

Surname					Other Names				
Centre Number					Candidate Number				
Candidate Signature									

For Examiner's Use
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General Certificate of Secondary Education  
June 2006

**DESIGN AND TECHNOLOGY  
(GRAPHIC PRODUCTS)  
Written Paper  
Foundation Tier**

**3543/F**

**F**



Tuesday 6 June 2006 1.30 pm to 3.30 pm

**For this paper you must have:**

- a pen, pencil, ruler, eraser, pencil sharpener and coloured pencils.

You may also use marker pens and 45/60 degree set squares.

For Examiner's Use			
Question	Mark	Question	Mark
1		5	
2		6	
3		7	
4		8	
Total (Column 1) →			
Total (Column 2) →			
<b>TOTAL</b>			
Examiner's Initials			

Time allowed: 2 hours

**Instructions**

- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- Show the working of your calculations.
- Detach the blue sheet from the back of this examination paper to use in between the sheets to prevent ink bleeding through to the next sheet.
- Do **not** hand in the blue sheet at the end of the examination.

**Information**

- The maximum mark for this paper is 125.
- The marks for questions are shown in brackets.
- All dimensions are given in millimetres unless otherwise stated.
- Sheet 9 is perforated.
- You are reminded of the need for good English and clear presentation in your answers.

This question is about signage and is worth 13 marks.

Spend about 10 minutes on this question.

- 1 A new sign is wanted by the Post Office. Only the words **POST OFFICE** are to be featured.

Study the letters given in **Figure 1**.

The letters contain only straight lines and are seven spaces high.

Complete the letters in **Figure 2**, in the same style as the word **POST**, by using a ruler.

Marks will be awarded for:

- (a) completing the missing letters in the same style;
- (b) line quality;
- (c) spacing.

