

Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

For Examiner's Use

General Certificate of Secondary Education
June 2006

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

3553/F

F



Tuesday 6 June 2006 1.30 pm to 3.00 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) →			
TOTAL			
Examiner's Initials			

Time allowed: 1 hour 30 minutes

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 100.
- The marks for questions are shown in brackets.
- All dimensions are given in millimetres unless otherwise stated.
- You are reminded of the need for good English and clear presentation in your answers.

This question is about signage and is worth 9 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 **OFFICE**, by using a ruler.
The letters you are required to complete are three spaces wide.

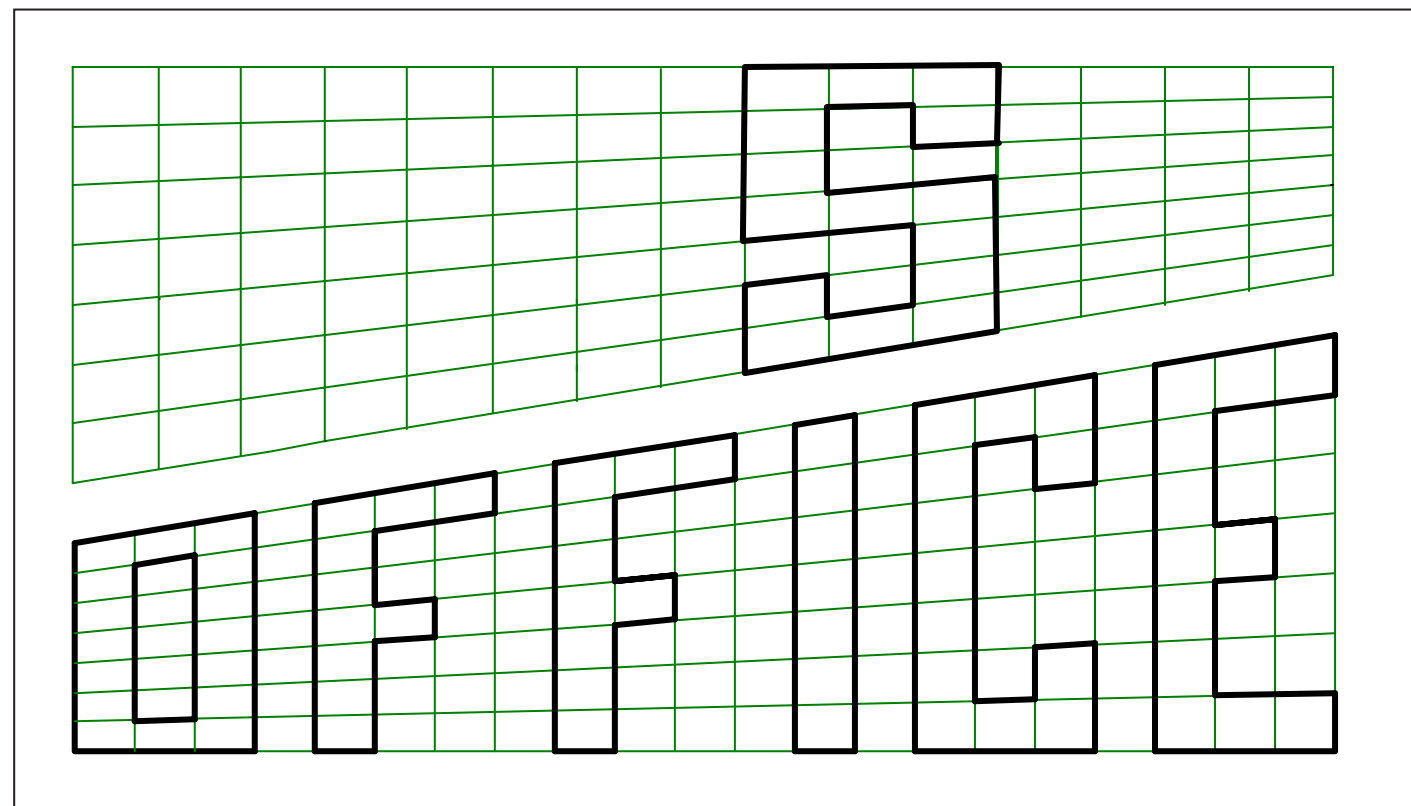
Marks will be awarded for:

- (a) completing the missing letters in the same style; *(6 marks)*
- (b) line quality; *(2 marks)*
- (c) spacing. *(1 mark)*

Figure 1



Figure 2



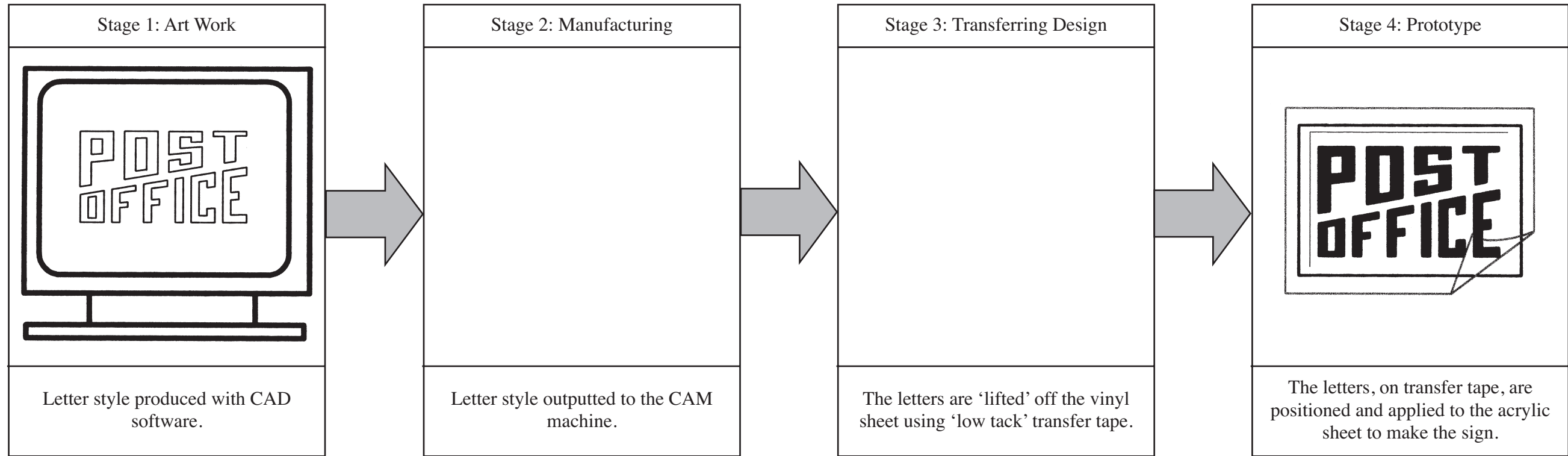
This question is about CAD/CAM and is worth 10 marks.

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 and 3) in the block diagrams below (Figure 3).

Figure 3



(6 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.

.....

.....

.....

.....

