the capital expenditures are to be depreciated by the declining-balance method at an annual rate of 20 percent, the corporate income tax rate is 40 percent and the cost of capital is 15 percent.

3. Rework Exercise 3 of CHAPTER #6 on an after-tax basis, given that the capital expenditures are to be depreciated over the project's life using the straight-line method, the corporate income tax rate is 40 percent and the cost of capital is 12 percent.

4. Rework Exercise 4 of CHAPTER #6 on an after-tax basis, given that the capital expenditures are to be depreciated over the project's life using the straight-line method, the corporate income tax rate is 50 percent and the cost of capital is 10 percent. Note that working capital is non-depreciable and therefore, non-taxable when recovered at the end of the project's life.

5. Rework Exercise 10 of CHAPTER #6 on an after-tax basis, given that the capital expenditures are to be depreciated by the declining-balance method at an annual rate of 30 percent, the corporate income tax rate is 40 percent and the cost of capital is 12 percent.

6. A manufacturing company incurred an immediate capital expenditure of $200 000 in anticipation of annual operating profits of $80 000 over a six-year period. It was estimated that the salvage value of the equipment purchased would be negligible. Given a corporate income tax rate of 45 percent and a minimum acceptable after-tax return on investment of 12 percent, compare the total tax payments and net present values obtained from depreciating the investment by the declining-balance method at rates of 30 percent and 40 percent per year. Discuss the results.

7. The following investment opportunity is being considered:

Immediate capital expenditure ($)	150 000
Life (years)	12

Annual revenues ($)	65 000
Annual operating expenses ($)	30 000
Salvage value	Negligible
Corporate income tax rate (%)	45
Straight-line depreciation rate (%)	10

The capital investment associated with the project is uncertain. Although it is expected to be $150 000, it may in fact be as high as $200 000 or as low as $120 000. Determine the most-likely after-tax net present value of the project as well as the range of possible values at a cost of capital of 15 percent.

8. An investment of $300 000 today is expected to generate an annual operating profits of $150 000 over an eight-year period. A salvage value of $100 000 is expected. Assume a corporate income tax rate of 45 percent and a minimum acceptable return on investment of 12 percent. Determine the net present value of the project based on the following depreciation methods:

i) Straight-line at 10 percent per year;
ii) Declining-balance at 30 percent per year.

9. A friend of yours bought a piece of land five years ago for $100 000. The land has just been sold for $250 000. If the personal income tax rate is 45 percent, 75 percent of any capital gain is taxable, and a capital loss reserve of $30 000 is available to offset any capital gain, determine:

i) the capital gain;
ii) the capital gains tax;
iii) the after-tax proceeds from the sale of the land.

10. A construction company purchased new equipment to improve its productivity. The initial cost was $100 000. This equipment will generate annual revenues of $70 000. Operating expenses are estimated at $30 000 per year. Assume a useful life of five years and a negligible salvage value. The corporate income tax rate is 45 percent and the company requires a 15 percent after-tax return on investment (18 percent on a before-tax basis). Based on straight-line depreciation at a rate of 30 percent per year, determine:

i) the before-tax net present value;
ii) the after-tax net present value.

11. A new machine costs $50 000. It has a useful life of five years and a salvage value of $10 000. A company can use the machine to generate additional revenues of $25 000 per year. The annual operating expenses of the machine are $7500. The machine will be depreciated by the declining-balance method at a rate of 30 percent per year. Given a corporate income tax rate of 45 percent, what is the after-tax rate of return associated with this investment? If the minimum acceptable return on investment is 12 percent, is it worth buying the machine?

12. A company is considering the purchase of equipment to expand its production facility. There are two options. The first is to buy a used model which costs $12 000. Operating expenses are expected to be $16 000 per year. The equipment can operate for six years and has a salvage value of $1000. The second option is to buy a new model with an initial cost of $25 000, annual operating expenses of $12 500, and a salvage value of $5000 after a useful life of six years. The equipment is to be depreciated by the declining-balance method at a rate of 30 percent per year. The corporate income tax rate is 45 percent and a minimum return on investment of 15 percent is required. Which alternative is preferred?

13. The following three mutually exclusive alternatives are being considered:

Alternative	**A**	**B**	**C**
Immediate investment ($)	15 000	45 000	22 000
Life (years)	5	5	5
Annual revenues ($)	35 000	36 000	35 000
Annual operating expenses ($)	28 000	21 000	25 000
Salvage value ($)	nil	5 000	nil

Given a declining-balance depreciation rate of 30 percent per year, a corporate income tax rate of 45 percent and a minimum acceptable return on investment of 12 percent, which alternative is preferred?