

Answer ALL the questions. Write your answers in the spaces provided.

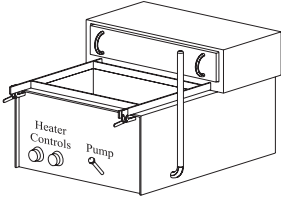
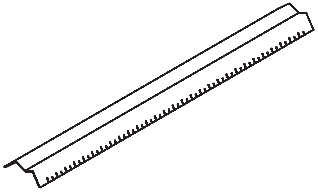
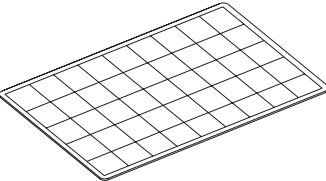
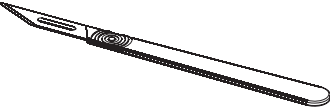
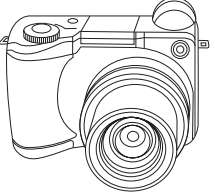
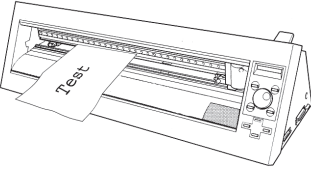
1. The table below shows some tools and equipment.

(a) Complete the table by:

(i) naming each tool or piece of equipment

(ii) describing its use.

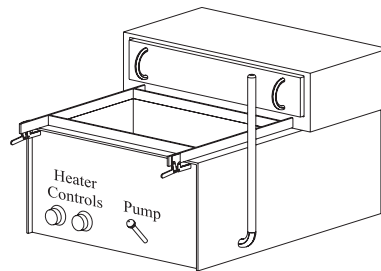
The first one has been done for you.

Tool/Equipment	Name	Use
	Vacuum former	Shaping plastic around moulds
		
		
		
		
		

(10)



(b) The drawing below shows a vacuum former.



The vacuum former is used to shape plastic around moulds.

Use the words from the list below to complete information about vacuum forming. Each word may be used once or not at all.

- | | | | |
|--------------------|-----------------------|--------------------|----------------|
| fabrication | CADCAM | epoxy resin | painted |
| trimmed | thermo-forming | PVC | |

1. Vacuum forming is a common process used in schools.
 2. The process uses heat to soften sheets of plastics.
The sheets of plastic are often made from
 3. After the plastic has been shaped it often needs to be
.....
- (3)**

(c) Glues are used to join materials.

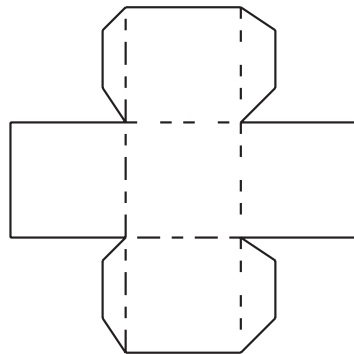
Use the words from the list below to complete information about joining materials. Each word may be used once or not at all.

- | | | | |
|------------|-------------------|--------------------|---------------|
| PVA | glue stick | spray mount | tensol |
|------------|-------------------|--------------------|---------------|

1. Pieces of pine can be permanently joined together using
.....
 2. is a glue that is produced especially to join acrylic.
- (2)**



(d) The drawing below shows a development (net) for a box.



The box is manufactured using a Computer Integrated Manufacturing (CIM) system. Lay planning is one process carried out as part of CIM.

Name **three** other computerised tasks that could be part of a CIM system.

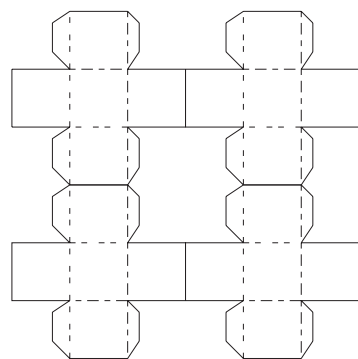
1

2

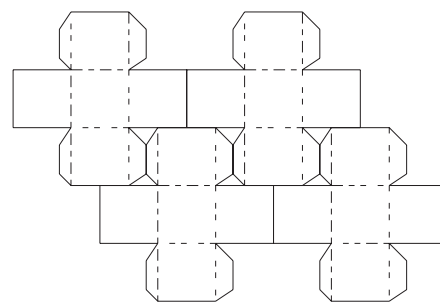
3

(3)

(e) The drawing below shows two different lay plans for the net.