*(10 marks)*

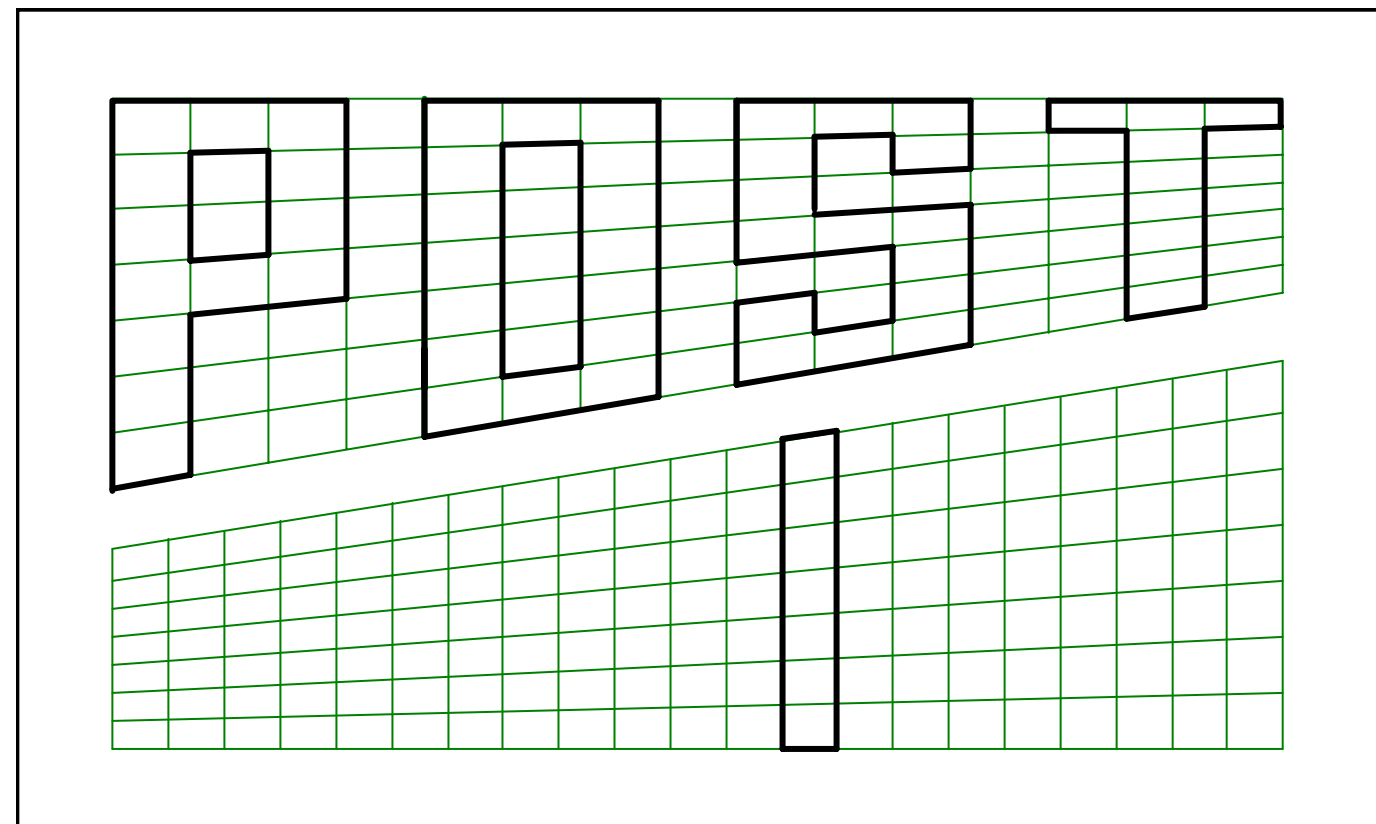
*(2 marks)*

*(1 mark)*

**Figure 1**



**Figure 2**



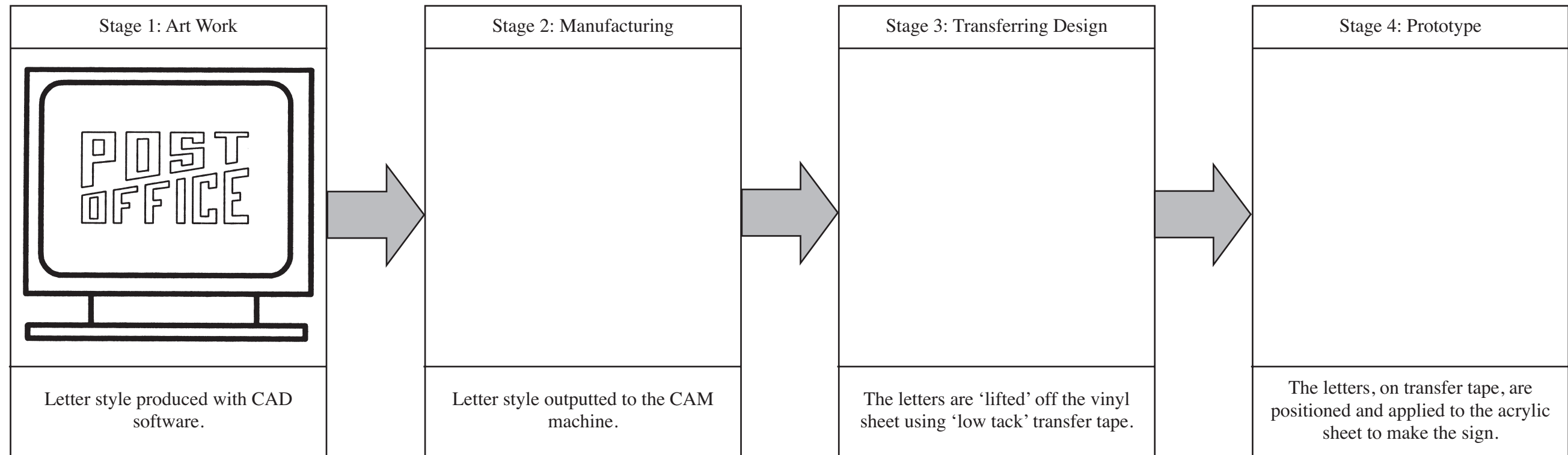
This question is about use of CAD/CAM and is worth 13 marks.

Spend about 10 minutes on this question.

2 A prototype sign using the new letter style from Question 1 is to be made using CAD/CAM in school.

(a) Complete the missing graphic images (Stages 2, 3 and 4) in the block diagrams below (Figure 3).

Figure 3



(9 marks)

(b) Choose a stage from the above process and suggest a Quality Control check that you could make.

I would carry out a Quality Control check at Stage .....

Explain how quality can be checked at your chosen stage.

.....

.....

.....

.....

.....

(2 marks)

(c) Explain why 'low tack' transfer tape is used at Stage 3.

