**Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Leeming Senior High School**

**Accounting and Finance ATAR (Year 12)**

**Unit 3**

**Task 5**

**Marking Key**

**Assessment Type:**

Test

**Total Marks:**

70 marks

**Conditions:**

**Period Allowed for Completion of the Task:**

60 minutes under invigilated conditions.

**Task Weighting**

5.0% of the school mark for this pair of units.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Section One (5 marks)**

For each of the following questions, select the most appropriate response.

1 The ‘time value of money’ concept

1. depends on the impact of inflation and interest rates.
2. means that future cash flows will have a greater value due to inflation.
3. means that any future profit will be in real terms.
4. stabilises the buying power of the company’s income.

2 Discounted cash flows are used to account for

1. cash and cash equivalents.
2. the time value of money.
3. the return on equity.
4. the payback period.

3 A factor affecting capital investment decisions is

1. equity providers’ preferences.
2. consumer preferences.
3. management preferences.
4. debt providers’ preferences.

**Questions 4 and 5 relate to the following information for Shearan Traders Ltd.**

Shearan Traders Ltd is considering investing in a new media project. The initial capital expenditure budget is limited to $15 000 000. The company has a 16% target rate for return on capital investments. Projected cash flows for the project are given below:

|  |  |
| --- | --- |
|  | **$** |
| Initial Investment | (13 000 000) |
| Net After Tax Operating cash flows as at 31 December for the following years: |  |
|  Year 1 | 4 000 000 |
|  Year 2 | 4 000 000 |
|  Year 3 | 4 000 000 |
|  Year 4 | 4 000 000 |
|  Year 5 | 4 000 000 |
|  Year 6 | 4 000 000 |

4 The present value (PV) of the annual operating cash flows for the project is:

 (a) $14 738 800.

 (b) $13 000 000.

 (c) $11 261 200.

 (d) $1 738 800.

5 What is the Payback Period, in years and months, for the project.

1. 3 years
2. 3 years and 3 months
3. 3 years and 4 months
4. 4 years

**Section Two (65 marks)**

Write your answers in the spaces provided.

**Question 6**

A company is considering investing in Project A or Project B. The initial capital expenditure budget is limited to $15 000 000.

Cash flows for each project are as follows:

|  |  |  |
| --- | --- | --- |
|  | **Project A** | **Project B** |
|  | **$** | **$** |
| Initial investment 1 January | 13 500 000 | 15 000 000 |
| Net after tax operating cash inflow as at 31 December for the following years: |
| Year 1 | 4 000 000 | Nil |
| Year 2 | 4 000 000 | 6 500 000 |
| Year 3 | 4 000 000 | 6 500 000 |
| Year 4 | 4 000 000 | 5 000 000 |
| Year 5 | 4 000 000 | 3 500 000 |
| Year 6 | 4 000 000 | Nil |

The final year cash flows include the net proceeds of salvage.

The company has a 16% target rate of return for capital investments.

(a) Calculate the Net Present Value (NPV) for Project A. (5 marks)

**Workings:**

|  |  |
| --- | --- |
| **PV =** | **NCF x PVF(i, n)** |

|  |  |  |
| --- | --- | --- |
| **PV (Years 1 – 6) =** | $4 000 000 x PVF(16%, 6) | **1** |

|  |  |  |
| --- | --- | --- |
| **PV (Years 1 – 6) =** | $4 000 000 x 3.6847 | **1** |

|  |  |  |
| --- | --- | --- |
| **PV (Years 1 – 6) =** | **$14 738 800** | **½** |

|  |  |  |  |
| --- | --- | --- | --- |
| **NPV =**  | **PV Net Cash Flows -** | **PV Of The Cost Of The Investment** | **1** |

|  |  |  |  |
| --- | --- | --- | --- |
| **NPV =**  | $14 738 800 - | $13 500 000 | **1** |

|  |  |  |
| --- | --- | --- |
| **NPV =**  | **(+ve) $1 238 800** | **½** |

(b) Calculate the Net Present Value (NPV) for Project B. (6 marks)