Poor lay planning



Good lay planning

State **two** advantages of manufacturing the net using good lay planning.

1

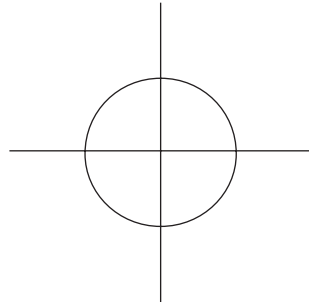
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(2)



(f) The net is printed in colour.

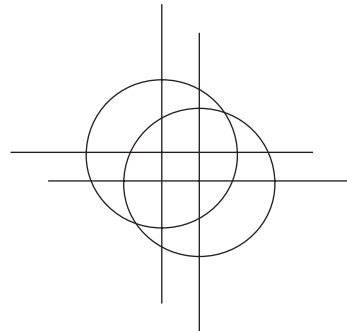
The symbol shown below is printed on the edge of each of the colour separations as part of the quality control process.



(i) Name the symbol.

..... (1)

(ii) There was a problem during the printing of the final net. The symbols on the final net looked like the drawing below.



State **one** reason why the symbols would look like this.

..... (1)

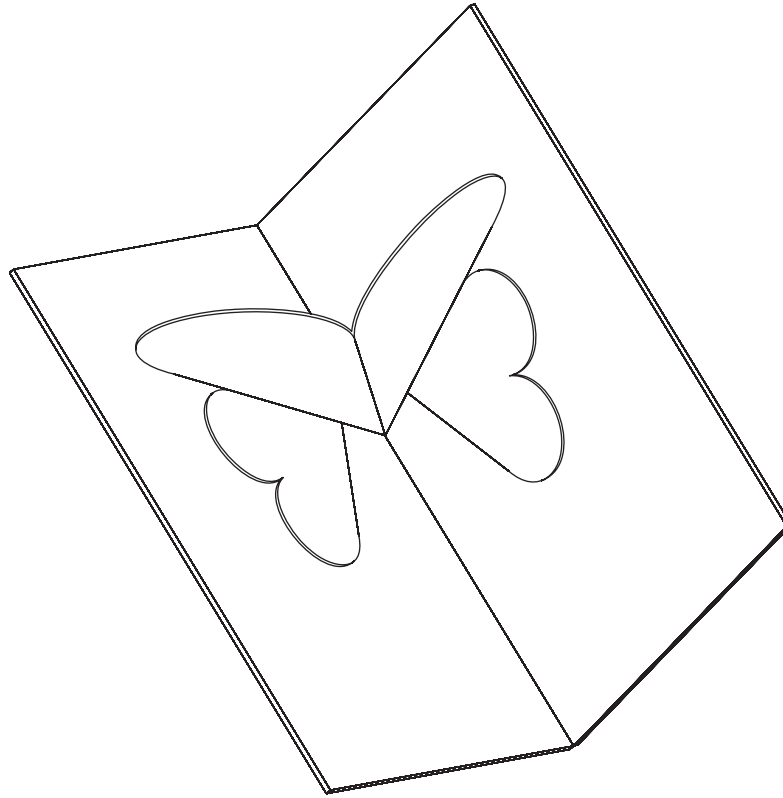
(Total 22 marks)

Q1

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2. The drawing below shows a pop-up birthday card made by a student.



(a) The pop-up birthday card could have been made from either paper or card.

(i) State **one** advantage of making the pop-up birthday card from paper.

..... (1)

(ii) State **one** advantage of making the pop-up birthday card from card.

..... (1)

(b) During the designing of the birthday card the student could use either an HB or a 2B pencil.

Give **two** advantages of using the HB pencil instead of the 2B pencil.