.....

.....

.....

.....

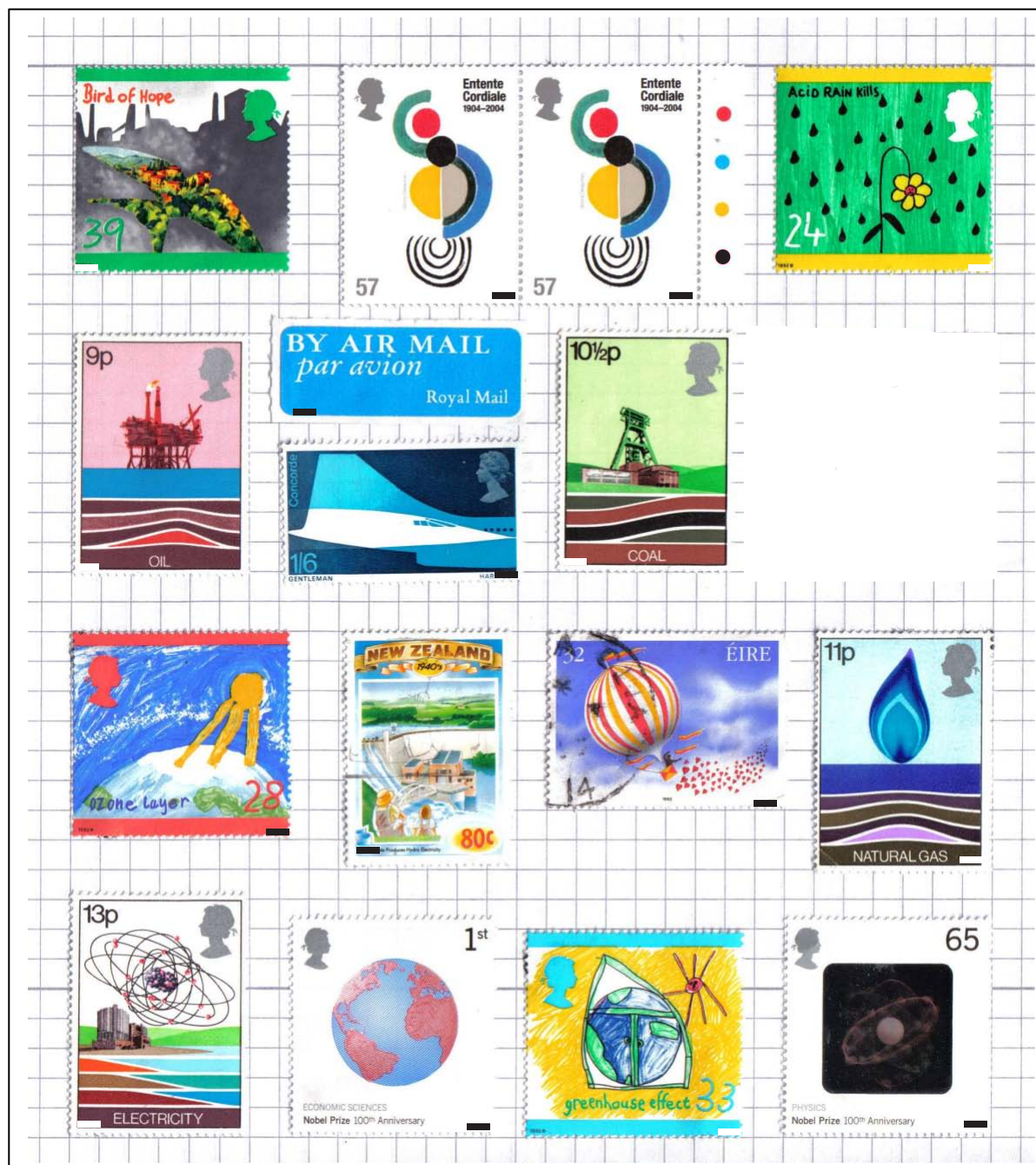
(2 marks)

**DESIGN BRIEF**

- A set of commemorative postage stamps will be issued in Britain.
- Each stamp in the set will feature a different way of generating power by renewable methods.
- You will be asked to **design one stamp**.

Study the examples of commemorative postage stamps (**Figure 4**) and turn to Question 3 on Sheet 4.