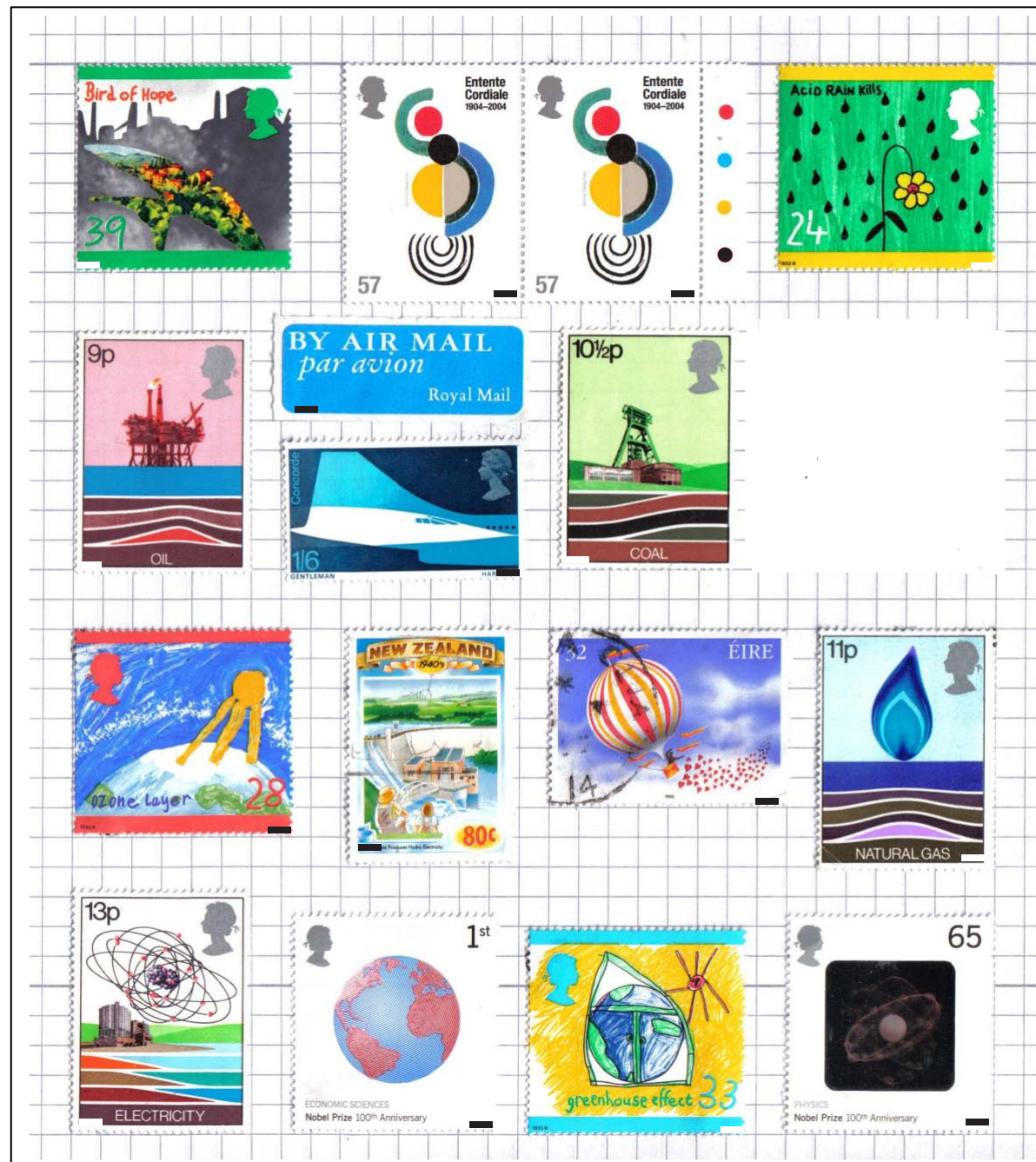
(2 marks)

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



This stamp has not been reproduced here due to third-party copyright constraints.

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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 25 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; (2 marks)
- use of colour; (1 mark)
- notes to explain your ideas. (6 marks)

(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; (2 marks)
- quality of colour rendering; (3 marks)
- layout. (4 marks)

Figure 5



STARTING POINT: Wind Farm



Initial idea

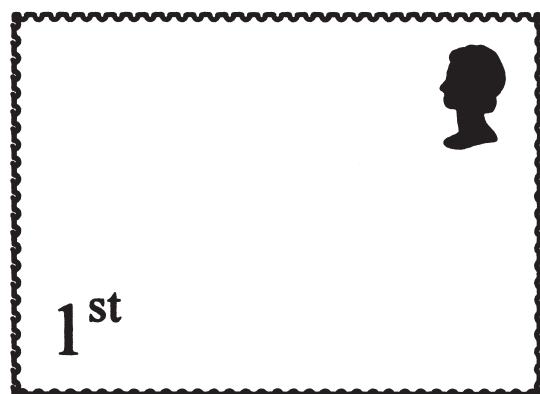
Notes

.....