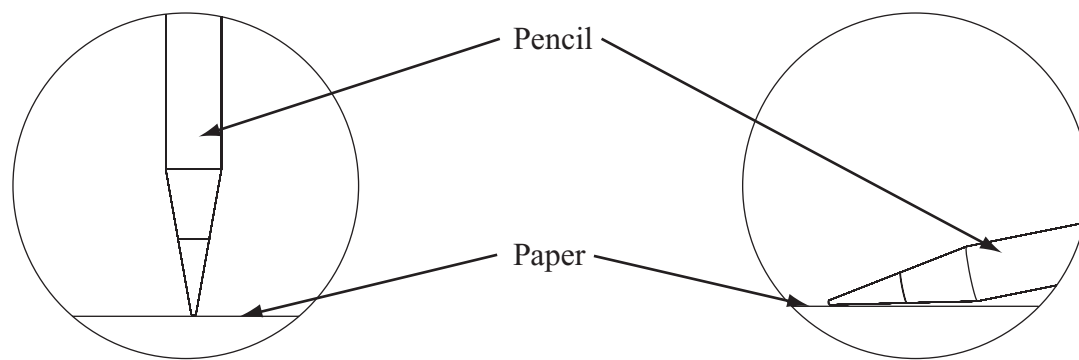
1

2

(2)



(c) (i) The student used colouring pencils on the front of the card.
The drawing below shows two different ways the pencil was used.



Pencil at an upright angle

Pencil at a low angle

Explain **one** advantage of applying the colour by holding the pencil at a **low** angle to the paper.

.....
.....

(2)

(ii) The student used marker pens on the inside of the card.

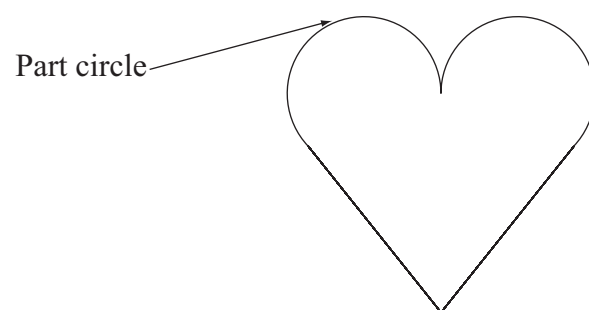
State **two** advantages of using marker pens to apply colour instead of pencils.

1

2

(2)

(d) The drawing below shows the pop-up design.
Parts of a circle are used in the design.



Name **one** piece of equipment suitable for drawing part of a circle.

.....

(1)



- (e) An airbrush was used when making the card.
A mask was applied to parts of the design.

Give **one** reason for applying a mask to the design when using an airbrush.

.....
(1)

- (f) (i) CAD software was used to design part of the birthday card.
Grids can be displayed on the drawings by CAD programs.

Give **one** reason for using a grid when using a CAD program.

.....
(1)

- (ii) CAD/CAM is often used to produce graphic products commercially.

Give **two** advantages for the consumer of CAD/CAM being used to produce graphic products commercially.

1

2

(2)

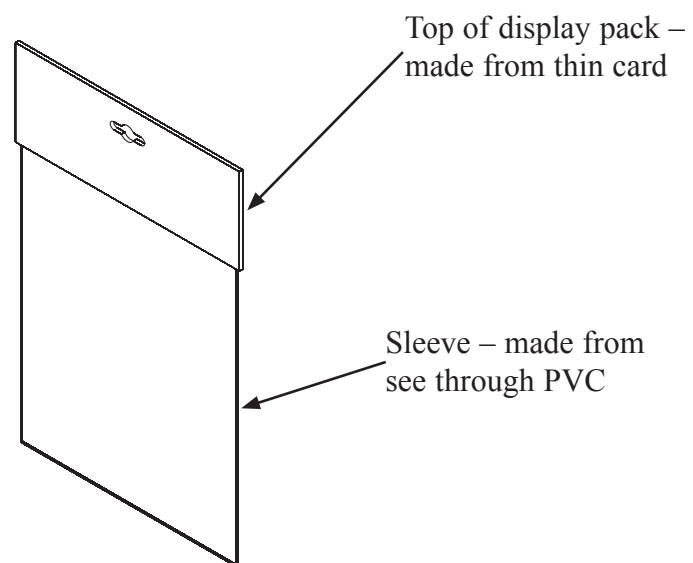
- (iii) CAD/CAM can have disadvantages for the employees of companies that produce graphic products.