**Figure 4**



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**DO NOT SKETCH ON THIS SHEET**

**This question is about developing an idea for a commemorative postage stamp and producing a presentation drawing of it. It is worth 26 marks.**

**Spend about 30 minutes on this question.**

**3** You are asked to design a commemorative postage stamp on the theme of wind generated renewable energy.

- (a) This part is about developing a design. Study the photograph of a wind farm (**Figure 5**).
- (i) Sketch your initial idea in the labelled box. *(2 marks)*
  - (ii) Develop your stamp's design in the labelled box. *(3 marks)*
  - (iii) Produce a final modification of your stamp's design in the labelled box. *(3 marks)*

Marks will be awarded for:

quality of sketches;	<i>(2 marks)</i>
use of colour;	<i>(1 mark)</i>
notes to explain your ideas.	<i>(6 marks)</i>

(b) Produce a presentation drawing of your final stamp design on the outline of the stamp (**Figure 6**).

Marks will be awarded for:

quality of lines;	<i>(2 marks)</i>
quality of colour rendering;	<i>(3 marks)</i>
layout.	<i>(4 marks)</i>

**Figure 5**



STARTING POINT: Wind Farm



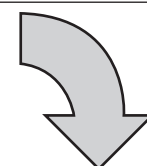
Initial idea

Notes .....

.....

.....

.....



**Figure 6**



Presentation drawing of your stamp

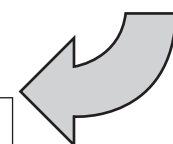
Development of idea

Notes .....

.....

.....

.....



Final modification

Notes .....

.....

.....

.....

This question is about printing effects and is worth 9 marks.

Spend about 10 minutes on this question.

- 4 Your commemorative postage stamp will have one of the following special printing effects (**Table 1**) included in its design.

**Table 1**

Printing effect	Description
'Scratch and Sniff'	Scratching the surface releases a smell
Thermochromatic Ink	Image alters due to temperature change
Holographic Image	A 3-D picture on metal foil
Embossed Image	Part of the picture is raised above the paper level
Metallic Foil	Thin metallic foil is fixed to the paper

- (b) With the aid of sketches and notes show how 'scratch and sniff' works.

- (a) Select **one** special printing effect you would use in your stamp design and give a reason why it is appropriate for your stamp.

I would use .....

Reason .....

.....

.....

.....

(2 marks)

(4 marks)

- (c) (i) Give another example of the use of 'scratch and sniff' on a graphic product.

Example .....

(1 mark)

- (ii) Explain why this printing effect is used.

Explanation .....

.....

.....

.....

(2 marks)

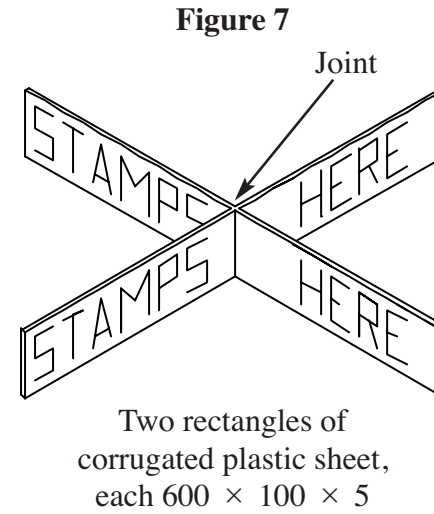
This question is about constructional details and British Standards and is worth 14 marks.

Spend about 15 minutes on this question.