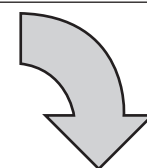
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Figure 6



Presentation drawing of your stamp



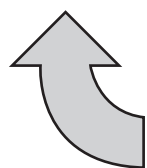
Development of idea

Notes

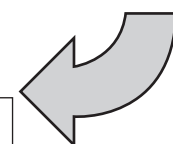
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Final modification



Notes

.....

.....

.....

This question is about printing effects and is worth 6 marks.

Spend about 5 minutes on this question.

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

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

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

(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)

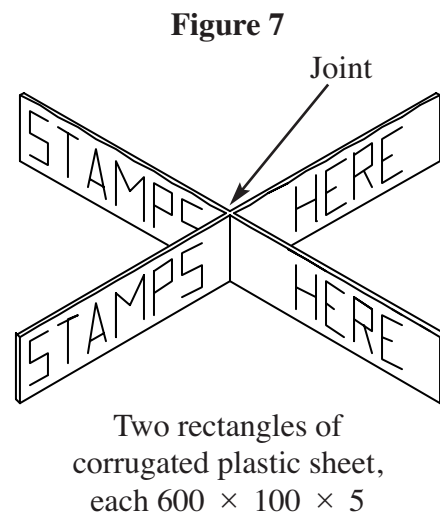
6

This question is about constructional details and British Standards and is worth 10 marks.

Spend about 10 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.

(4 marks)

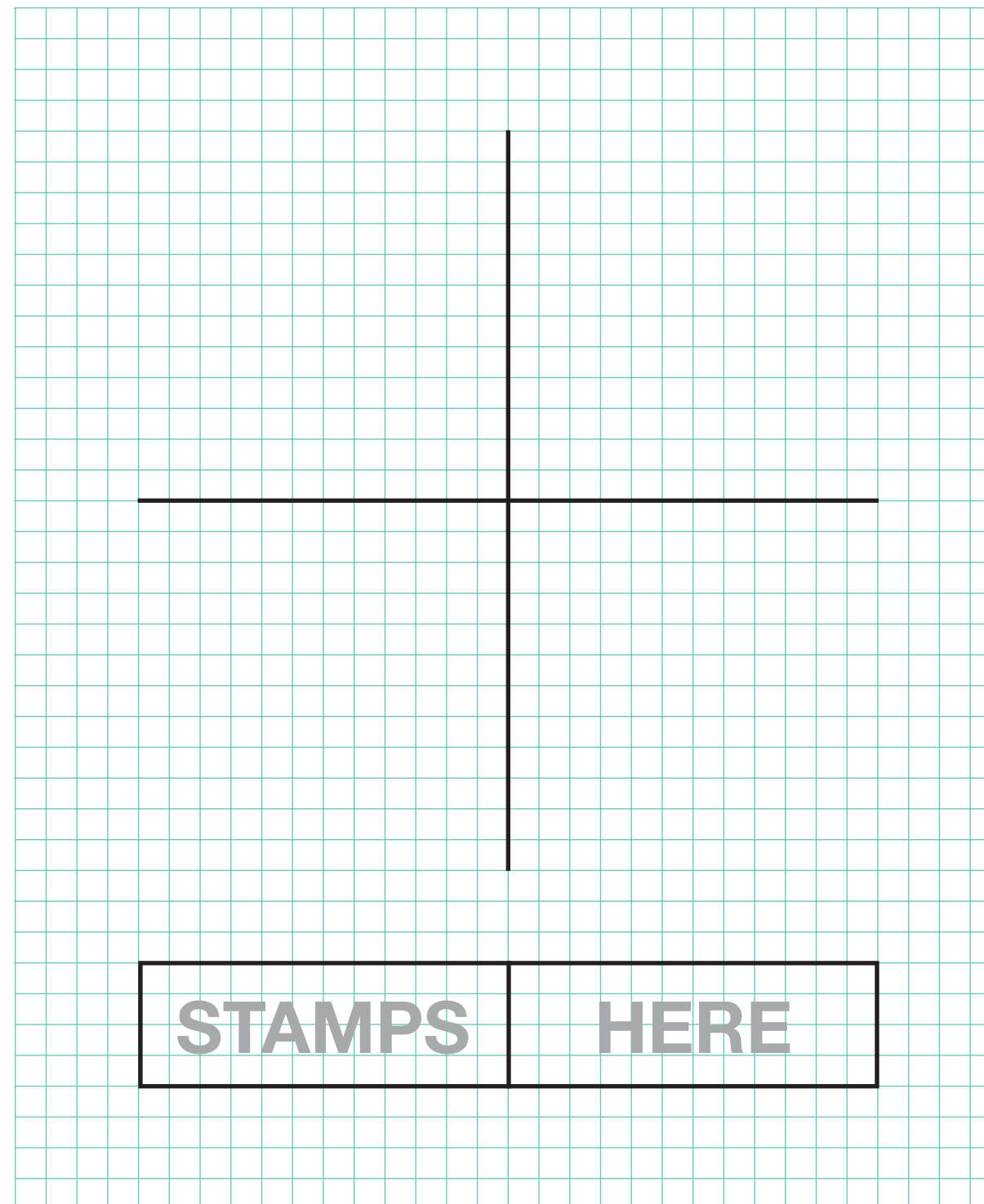
(b) **Figure 8** shows the front view and plan of the assembled sign.

