Write your name here

Surname	Other names

Centre Number | Candidate Number

Edexcel GCSE

Manufacturing (Double Award)
Engineering (Double Award)

Unit 3: Application of Technology in Engineering and Manufacturing
Paper A: Printing and Publishing, Paper and Board

Monday 14 May 2012 – Afternoon
Time: 1 hour 30 minutes

Paper Reference
5EM03/3A

You must have:
Notes and sketches collected during your pre-release research.
Ruler, pen, pencil, rubber.

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** the questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*

Information

- The total mark for this paper is 110.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed
  – *you should take particular care on these questions with your spelling, punctuation and grammar as well as the clarity of expression.*

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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6/4/6/4/3

P 4 0 5 2 2 A 0 1 2 4

PEARSON

SECTION A

Answer ALL questions.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

1 All of the products listed below belong to a manufacturing sector.

(a) Put a cross ☒ in the **two** boxes below where the products belong to the **printing and publishing** sector.

(2)

MP3 player	☒
Shower gel	☒
Cinema ticket	☒
Swimwear	☒
Magazine	☒
Smartphone	☒

(b) Put a cross ☒ in the **two** boxes below where the products belong to the **paper and board** sector.

(2)

Combination padlock	☒
Plasterboard fixing	☒
Lever arch file	☒
Pocket calculator	☒
Laptop computer	☒
Self-adhesive label	☒

(Total for Question 1 = 4 marks)

2 The tables below show some items used during the manufacture of printing and publishing, paper and board products.

(a) Complete Table 1 by naming each item.

(2)

Item	Item name	Use
		A device used to permanently join together sheets of paper or other items.
		Used for joining, sealing, attaching or mending and can be used with a dispenser.

Table 1

(b) Complete Table 2 by explaining what each item is used for.

(4)

Item	Item name	Use
	Guillotine	
	Flexi-curve	

Table 2

(Total for Question 2 = 6 marks)

3 Draw a straight line to link each **Term** listed below to the most appropriate **Key Area**.

Each Key Area can be used more than once.

Term	Key Area
Programmable logic controllers (PLCs)	
Foil lined board	Modern materials
Databases	
Pick and place robots	Control technology
Bleed proof card	
Word processing	Information and communication technology (ICT)
Acrylic	

(Total for Question 3 = 7 marks)

4 (a) Point of sale displays belong to the printing and publishing, paper and board sector and use a variety of modern materials in their manufacture.

(i) Name **two other** products from this sector that use a polymer in their manufacture.

(2)

Product 1

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Product 2

.....

(ii) Name a polymer used in **Product 1**.

(1)

.....

(iii) Explain **two** different reasons why this polymer is used in **Product 1**.

(4)

1 .....

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.....

.....

2 .....

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.....

.....

(b) Systems and control technology is used in the printing and publishing, paper and board sector.

(i) Name **one** stage in the manufacture of printing and publishing, paper and board products where systems and control technology is used.

(1)

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(ii) Explain **one** advantage to a **manufacturer** of using systems and control technology at this stage.

(2)

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(Total for Question 4 = 10 marks)

5 Computer-aided design (CAD) and computer-aided manufacture (CAM) are both used by manufacturers of printing and publishing, paper and board products.

(a) Describe **three** ways that CAD contributes to the efficiency of new product development.

(6)

1 .....

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2 .....

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3 .....

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(b) Explain why a **manufacturer** would use CAM rather than traditional methods.

(2)

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(Total for Question 5 = 8 marks)

6 Communication technology is widely used by manufacturers.

(a) (i) Describe the term 'electronic mail' (email).

(2)

(ii) Explain **one disadvantage** to a **manufacturer** of using email.

(2)

(b) Video conferencing is also an example of communication technology.

(i) Name the traditional method it has replaced.

(1)

(ii) Explain **two advantages** to a **manufacturer** of using video conferencing.

(4)

1

2

(Total for Question 6 = 9 marks)

7 Handling information and data is an essential feature in printing and publishing, paper and board companies.

(a) Explain **one** benefit information and data handling systems have on production efficiency.

(2)

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(b) Explain **two** benefits information and data handling systems have on packaging and dispatch.

(4)

1 .....

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2 .....