5 A sign is to hang from the ceiling of a Post Office shop.

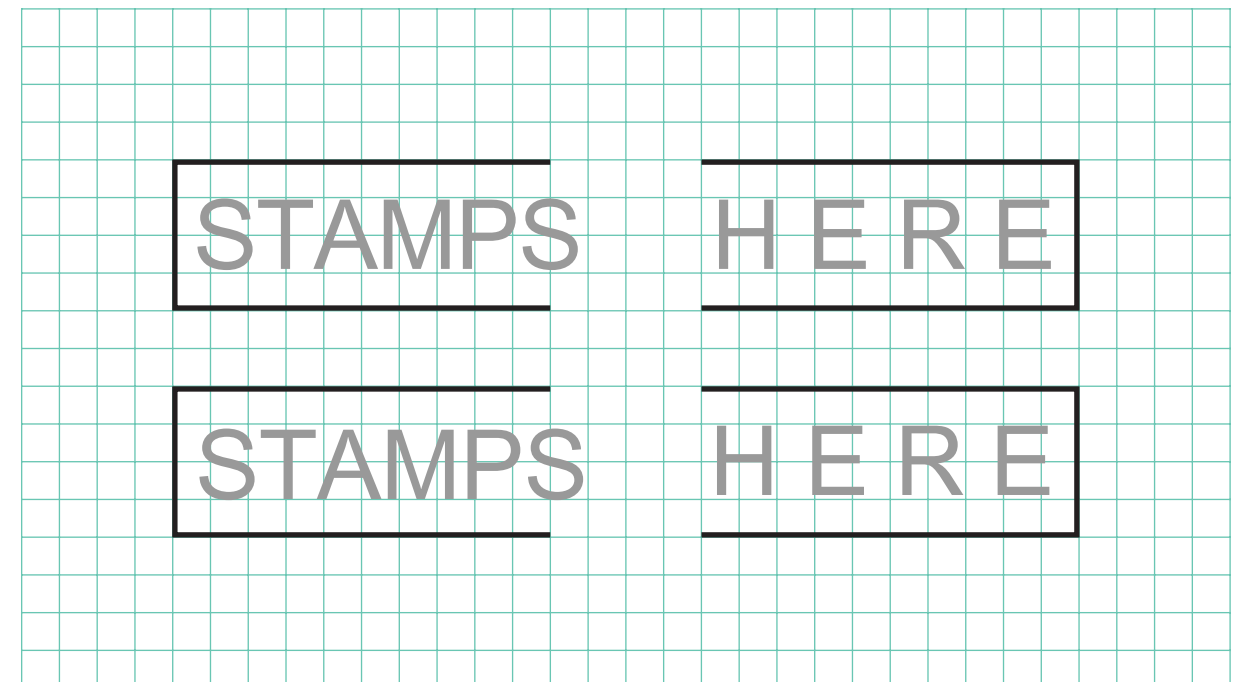
The sign is to be made from two rectangles of corrugated plastic sheet (e.g. *corriflute* or *correx*) jointed to form a cross as shown in **Figure 7**.

(a) With sketches and notes, show the structure of corrugated plastic sheet.



(c) (i) On the 5 mm grid below (**Figure 8**) complete the outlines of the two pieces of corrugated plastic sheet showing the position and size of the joining. (3 marks)

**Figure 8**



Scale 1 : 5

(ii) Add **two** outline dimensions to the sign in **Figure 8** using British Standard conventions. (4 marks)

(3 marks)

This question is about representing materials and perspective drawing and is worth 20 marks.

Spend about 20 minutes on this question.

6 A point of sale display for your commemorative postage stamp is shown in Figure 9.

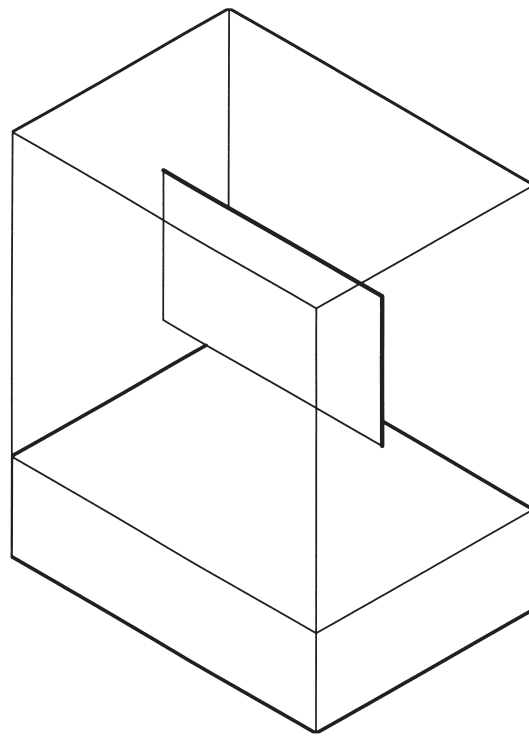
The stamp is suspended inside a clear plastic cover.

(a) Figure 10 is an isometric drawing of the point of sale display.

