# Lecture 8 Questions

## Question One

Black Swan Fabrications Ltd is faced with the problem of deciding between two investment projects. The first involves expansion of the plant by the purchase of premises that have become available next door. The other involves the automation of their present manufacturing system. Both projects have their advantages. The market is rapidly expanding, and they need to make a quick decision.

Costs and revenues have been forecast as far ahead as can be reasonably certain. These are summarised in the following table:

|  |  |  |
| --- | --- | --- |
| Year | Expansion £ | Automation £ |
| 0 | (250,000) | (200,000) |
| 1 | Nil | 60,000 |
| 2 | Nil | 50,000 |
| 3 | 150,000 | 90,000 |
| 4 | 100,000 | 90,000 |
| 5 | 160,000 | 90,000 |
| 6 | 116,000 | 90,000 |

**Required:**

For each project calculate:

1. Payback period.
2. The average rate of return on the initial investment.
3. The net present value if the cost of capital is 10%.

Outline two factors other than those considered above that might influence your decision.

## Question Two

Faircliffs PLC has up to a maximum of £3,500,000 to invest in new capital projects in the next financial year. Numerous potential investments have been considered and the following final list has been produced.

**Investment project Cost £M Life (years) Cash flows**

1. Purchase licence to Annual Cash Inflows

manufacture new product. 1.50 7 £430,000

2. Increase existing Annual Cash Inflows

production facilities 2.00 5 £600,000

3. Introduce labour saving Cost Savings

technology 0.9 3.0 Year 1 £600,000

Years 2 & 3 £300,000 each

Cash inflows will commence in year 1 and the company’s cost of capital is 15%.

**Required**:

1. For each project:
2. Calculate the NPV of each investment at the company’s cost of capital of 15%.
3. Calculate the internal rate of return using the interest rates of 15% and 30%.
4. Assuming investments are divisible and independent which would you advise Faircliffs to fund and why?

|  |  |  |
| --- | --- | --- |
|  | D.F. 15% | D.F 30% |
| 0 | 1 | 1 |
| 1 | 0.870 | 0.769 |
| 2 | 0.756 | 0.592 |
| 3 | 0.658 | 0.455 |
| 4 | 0.572 | 0.350 |
| 5 | 0.497 | 0.269 |
| 6 | 0.432 | 0.207 |
| 7 | 0.376 | 0.159 |
|  |  |  |

## Question Three

The directors of Keyhan Ltd are currently considering two mutually exclusive investment projects. Both projects are concerned with the purchase of new plant. The following data are available for the projects:

|  |  |  |
| --- | --- | --- |
|  | Project 1 | Project 2 |
|  | £ | £ |
| Cost (immediate outlay) | 100,000 | 60,000 |
| Expected annual net profit (loss): |  |  |
| Year 1 | 60,000 | 36,000 |
| Year 2 | 30,000 | 16,000 |
| Year 3 | 33,000 | 22,000 |
| Estimated residual value | 7,000 | 6,000 |

The company has an estimated cost of capital of 15 per cent.

**Required**:

1. Calculate for each project:

(i) The net present value

(ii) The approximate internal rate of return (using 17% as the alternative discount rate)

(iii) The payback period

1. State which, if any, of the two investment projects the directors of Keyhan Ltd should accept, and why.
2. State, in general terms, which method of investment appraisal you consider to be most appropriate for evaluating investment projects, and why.

Discount Factors

Year Net Present Value

15% 17%

1 0.870 0.855

2 0.756 0.731

3 0.658 0.624

## Question Four

(From Drury Review Problem 6.22, p. 159 and reproduced below)

Paradis PLC has recently raised £350,000 and the directors are considering three ways of using these funds. Three projects (A,B,C) are being considered, each involving the immediate purchase of equipment costing £350,000. Only one project can be undertaken and the equipment for each project will have a useful life equal to that of the project, with no scrap value.

The following summary is of cash flows for each project:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Net Cash Flows (£000s) | | | | | | | | | | |
|  |  |  |  |  | Years |  |  |  |  | Internal Rate of Return |
| Project | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | % |
| A | (350) | 100 | 110 | 104 | 112 | 138 | 160 | 180 | - | 27.5 |
| B | (350) | 40 | 100 | 210 | 260 | 160 | - | - | - | 26.4 |
| C | (350) | 200 | 150 | 240 | 40 | - | - | - | - | 33.0 |

The company’s cost of capital is 10%.

**Required**:

Calculate for each project the payback period, the accounting rate of return and the net present value.

Recommend which project should be accepted.

