**Assignment 4 – Financial Management**

1.

The firm has a target debt-equity ratio of 0.70.

Thus, equity : debt = 1 : 0.70

WACC = (1/1+0.70)(0.16) + (0.7/1+0.70)(0.06) = 11.88%

Management applies an adjustment factor of +2 percent to the cost of capital for risky projects.

Therefore, this project discount rate = WACC + 2% = 11.88% + 2% = 13.88%

Cash inflow is $6 million at the end of the first year, and these will grow at a rate of 3 percent per year indefinitely.

Therefore, the firm takes this project when the cost of this project is less than $55,147,059.

2.

Payback period of project A = 2 + ($5,000/$10,000) = 2.5 years

Payback period of project B = 3 + ($12,000/$500,000) = 3.024years

Because the payback cutoff is three years, this firm rejects project B and accepts project A.

The below table is present value of cash flows from each project.

|  |  |  |  |
| --- | --- | --- | --- |
| Year | Present value of Cash Flow(A) | Year | Present value of Cash Flow(B) |
| 0 | -$50,000 | 0 | -$70,000 |
| 1 | $28,302 | 1 | $7,547 |
| 2 | $13,350 | 2 | $17,800 |
| 3 | $8,396 | 3 | $25,189 |
| 4 | $7,921 | 4 | $396,047 |

Discounted payback period of project A = 2 + ($8,348/$8,396) = 2.99 years

Discounted payback period of project B = 3 + ($19,464/$396,047) = 3.05 years

Because the payback cutoff is three years, this firm rejects project B and accepts project A.

3.

MIRR is calculated by following equation:

For calculating MIRR, calculate this:

$6,443 = $9,761[PVIF MIRR, 4]

Thus, MIRR = 10.94%

Because MIRR > cost of capital(8%), we should take this project.

4.

The initial investment is $650,000, cash inflow is $40,000 during the first year, and these will grow at a rate of 7 percent per year indefinitely.

Therefore NPV < 0, ABC Inc. should not start the cemetery business.

5.

A.

The project’s initial Time 0 cash flow = cost of land + cost of building the plant + initial investment to get operational = $9,250,000 + $14,000,000 + $900,000 = $24,150,000

Thus, the initial time 0 cash flow = -$24,150,000 since it is cash outflow.

B.

Because this project is funded by internally generated funds only, the cost of capital of this project is the cost of equity of this firm and since there is no dividends information, we should use CAPM to calculate cost of capital.

CAPM: Ks = KRF + β(KM-KRF)

According to the question, KRF = 0.05, β = 1.4, KM - KRF = 0.08

Thus, WACC = Ks = 0.05 + 1.4\*(0.08) = 16.2%

Since management has told us to use an adjustment factor of +2 percent, the appropriate discount rate to use when evaluating ABC’s project is 16.2% + 2% = 18.2%

C.

Annual depreciation = (Depreciable base - Salvage value)/number of useful life

= ($14,000,000-$5,000,000)/5 = $1,800,000

Thus, the annual depreciation of this plant is $1,800,000.

D.

The below table is for estimating annual cash flows.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Year | 1 | 2 | 3 | 4 | 5 |
| Unit sales | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| Sales ($10,400 per units) | $104,000,000 | $104,000,000 | $104,000,000 | $104,000,000 | $104,000,000 |
| variable production costs ($8,500 per units) | ($85,000,000) | ($85,000,000) | ($85,000,000) | ($85,000,000) | ($85,000,000) |
| Depreciation | ($1,800,000) | ($1,800,000) | ($1,800,000) | ($1,800,000) | ($1,800,000) |
| Fixed costs | ($350,000) | ($350,000) | ($350,000) | ($350,000) | ($350,000) |
| EBIT | $16,850,000 | $16,850,000 | $16,850,000 | $16,850,000 | $16,850,000 |
| Tax (Tax rate =35%) | ($5,897,500) | ($5,897,500) | ($5,897,500) | ($5,897,500) | ($5,897,500) |
| NOPAT | $10,952,500 | $10,952,500 | $10,952,500 | $10,952,500 | $10,952,500 |
| Depreciation | $1,800,000 | $1,800,000 | $1,800,000 | $1,800,000 | $1,800,000 |
| Operating Cash Flow | $12,752,500 | $12,752,500 | $12,752,500 | $12,752,500 | $12,752,500 |

Thus, annual Operating Cash flow from this project is $12,752,500.

E.

Cash flow of year 0= -$24,150,000

Cash flow of year 1 to 5= $12,752,500

Additional terminal value = $5,000,000(salvage value of the plant) + $9,250,000(land) = $14,250,000

|  |  |
| --- | --- |
| Year | Cash flow |
| 0 | -$24,150,000 |
| 1 | $12,752,500 |
| 2 | $12,752,500 |
| 3 | $12,752,500 |
| 4 | $12,752,500 |
| 5 | $12,752,500 + $14,250,000 = $27,002,500 |

Discount rate = WACC + 2% = 18.2%

By excel, NPV = $21,725,544, IRR= 49.68%

NPV > 0 and IRR > cost of capital, thus, take this project.