(i) Colour the sides of the base to represent a wood grain effect. (4 marks)

(ii) Render the upper part to represent clear plastic. (4 marks)

Figure 10

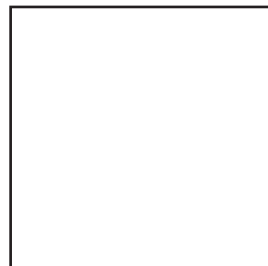


(b) (i) The clear plastic cover is non-biodegradable. Explain the term 'non-biodegradable'.

.....  
 .....

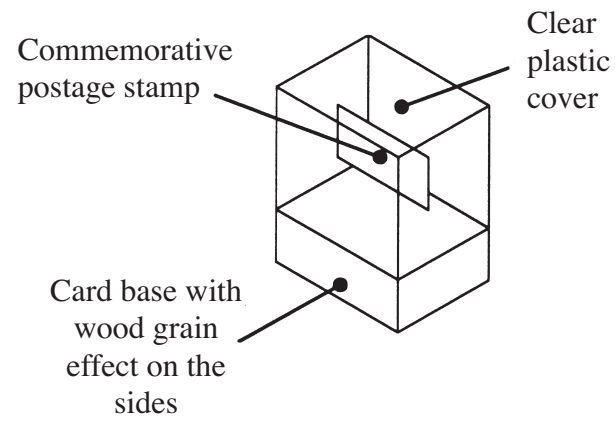
(2 marks)

(ii) The card base can be recycled. In the space below draw a symbol to represent recycling.



(2 marks)

Figure 9



(c) An incomplete one-point perspective drawing of the point of sale display is shown in Figure 11.

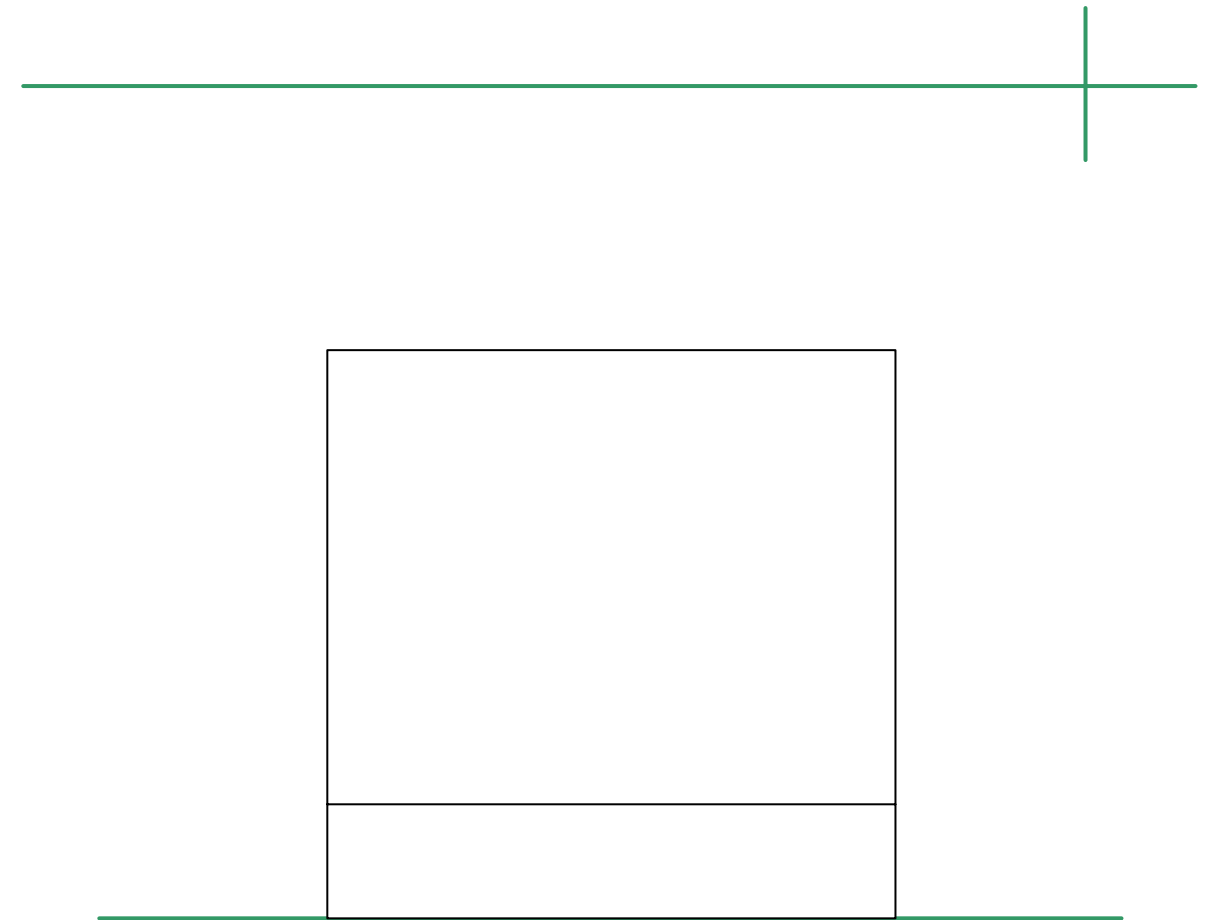
(i) Label the following features of the one-point perspective drawing:

- the vanishing point;
- the eye level (horizon);
- the ground level.

(3 marks)

(ii) Use a ruler to complete the one-point perspective drawing of the point of sale display. (Do **not** include the stamp). (5 marks)

Figure 11

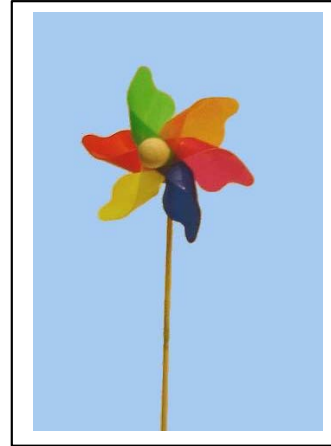




This question is about materials and industrial practices and is worth 16 marks.

Spend about 15 minutes on this question.

Figure 12



7 As part of the promotion of the renewable energy stamps, small hand-held toy windmills (Figure 12) are to be given away to children.

The windmill has six plastic PVC sails.

(a) (i) Give a safety reason why PVC is a good material for the sails.

Reason .....

.....

(2 marks)

(ii) Thin card is another material from which the sails could be made.

Give **one** advantage and **one** disadvantage of using thin card for the sails.

Advantage .....

.....

(2 marks)

Disadvantage .....

.....

(2 marks)

(b) This toy is made by a 'mass production' process.

(i) Give another example of a graphic product made by a 'mass production' process.

.....

(1 mark)

(ii) Explain the term 'batch production'.

.....

.....

(2 marks)

(c) (i) Name a Computer Aided Manufacturing (CAM) machine that can be used to cut out the sails for the windmill.

.....

(1 mark)

(ii) Several sails are to be cut from an A4 sheet of PVC.

Figure 13 is a scale drawing showing one possible layout which allows **four** sails to be cut out.

On Figure 14 use the given under-lay sheet (Sheet 9), to show a layout which allows more than four sails to be cut from the same size sheet of PVC.

(4 marks)