Give **one disadvantage**, for employees, of their company using CAD/CAM.

.....
(1)



(g) The drawing below shows a PVC display pack that is used to hold a commercially produced birthday card.



Describe **one** environmental problem linked to the production of PVC.

.....

(2)

(h) The table below lists three types of information that are displayed on packaging.

For each type of information state **one** advantage for the consumer of having this information.

Each answer must be different.

Type of information	Advantage for consumer of having this information
The name of the manufacturer
The address of the manufacturer
The age range the product is intended for

(3)



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blank

- (i) Some greeting cards have parts made from light sensitive plastics.

State **one** way the appearance of light sensitive plastics can change when exposed to sunlight.

.....
(1)

- (j) Greeting cards are an example of a product with planned product obsolescence.

State **two** environmental **disadvantages** of planned product obsolescence.

1

2

(2)

Q2

(Total 22 marks)



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3. A sandwich shop called “Roll away the Stone” requires a portable sign.

The sign will be placed on the pavement outside the shop when the shop is open.

The specification for the portable sign is that it must:

- be easy to carry and fold up for storage
- not fall over in wind and not be damaged by rain
- display the shop name to people walking from both directions
- be suitable for production using school workshop materials and processes.

(a) In the spaces opposite, use sketches and, where necessary, brief notes to show **two different** design ideas for the portable sign that meet this specification.

Do **not** evaluate your designs in part (a).

Candidates are reminded that if pencil is used for diagrams/sketches, it must be dark (HB or B). Coloured pens, pencils and highlighter pens must **not** be used.

PLEASE DO NOT WRITE OR DRAW IN THIS SPACE.

PLEASE USE THE SPACES OPPOSITE FOR YOUR DESIGNS.



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Design Idea 1

(8)

Design Idea 2

(8)



Leave
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(b) Three of the original specification points are repeated below.

Evaluate how **one** of your design ideas succeeds or fails to meet each of these specification points.

Write down the number of your chosen design idea (1 or 2) here:

(i) The portable sign must be easy to carry and fold up for storage.

.....
.....
..... (2)

(ii) The portable sign must not fall over in wind and not be damaged by rain.

.....
.....
..... (2)

(iii) The portable sign must display the shop name to people walking from both directions.

.....
.....
..... (2)

(Total 22 marks)