**Workings:**

|  |  |
| --- | --- |
| **PV =** | **NCF x PVF(i, n)** |

|  |  |
| --- | --- |
| **PV (Year 2) =** | $6 500 000 x PVF(16%, 2) |

|  |  |
| --- | --- |
| **PV (Year 2) =** | $6 500 000 x 0.7432 |

|  |  |  |
| --- | --- | --- |
| **PV (Year 2) =** | **$4 830 800** | **1** |

|  |  |
| --- | --- |
| **PV (Year 3) =** | $6 500 000 x PVF(16%, 3) |

|  |  |
| --- | --- |
| **PV (Year 3) =** | $6 500 000 x 0.6407 |

|  |  |  |
| --- | --- | --- |
| **PV (Year 3) =** | **$4 164 550** | **1** |

|  |  |
| --- | --- |
| **PV (Year 4) =** | $5 000 000 x PVF(16%, 4) |

|  |  |
| --- | --- |
| **PV (Year 4) =** | $5 000 000 x 0.5523 |

|  |  |  |
| --- | --- | --- |
| **PV (Year 4) =** | **$2 761 500** | **1** |

|  |  |
| --- | --- |
| **PV (Year 5) =** | $3 500 000 x PVF(16%, 5) |

|  |  |
| --- | --- |
| **PV (Year 5) =** | $3 500 000 x 0.4761 |

|  |  |  |
| --- | --- | --- |
| **PV (Year 5) =** | **$1 666 350** | **1** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **PV =** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| $0 | $4 830 800 | $4 164 550 | $2 761 500 | $1 666 350 | $0 |

|  |  |  |
| --- | --- | --- |
| **NPV =**  | **PV Net Cash Flows -** | **PV Of The Cost Of The Investment** |

|  |  |  |  |
| --- | --- | --- | --- |
| **NPV =**  | $13 423 200 - | $15 000 000 | **1** |

|  |  |  |
| --- | --- | --- |
| **NPV =**  | **(-ve) $1 576 800** | **1** |

(c) Calculate the Payback Period in years and months for Project A. (3 marks)

**Workings:**

|  |  |
| --- | --- |
| **Payback Period =** | **Initial Cost of Investment** |
| **Net Cash Flows** |

|  |  |  |
| --- | --- | --- |
| **Payback Period =** | $13 500 000 | **1** |
| $4 000 000 |

|  |  |  |
| --- | --- | --- |
| **Payback Period =** | 3.375 | **½** |

|  |  |  |
| --- | --- | --- |
| **Payback Period =** | 0.375 x 12 = 5 | **1** |

|  |  |  |
| --- | --- | --- |
| **Payback Period =** | **3 Years and 5 Months** | **½** |

(d) The Payback Period for Project B is 3 years and 5 months.

 Provide an investment recommendation for the company and justify the recommendation with specific reference to two (2) quantitative methods. (6 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Identifies the correct investment and justifies, in detail, the recommendation with specific reference to two (2) quantitative methods | **6** |
| Identifies the correct investment and justifies, in general detail, the recommendation with specific reference to two (2) quantitative method | **5** |
| Identifies the correct investment and justifies, in detail, the recommendation with specific reference to one (1) quantitative method | **4** |
| Identifies the correct investment and justifies, in general detail, the recommendation with specific reference to one (1) quantitative method | **3** |
| Identifies the correct investment | **2** |
| Identifies an investment with limited justification | **1** |
| **Answer could include, but is not limited to, the following points:** |
| * Project A has a much better NPV (+ve) $1 238 800) compared to Project B (-ve) $1 576 800).
* The Payback Periods are identical for both projects, so the NPV results will need to be referred to.
 |
| **Total Marks** | **6** |

(e) State one (1) advantage and one (1) disadvantage of using the Payback method to evaluate capital investment decisions. (2 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| States correctly, and in detail, one (1) advantage and one (1) disadvantage of using the Payback method to evaluate capital investment decisions | **2** |
| States correctly, but in general detail, one (1) advantage and one (1) disadvantage of using the Payback method to evaluate capital investment decisions | **1** |
| **Answer could include, but is not limited to, the following points:** |
| * Advantage of the Payback method – relatively easy to calculate and to understand.
* Disadvantage of the Payback method – takes no account of the fall in value of money over time.
 |
| **Total Marks** | **2** |

**Question 7 (25 marks)**

Seismo System Corporation (SSC) specialises in the provision of drilling equipment to the Australian offshore oil and gas industry. SSC is evaluating the purchase of a new high-powered sonar instrument it intends to use for analysing the production potential of oil and gas discoveries in the Southern Ocean.