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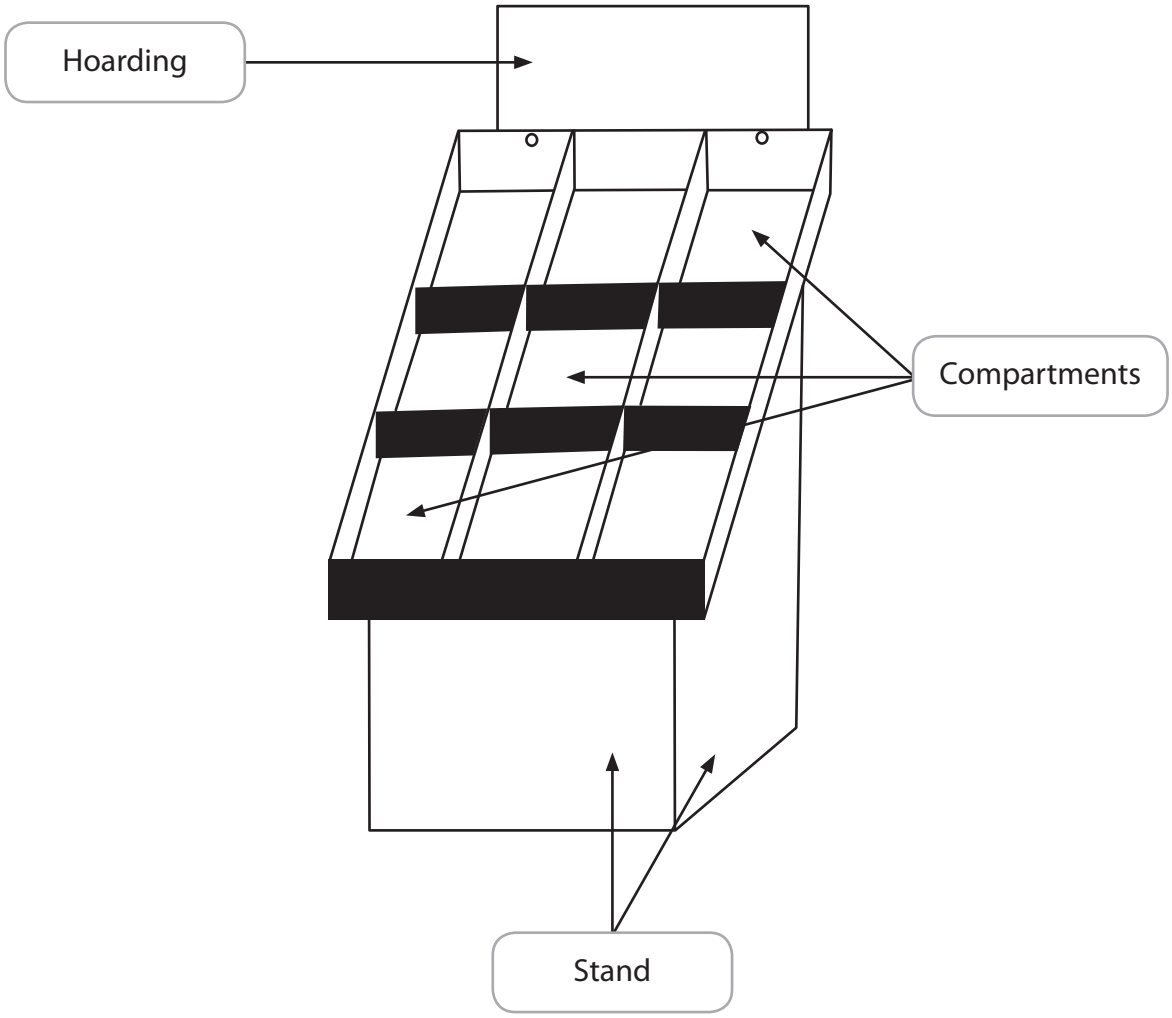
(Total for Question 7 = 6 marks)

TOTAL FOR SECTION A = 50 MARKS

SECTION B

Answer ALL questions in section B with reference to the manufacture of mass produced temporary point of sale displays.

The diagram below shows a **temporary point of sale display**.



