



## Worksheet 9: Marking analysis

- 1 Read the following data and the responses which follow. Award marks for each response using the mark scheme.

Z Limited receives an order from an existing customer to manufacture a new product for a period of four years. To satisfy this order, the directors of Z Limited have to:

- Purchase a machine from overseas with an expected cost of \$300 000. The machine has a useful life of 4 years with no residual value.
- Hire a specialised engineer.
- Purchase direct materials from a new supplier.

The estimates relating to the operation of this order are:

	Cash inflow	Cash outflow
Year	\$	\$
1	200 000	140 000
2	230 000	130 000
3	240 000	110 000
4	210 000	100 000

The cost of capital is 10%. The relevant discount factors are:

10%	12%
0.909	0.893
0.826	0.797
0.751	0.712
0.683	0.636

The investment analysis shows payback period is 3 years and 34 days, ARR (accounting rate of return) is 16.67% and NPV (net present value) is \$9900.

The expected cost of the machine, \$300 000, includes an import duty of 20%. The import duty has increased to 30% due to a recent unfavourable trade agreement.

Explain the impact of this increase in the import duty on the decision to purchase the machinery.

Support your answer with calculations



- 1 Explain the impact of this increase in the import duty on the decision to purchase the machinery.  
Support your answer with calculations.

[Max Marks 7]

**Response 1:**

*The new cost of the machine will be:*

$$(\$300\,000/120\%) \times 130\% = \$325\,000$$

*Payback period, ARR and NPV will change.*

*Z Limited should not purchase the machine to manufacture the new product as the import duty has increased.*

Mark	
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**Response 2:**

*The new cost of the machine will be:*

$$(\$300\,000/120\%) \times 130\% = \$325\,000$$

*Payback period will now be:*

$$\begin{aligned} \$325\,000 - (\$60\,000 + \$100\,000 + 130\,000) &= \$35\,000 \\ (\$35\,000/\$110\,000) \times 365 &= 117 \text{ days} \end{aligned}$$

*3 years 117 days*

*Accounting rate of return (ARR) will now be:*

$$\$75\,000/4 = \$18\,750$$

$$\text{ARR} = (\$18\,750/\$162\,500) \times 100 = 11.54\%$$

*Net present value (NPV) will be:*

$$\$9\,900 - \$25\,000 = (\$15\,100)$$

*Z Limited should not purchase the machine to manufacture the new product as the import duty has increased.*

Mark	
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**Response 3:**

The new cost of the machine will be:

$$(\$300000/120\%) \times 130\% = \$325000, \text{ increase in cost of } \$25000$$

Payback period will now be:

$$\begin{aligned} \$325000 - (\$60000 + \$100000 + 130000) &= \$35000 \\ (\$35000/\$110000) \times 365 &= 117 \text{ days} \end{aligned}$$

$$3 \text{ years } 117 \text{ days} - 3 \text{ years } 34 \text{ days} = 83 \text{ more days to payback}$$

Accounting rate of return (ARR) will now be

$$\$75000/4 = \$18750$$

$$\text{ARR} = (\$18750/\$162500) \times 100 = 11.54\%, \text{ ARR has declined}$$

Net present value (NPV) will be

$$\$9900 - \$25000 = (\$15100), \text{ NPV changed from positive to negative.}$$

The increase in import duty indicates that Z Limited should not purchase the machine to manufacture the new product mainly due to a negative NPV.

Mark	
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