You have been given the following information about two (2) sonar instruments to evaluate the investment option of each and recommend which one to purchase.

|  |  |  |
| --- | --- | --- |
| **Details** | **Baltic Sonar Deluxe (BSD)****$** | **Pacific Sonar Supreme (PSS)****$** |
| Cost of Acquisition | 1 050 000 | 960 000 |
| Installation Cost | 0 | 40 000 |
| Useful Life in Years | 4 | 3 |
| Cost Savings from a Reduction in Annual Direct Labour Costs | 150 000 | 150 000 |
| Additional Annual Cash Revenues Generated: |  |  |
|  Year 1 | 775 000 | 800 000 |
|  Year 2 | 775 000 | 750 000 |
|  Year 3 | 775 000 | 650 000 |
|  Year 4 | 775 000 |  |
| Maintenance Cash Costs Per Year | 525 000 | 400 000 |
| Residual Value at End of Useful Life | Nil | 50 000 |
| Discount Rate | 10% | 10% |

**Additional Information:**

* The installation costs for PSS are to be paid at the beginning of the first year of operations.
* Assume that apart from the cost of acquiring a sonar instrument, all other cash flows are received or paid at the end of each year.
* Ignore all tax implications.

(a) Calculate the Net Present Value for the:

1. Baltic Sonar Deluxe investment option. (7 marks)
2. Pacific Sonar Supreme investment option. (15 marks)

**Baltic Sonar Deluxe Investment Option**

**Workings:**

|  |  |  |
| --- | --- | --- |
| **Net Cash Flow =** | **Cash Inflows -** | **Cash Outflows** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Net Cash Flow =** | ($775 000 + $150 000) -  | $525 000 | **1½** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Net Cash Flow =** | $925 000 -  | $525 000 | **1** |

|  |  |  |
| --- | --- | --- |
| **Net Cash Flow =** | **$400 000** | **½** |

|  |  |
| --- | --- |
| **PV =** | **NCF x PVF(i, n)** |

|  |  |  |
| --- | --- | --- |
| **PV (Years 1 – 4) =** | $400 000 x PVF(10%, 1) | **1** |

|  |  |  |
| --- | --- | --- |
| **PV (Years 1 – 4) =** | $400 000 x 0.9091 | **1** |

|  |  |  |
| --- | --- | --- |
| **PV (Years 1 – 4) =** | **$1 267 960** | **½** |

|  |  |  |
| --- | --- | --- |
| **NPV =**  | **PV Net Cash Flows -** | **PV Of The Cost Of The Investment** |

|  |  |  |  |
| --- | --- | --- | --- |
| **NPV =**  | $1 267 960 - | $1 050 000 | **1** |

|  |  |  |
| --- | --- | --- |
| **NPV =**  | **(+ve) $217 960** | **½** |

**Pacific Sonar Supreme Investment Option**

**Workings:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NCF =** | **Year 1** | **Year 2** | **Year 3** | **Marks** |
| ($800 000 + $150 000) - $400 000 | ($750 000 + $150 000) - $400 000 | ($650 000 + $150 000 + $50 000) – $400 000 | **3** |
| = $550 000 | = $500 000 | $450 000 |

|  |  |
| --- | --- |
| **PV =** | **NCF x PVF(i, n)** |

|  |  |  |
| --- | --- | --- |
| **PV (Year 1) =** | $550 000 x PVF(10%, 1) | **1** |

|  |  |  |
| --- | --- | --- |
| **PV (Year 1) =** | $550 000 x 0.9091 | **1** |

|  |  |  |
| --- | --- | --- |
| **PV (Year 1) =** | **$500 005** | **1** |

|  |  |  |
| --- | --- | --- |
| **PV (Year 2) =** | $500 000 x PVF(10%, 2) | **1** |

|  |  |  |
| --- | --- | --- |
| **PV (Year 2) =** | $500 000 x 0.8264 | **1** |

|  |  |  |
| --- | --- | --- |
| **PV (Year 2) =** | **$413 200** | **1** |

|  |  |  |
| --- | --- | --- |
| **PV (Year 3) =** | $450 000 x PVF(10%, 3) | **1** |

|  |  |  |
| --- | --- | --- |
| **PV (Year 3) =** | $450 000 x 0.7513 | **1** |

|  |  |  |
| --- | --- | --- |
| **PV (Year 3) =** | **$300 520** | **1** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PV =** | **Year 1** | **Year 2** | **Year 3** | **1** |
| $500 005 | $413 200 | $338 085 |

|  |  |  |
| --- | --- | --- |
| **NPV =**  | **PV Net Cash Flows -** | **PV Of The Cost Of The Investment** |

|  |  |  |  |
| --- | --- | --- | --- |
| **NPV =**  | $1 251 290 - | $1 000 000 | **1** |

|  |  |  |
| --- | --- | --- |
| **NPV =**  | **(+ve) $251 290** | **1** |

(b) Calculate the Payback Period for the:

1. Baltic Sonar Deluxe investment option. (5 marks)
2. Pacific Sonar Supreme investment option. (8 marks)

**Baltic Sonar Deluxe Investment Option**

**Workings:**

|  |  |  |
| --- | --- | --- |
| **Net Cash Flow =** | **Cash Inflows -** | **Cash Outflows** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Net Cash Flow =** | ($775 000 + $150 000) -  | $525 000 | **1** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Net Cash Flow =** | $925 000 -  | $525 000 | **½** |

|  |  |  |
| --- | --- | --- |
| **Net Cash Flow =** | **$400 000** | **½** |

|  |  |
| --- | --- |
| **Payback Period =** | **Initial Cost of Investment** |
| **Net Cash Flows** |

|  |  |  |
| --- | --- | --- |
| **Payback Period =** | $1 050 000 | **1** |
| $400 000 |

|  |  |  |
| --- | --- | --- |
| **Payback Period =** | 2.625 | **½** |

|  |  |  |
| --- | --- | --- |
| **Payback Period =** | 0.625 x 12 = 8 | **½** |

|  |  |  |
| --- | --- | --- |
| **Payback Period =** | **2 Years and 8 Months** | **1** |

**Pacific Sonar Supreme Investment Option**

**Workings:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Net Cash Flows** | **Accumulated Cash Flows** | **Marks** |
| 1 | $550 000 | $550 000 | **1** |
| 2 | $500 000 | $1 050 000 | **1** |
| 3 | $450 000 | $1 500 000 | **1½** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Step 1** | Calculate the cumulative cash flows for each year. | At the end of **Year 1** we have accumulated **$550 000** and at the end of **Year 2** we accumulated **$1 050 000**. The initial investment ($960 000 + $40 000 = $1 000 000) is recovered after **Year 1** but before the completion of **Year 2**. | **1** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Step 2** | Determine the amount still to be recovered after **Year 1**. | $1 000 000 - $550 000 | = $450 000 | **1** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Step 3** | Calculate the proportion of the amount to be recovered is of the total to be recovered in **Year 2**. | $450 000$500 000 | = 0.9 | **1** |

|  |
| --- |
| This proportion can be expressed in months as follows: |

|  |  |  |
| --- | --- | --- |
| **Payback Period =** | 0.9 x 12 months = 10.8 | **½** |

|  |  |  |
| --- | --- | --- |
| **Payback Period =** | **1 Year and 11 Months** | **1** |

(c) Based on your calculations, prepare a report to the company directors, outlining your recommendations about which option the company should accept. Justify your recommendation by discussing two (2) quantitative and two (2) qualitative factors.

(8 marks)

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Recommends the correct option and justifies, in detail, the recommendation with specific reference to two (2) quantitative factors and two (2) qualitative factors | **8** |
| Recommends the correct option and justifies, the recommendation with specific reference to two (2) quantitative factors and two (2) qualitative factors | **7** |
| Recommends the correct option and justifies, in detail, the recommendation with specific reference to one (1) quantitative factor and one (1) qualitative factor | **6** |
| Recommends the correct option and justifies, with limited detail, the recommendation with specific reference to two (2) quantitative factors and two (2) qualitative factors | **5** |
| Recommends the correct option and justifies, the recommendation with specific reference to one (1) quantitative factor or one (1) qualitative factor | **4** |
| Recommends the correct option and justifies, with limited detail, the recommendation with specific reference to one (1) quantitative factor and one (1) qualitative factor | **3** |
| Recommends the correct option, with no justification | **2** |
| Justifies with either one (1) quantitative factor or one (1) qualitative factor, in limited detail | **1** |
| **Answer could include, but is not limited to, the following points:** |
| * On the information provided by this analysis, SSC should choose the PSS option, for the following reasons:
	+ the PSS option has a greater estimated NPV;
	+ the PSS option has a shorter Payback Period, and will recover the investment over a shorter period of time;
	+ the PSS option has a lower maintenance cash costs per year, which will have an impact on the number of maintenance workers required each year, which could affect the workforce’s morale;
	+ the BSS option might have a greater impact on the environment due to being discarded, rather than sold, due to the $0 residual value.
 |
| **Total Marks** | **8** |