Add the following dimensions using British Standard conventions.

(i) On the front view of the sign add the height of the sign. (3 marks)

(ii) On the plan of the sign add the overall length of the sign. (3 marks)

Figure 8



Scale 1 : 5

This question is about representing materials and is worth 8 marks.

Spend about 5 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.

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

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

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

DO NOT INCLUDE YOUR STAMP DESIGN

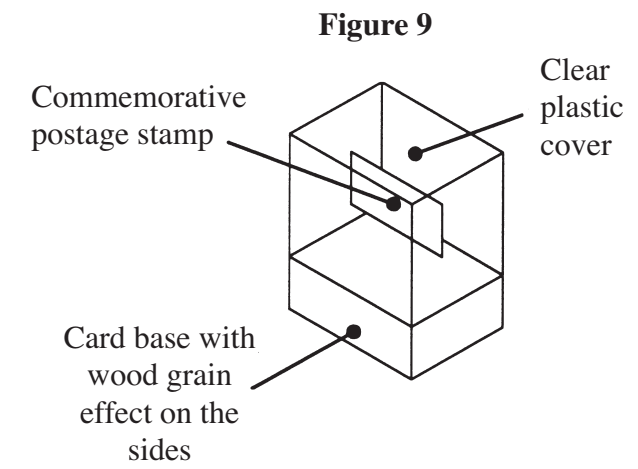
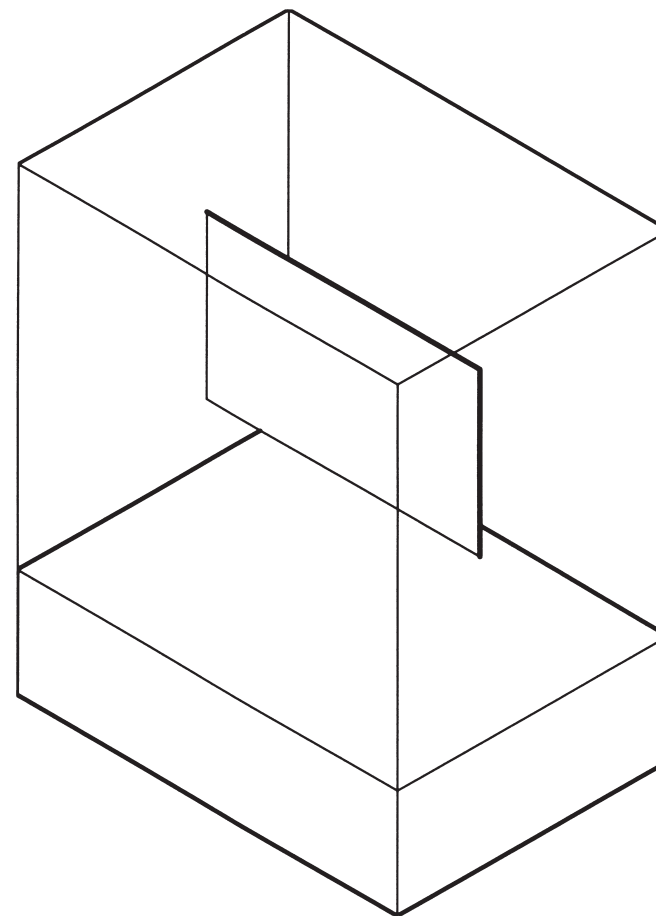


