

Write your name here

Surname

Other names

**Edexcel**  
**Principal Learning**

Centre Number

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Candidate Number

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# Manufacturing and Product Design

## Level 3

### Unit 1: Manufacturing Business Principles

Thursday 12 January 2012 – Afternoon

**Time: 1 hour 30 minutes**

Paper Reference

**MP301/01**

**You may use a calculator.**

Total Marks

#### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*

#### Information

- The total mark for this paper is 90.
- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*

#### Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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(b) A car manufacturer uses recyclable materials in its products.

Explain how this could reduce production costs.

(6)

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**(Total for Question 6 = 12 marks)**



7 Outline **two** ways an increase in interest rates could affect a manufacturing enterprise.

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2 .....

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**(Total for Question 7 = 4 marks)**

8 (a) Outline **one** element of a business plan for a manufacturer.

(2)

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(b) Outline the importance of research and development (R&D) for a manufacturer.

(2)

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**(Total for Question 8 = 4 marks)**





9 A clothing manufacturer has invested in new production technology.

(a) Outline **two** ways in which this investment would reduce production costs.

(4)

1 .....  
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2 .....  
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(b) Other than investing in new technology, explain the efficiency methods the clothing manufacturer should use to further improve its production performance.

(6)

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**(Total for Question 9 = 10 marks)**



10 Outline what is meant by the term **financial risk assessment**.

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**(Total for Question 10 = 2 marks)**

11 (a) Outline **two** examples of non-value adding production activities for a manufacturer.

(4)

1 .....

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2 .....

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(b) Explain how total quality management (TQM) influences the profitability of a manufacturing business.

(8)

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(Total for Question 11 = 12 marks)

12 Outline what is meant by the term **payback period**.

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(Total for Question 12 = 2 marks)



**13** A manufacturing enterprise purchased a new machine for £110 000 on 1st January 2012. It is estimated that the machine will have a residual value of 20% of the purchase price after 5 years of useful life.

The enterprise has an accounting year end of 31st December.

(a) Using the formula for straight line depreciation,

$$Dpn = \frac{C - R}{N}$$

Calculate the annual straight line depreciation charge.

Show your working.

(2)

Space for working

Answer: .....

(b) Complete the balance sheet for 31st December 2014.

(2)

**Balance sheet at 31st December 2014**

	Liabilities (£)	Assets (£)
Machine at cost	110 000	
Accumulated depreciation	.....	
Machine at net book value		.....

**(Total for Question 13 = 4 marks)**



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**Question 14 begins on the next page**



14 The following table shows a cost benefit analysis for developing two products, M and N.

Product	M	N
Period over which benefits are calculated	12 months	15 months
<b>Costs</b>		
Design and development	£73 000	£40 000
Promotion	£5 000	£5 000
Administration	£14 000	£10 000
Facilities	£9 000	£15 000
Evaluation costs	£3 000	£3 000
Public consultation costs	£2 000	£2 000
<b>Total costs</b>	<b>£106 000</b>	<b>£75 000</b>
<b>Benefits</b>		
Labour saving	£31 000	£20 000
Productivity increases	£19 000	£12 000
Other cost savings	£11 000	£18 000
Other income generated	£10 000	£10 000
<b>Total benefits</b>	<b>£71 000</b>	<b>£60 000</b>

(a) (i) Calculate the return on investment for each product.

(3)

Show your calculations here

Answer for Product M: .....

Answer for Product N: .....

(ii) Using the return on investment method state which product should be developed.

(1)



(b) (i) Calculate the payback period (in months) for each product.

(3)

Show your calculations here

Answer for Product M: .....

Answer for Product N: .....

(ii) Using the payback period method state which product should be developed.

(1)

(c) Using your answers from (a)(i) and (b)(i) explain which product you would develop.

(2)

**(Total for Question 14 = 10 marks)**

**TOTAL FOR PAPER = 90 MARKS**





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