Figure 13

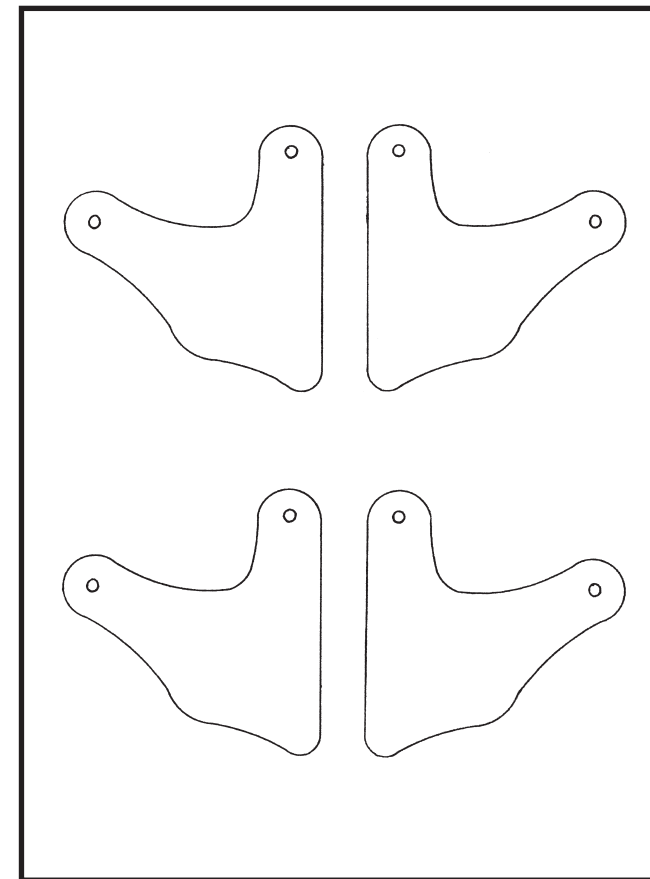
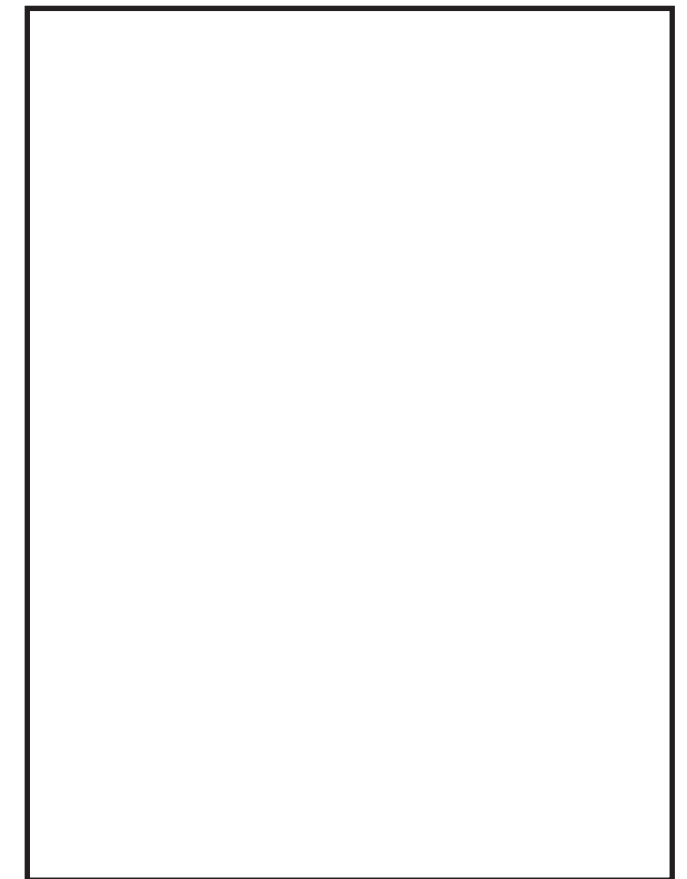


Figure 14



(iii) Give an advantage to the manufacturer of increasing the number of sails per sheet.

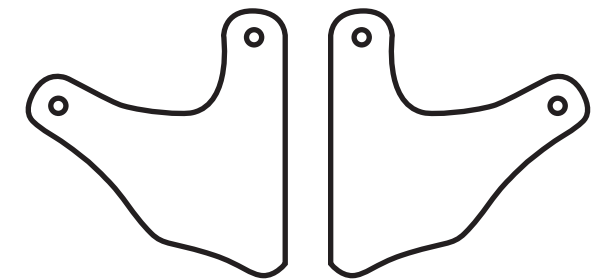
Advantage .....

.....

(2 marks)

**Instructions for Sheet 9**

- Sheet 9 is perforated.
- Use the images opposite as an under-lay to help you answer Question 7 (c) part (ii).
- Fold along the dotted line and tear off the right-hand part of this sheet.



**This question is about evaluating and is worth 14 marks.**

**Spend about 10 minutes on this question.**

**8** (a) Many letters are sent by airmail. These have an extra ‘sticker’ similar to **Figure 15**.

You are asked to design an alternative airmail ‘sticker’ in the same style.

**Figure 15**



Study **Figure 15** and list **three** design features that must be included in a design specification when designing a new ‘sticker’ in the same style.

- Design feature 1 .....
  - Design feature 2 .....
  - Design feature 3 .....
- (3 marks)

(b) In the box below, draw an alternative airmail ‘sticker’ in the same style using the **three** design features you listed in part (a).



(5 marks)

(c) Evaluate the design of your airmail ‘sticker’ against your design specification.

Feature 1: .....  
.....  
.....  
(2 marks)

Feature 2: .....  
.....  
.....  
(2 marks)

Feature 3: .....  
.....  
.....  
(2 marks)

**END OF QUESTIONS**