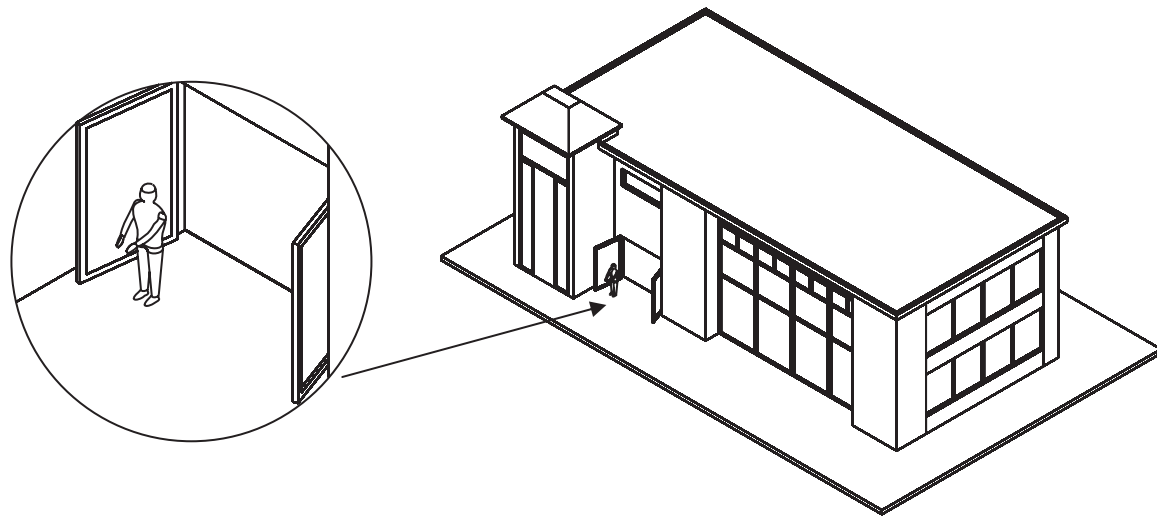
Q3



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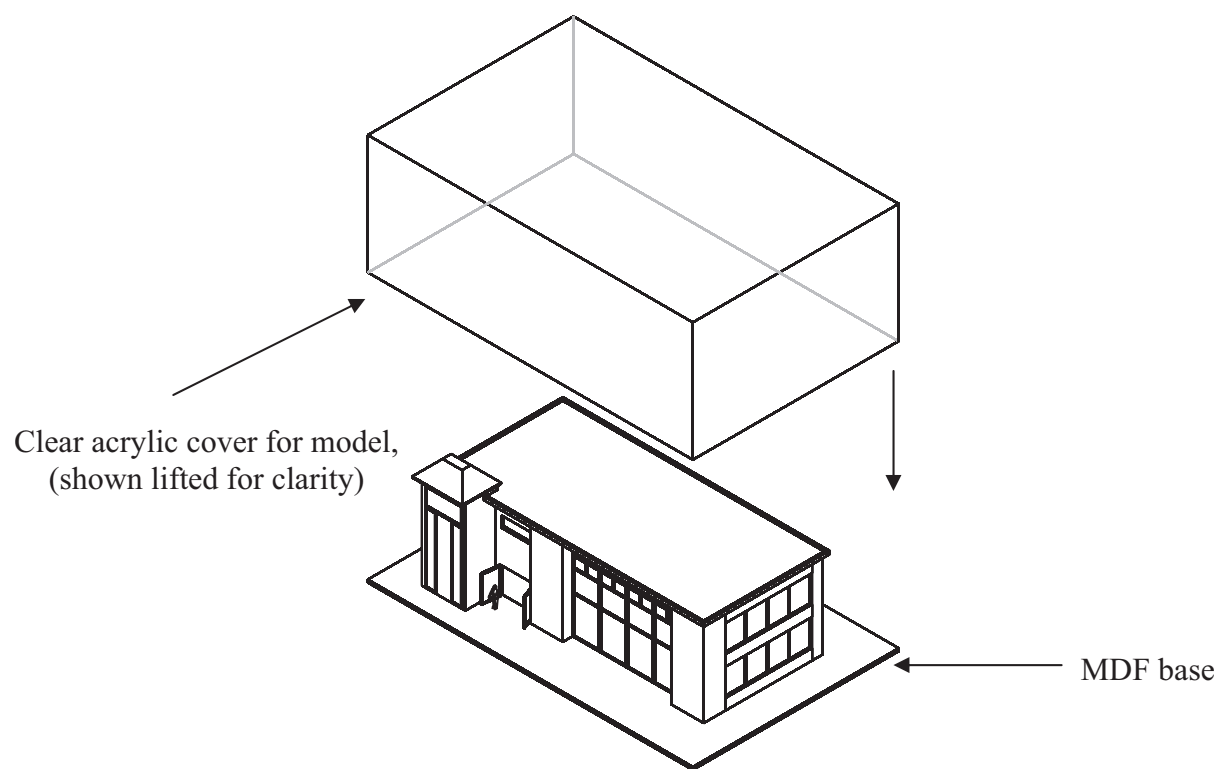


4. The drawing below shows an architect's model of a new library that was made for a local council. The model is designed to be displayed to show users of the new building what it will look like.



Enlarged view showing a scale model of a person

Architect's model of library



Additional data:
The model is 1000 mm long, 500 mm wide and 300 mm tall.
Battery powered lights are used to illuminate the interior.



(a) Two specification points for the architect's model are that it must:

- show viewers the scale of the building
- be durable.

Under each of the following headings, give **one** more point that should be included in the specification for the architect's model.

For each point, give **one** reason why it should be included.

(i) The needs of the user.

Point

Reason

.....

.....

