# DEPARTMENT OF HUMANITIES AND MANAGEMENT

HUM 3051: Engineering Economics and Financial Management

## Risk Analysis and Estimations in Projects

# Question Bank

**1)** What are risks and what is risk management?

**2)** Explain briefly the risk management process.

**3)** Explain the risk management approaches.

**4)** Explain the types of risk management.

**5)** State the importance and limitations of risk management.

**6)** What is sensitivity analysis. State the significance of the same in risk analysis.

**7)** What are the merits and shortcomings of sensitivity analysis?

**8)** Jawahar Industries has identified the following factors, with their respected expected values, having a bearing on the NPV of their new project.

- Initial investment: 10,000
- Cost of Capital: 11%
- Quantity manufactured and sold: 1000
- Price per unit: 20
- Variable cost per unit: 15
- Fixed costs: 1000
- Depreciation: 1000
- Tax rate: 20%
- Life of Project: 7 years
- Net Salvage Value: Nil

Assume the following variables can take the values as shown:

| **Underlying variable** | **Pessimistic** | **Optimistic** |
|---|---|---|
| Quantity manufactured & sold | 700 | 1400 |
| Price per unit | 18 | 23 |
| Variable cost per unit | 16 | 14 |

Calculate the sensitivity of NPV to variation in:

a) Quantity manufactured and sold

b) Price per unit

c) Variable cost per unit

9) What is the meaning of scenario analysis? State its significance in risk analysis of a project.

10) Differentiate between sensitivity analysis and scenario analysis.

11) A company has the following cash flow forecast for their new project:

| | **Year 0** | **Rs. In Millions Years 1 – 10** |
|---|---|---|
| Investment | (400) | |
| Sales | | 440 |
| Variable costs (75% of sales) | | 330 |
| Fixed costs | | 20 |
| Depreciation (Straight line method) | | 40 |
| Pre-tax profit | | 50 |
| Taxes (at 20%) | | 10 |
| Profit after taxes | | 40 |
| Cash flow from operations | | 80 |
| Net cash flows | | 80 |

What is the NPV of the new project? Assume that the cost of capital is 10%. The range of values that the underlying variables can take under three scenarios: pessimistic, expected, and optimistic are as shown below:

| **Underlying variables** | **Pessimistic** | **Expected** | **Optimistic** |
|---|---|---|---|
| Investment (Rs. In million) | 420 | 400 | 360 |
| Sales (Rs. In million) | 350 | 440 | 500 |
| Variable Cost (as percent of sales) | 80 | 75 | 700 |
| Fixed Costs | 25 | 20 | 18 |
| Cost of Capital | 11 | 10 | 9 |

What are the NPVs under different scenarios?

12) What is forecasting risks? Explain ways to reduce forecasting risks.

13) What is break-even analysis? Explain accounting, cash-flow, and financial break-even point with an example.

14) Explain the flowing methods to adjust the value for risk:

a) Risk adjusted discount rates

b) Certainty Equivalent Approach