Figure 10



This question is about materials and industrial practices and is worth 17 marks.

Spend about 15 minutes on this question.

Figure 11



7 As part of the promotion of the renewable energy stamps, small hand-held toy windmills (Figure 11) 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) Name another material which could be used for the sails of this toy and explain which of its properties make it suitable for use.

Material

(1 mark)

Property

.....

.....

(2 marks)

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

(i) Name another 'scale of production'.

.....

(1 mark)

(ii) Name a graphic product made on this scale.

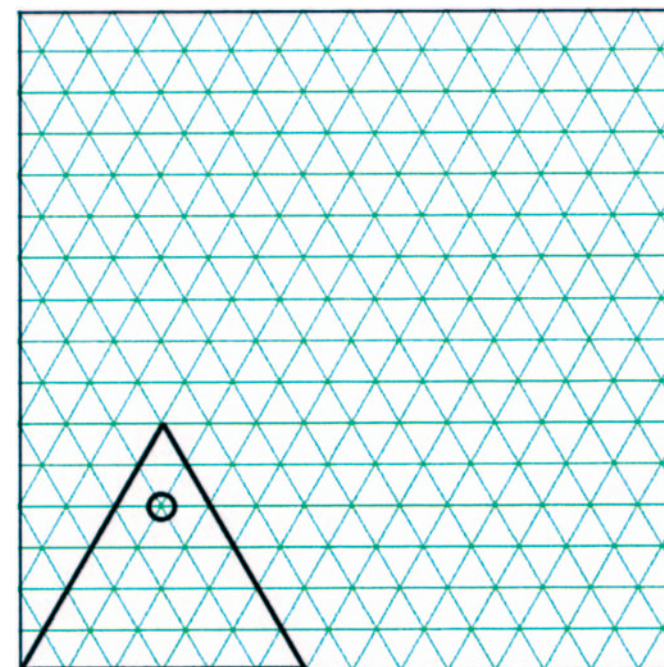
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(1 mark)

(c) A similar toy windmill has sails in the shape of equilateral triangles. (An equilateral triangle has 3 sides of equal length.)

(i) On the grid (Figure 12) draw a layout showing the maximum number of sails that can be cut from a piece of material this size. One has been done for you. (4 marks)

Figure 12



(ii) What is the maximum number of sails that can be cut from this material?

.....

(1 mark)

(d) Renewable energy is considered a 'green' issue.

(i) What is meant by 'green' issue?

.....

.....

(2 marks)

(ii) Explain why PVC plastic is **not** considered a 'green' material.

.....

.....

.....

.....

(3 marks)

This question is about evaluating and is worth 14 marks.

Spend about 10 minutes on this question.

8 Many letters are sent by airmail. These have an extra ‘sticker’ similar to **Figure 13**.

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

Figure 13



(a) Study **Figure 13** 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