8 Describe, using notes and sketches:

(a) the function of the stand

(3)

Stand

(b) the function of the compartments

(3)

Compartments

(c) the function of the hoarding

(3)

Hoarding

(Total for Question 8 = 9 marks)

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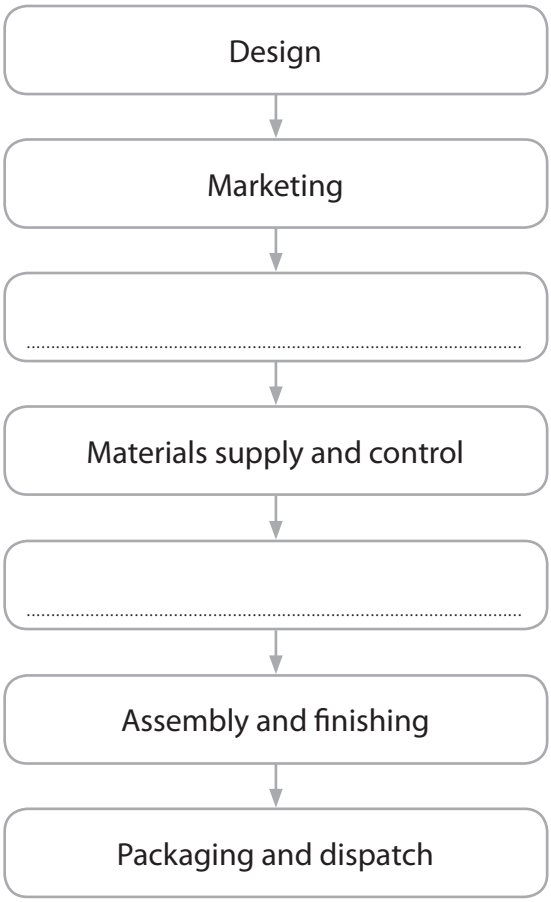
9 (a) The incomplete flow diagram below indicates some of the main stages in manufacturing temporary point of sale displays.

(i) Complete the flow diagram by adding the **two** missing main stages in manufacturing temporary point of sale displays.

(2)



(ii) State the stage in manufacturing where images are created for the temporary point of sale display.

(1)

Stage

.....

(b) Describe the following **two** stages in the manufacture of temporary point of sale displays.

(i) Marketing

(3)

(ii) Materials supply and control

(3)

(Total for Question 9 = 9 marks)

10 (a) State a specific material commonly used for the stand of the temporary point of sale display.

(1)

.....

(b) Web-fed offset lithography is a process used to print onto the surface of temporary point of sale displays.

(i) State **three** production processes, other than web-fed offset lithography, used during the manufacture of temporary point of sale displays.

(3)

Process 1

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Process 2

.....

Process 3

.....

(ii) Explain why web-fed offset lithography is a suitable process for printing onto the surface of a temporary point of sale display.

(3)

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(c) Explain how the development of modern materials has helped the manufacturer of temporary point of sale displays improve their products.

(3)

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(Total for Question 10 = 10 marks)

11 Quality control and automation are used in the manufacture of temporary point of sale displays.

(a) (i) Describe **two** examples of quality control used at the packaging and dispatch stage during the manufacture of temporary point of sale displays.

(4)

1 .....

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2 .....

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(ii) Describe **two** examples of automation used at the packaging and dispatch stage during the manufacture of temporary point of sale displays.

(4)

1 .....

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2 .....

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(b) Explain **one** advantage to the **manufacturer** of applying quality control during automated stages of manufacture.

(2)

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(Total for Question 11 = 10 marks)

12 (a) A manufacturer of temporary point of sale displays has changed their working environment from traditional to modern technology as a result of high product demand.

Explain the impact of these changes for:

(i) employees

(3)

(ii) the global environment

(3)

(b) Information and communication technology (ICT) plays an important role in the manufacture of temporary point of sale displays.

(i) State **two** uses of ICT at the marketing stage.

(2)

1 .....

2 .....

(ii) Describe **one** use of ICT at the design stage.

(2)

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(iii) Explain **one** benefit of using ICT to the distributor of temporary point of sale displays.

(2)

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(Total for Question 12 = 12 marks)

13 Control technology is an essential feature in the manufacture of temporary point of sale displays.

Explain the impact of control technology on safety when manufacturing.

(Total for Question 13 = 4 marks)

***14** Discuss how manufacturers can reduce energy consumption when manufacturing temporary point of sale displays.

(Total for Question 14 = 6 marks)

TOTAL FOR SECTION B = 60 MARKS
TOTAL FOR PAPER = 110 MARKS

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