**NPV exam level question**

**Investment Appraisal with tax and inflation**

Question 1

Project Y is an investment in new machinery to produce a product recently developed. The cost of the machinery, which is payable immediately is £1.5 million, and has a scrap value at the end of 4 years of £100,000. Tax allowable depreciation can be claimed on this with a balancing allowance or charge in the year of disposal. investment at a rate of 18% per annum reducing balance. Information on the future returns from the investment have been forecast and are as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | 1 | 2 | 3 | 4 |
| Sales volume (units/year) | 50,000 | 95,000 | 140,000 | 75,000 |
| Selling price (£/unit) | 25.00 | 24.00 | 23.00 | 23.00 |
| Variable cost (£/unit) | 10.00 | 11.00 | 12.00 | 12.50 |
| Fixed costs (£/unit) | 105,000 | 115,000 | 125,000 | 125,000 |

This information must be adjusted to allow for selling price inflation of 4% per year and variable cost inflation of 2.5% per year. Fixed costs, which are wholly attributable to the project, have already been adjusted for inflation. The company pays corporation tax at a rate of 19% on profits one year in arrears.

The company has a nominal after tax weighted average cost of capital of 15%

**Required:**

**Calculate the money NPV of the project and comment on whether this is financially acceptable.**

Question 2

GTV Co is a listed company which plans to meet increased demand for its product by buying new machinery costing £7 million. The machinery would last for 4 years and at the end of that time would be replaced. The scrap value is expected to be 5% of its initial cost. Tax depreciation of 18% reducing balance is allowable on the machinery and a balancing allowance or charge in the year of disposal.

This investment will increase production capacity by 9000 units per year and all of these units are expected to be sold as they are produced. Relevant financial information in current price terms is as follows:

Selling price £650 per unit Forecast inflation 4% per year

Variable cost £250 per unit Forecast inflation 5.5% per year

Incremental fixed costs £450000 per year Forecast inflation 5% per year

In addition to the initial cost of the new machinery, initial investment in working capital of £500,000 will be required. This working capital will not be refunded at the end of the project as the machine will be replaced and so the investment in working capital will continue. Investment in working capital will be subject to the general rate of inflation which is 4.7% per year.

GTV pays corporation tax at 19% per year and half is payable in the year and half in the following year.

The money cost of capital is 16%

**Required:**

**Calculate the money NPV of the project and comment on whether this is financially acceptable.**