(2)

(ii) Environmental considerations.

Point

Reason

.....

.....

(2)

(iii) Quality.

Point

Reason

.....

.....

(2)



(b) The base is made from MDF.

One reason for using MDF to make the base is that it is cost effective.

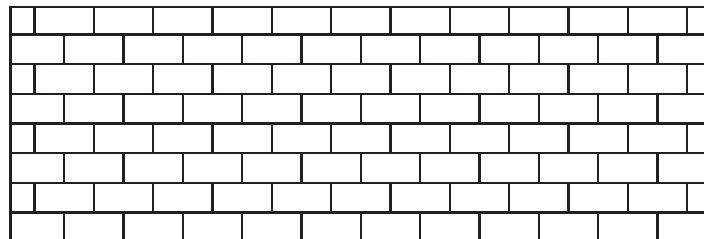
Give **two** other reasons why MDF is a suitable material from which to make the base.

1

2

(2)

(c) The drawing below shows printed paper that is stuck to the walls to make them look realistic.



The printed paper is manufactured by lithography.

Give **two** reasons why lithography is a suitable process to manufacture the printed paper.

1

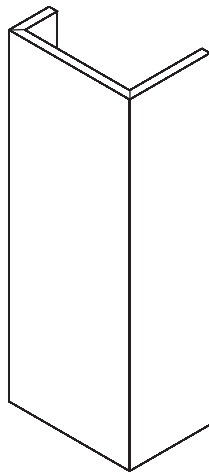
2

(2)



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(d) The drawing below shows a wall from the architect's model.



The wall is made from foamboard.

Give **two** properties of foamboard that make it a suitable material from which to make the wall.

For **each** property give **one** reason why it makes foamboard suitable for the wall.

Property 1

Reason

.....

.....

Property 2

Reason

.....

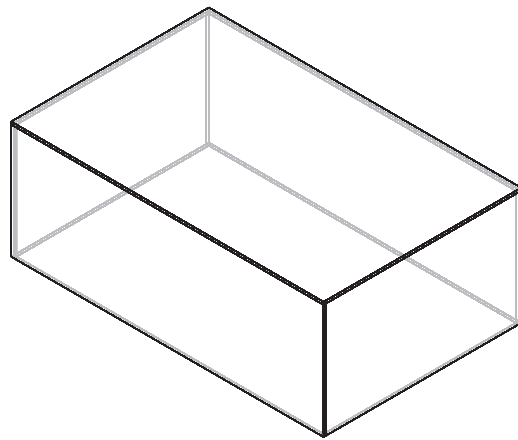
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(4)



- (e) Quality control checks are carried out at important stages during the manufacture of the acrylic cover.

The cover is manufactured by gluing together five pieces of acrylic.



Clear acrylic cover

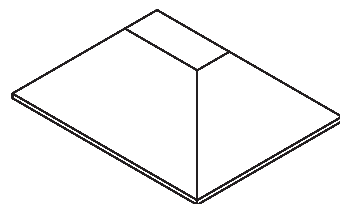
Name **two** important quality control checks, other than safety, that should be made during the manufacture of the clear acrylic cover.

1

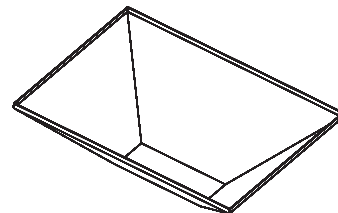
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(2)

- (f) The drawing below shows part of the roof of the architect's model. It is a bought-in component.



Top view of roof



View of roof upside down

The roof is made in batches using vacuum forming.

The shape of the roof makes it suitable to be made using the vacuum forming process.

Describe **one** way in which the shape of the roof makes it suitable to be made in batches using the vacuum forming process.

.....

.....

(2)



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(g) Two purposes of the architect's model are to:

- show viewers the scale of the building
- be durable.

Explain under the following headings, how the architect's model achieves these purposes.

(i) Show viewers the scale of the building.

.....
.....
.....
.....

(2)

(ii) Be durable.

.....
.....
.....
.....

(2)

(Total 22 marks)

Q4

TOTAL FOR PAPER: 88 MARKS

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