



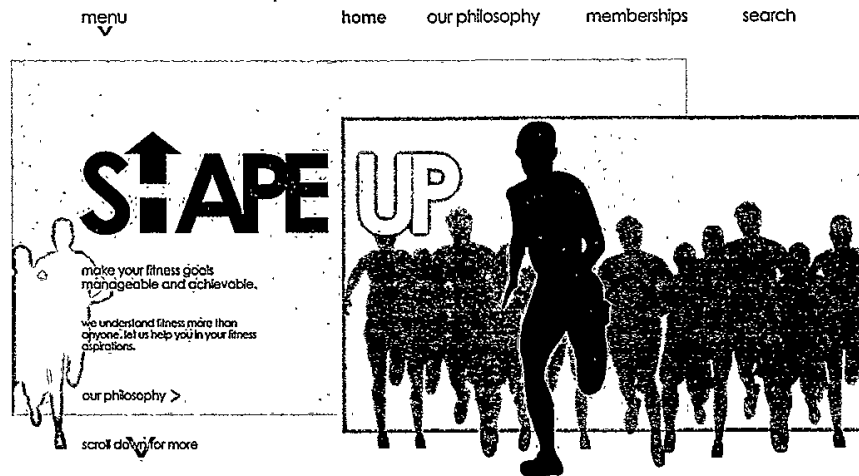
**Graphic Communication
(National 5): question paper**

Candidate evidence

Candidate 7 evidence

Total marks — 65
Attempt ALL questions

1. The website homepage for a fitness company is shown below.



- (a) Explain two ways the designer has successfully created a modern and simple website homepage.

2

- There isn't too much text on the page, making it easier to understand.
- Also, the designer hasn't used too many colours, making the webpage look neat and tidy.

1. (continued)

- (b) Describe two ways the graphic designer has used each of the following design elements and principles in the layout.

You may annotate the graphic on the opposite page to support your answer.

(i) Alignment

2

- The main text on the page is aligned to the left.

- The menu along the top is centrally aligned.

(ii) Depth

2

- Depth has been created through the designer moving the grey block to the back, which makes the silhouette stand out.

- Also, the runners behind the silhouette have been faded to make it stand out.

(iii) Contrast

2

- The black on orange makes the figure stand out, which is a form of contrast.

- The two ~~colour~~ colours in the blocks contrast, which makes the page capture the eye.

- (c) Explain two advantages to the fitness company of promoting their company online rather than in printed media.

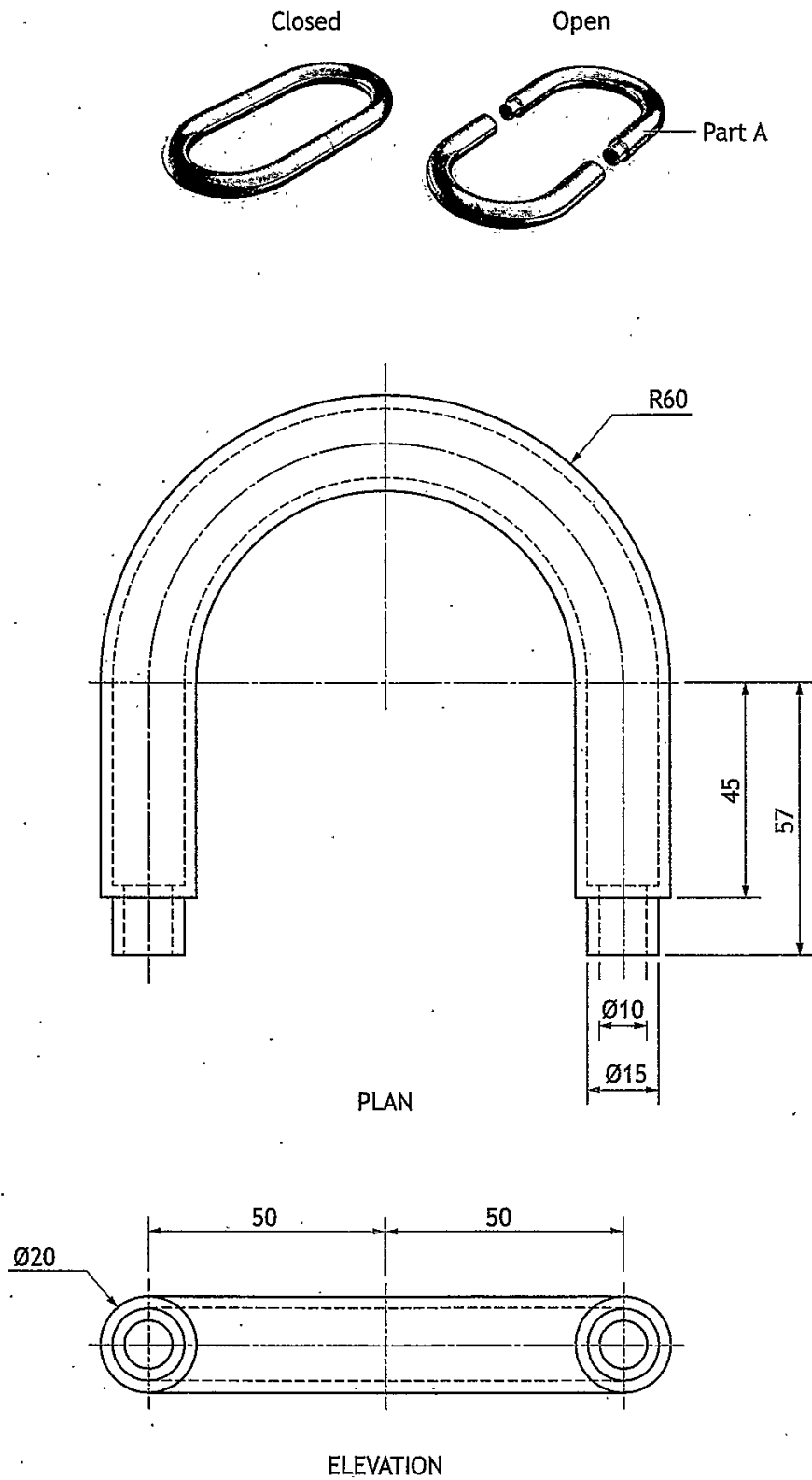
2

- It is easily accessible.

- Only people who want to find out more can find the webpage.

[Turn over

2. A 3D CAD illustration of a bicycle lock casing, and an orthographic drawing of Part A, are shown below.



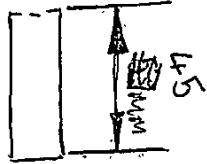
2. (continued)

- (a) Describe, using the correct dimensions and 3D CAD modelling terms, how you would use 3D CAD software to model Part A.

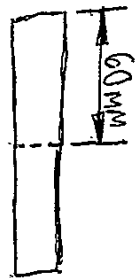
You may use sketches to support your answer.

6

- Draw ~~two~~ two lines each ~~60mm~~ 45mm, with a circular base of $\phi 5\text{mm}$.



- Then draw another 2 lines both 60mm.

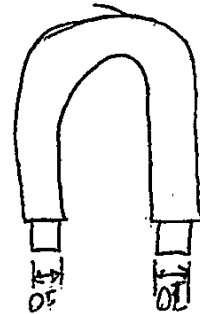


- Then finish sketch and extrude add 20mm.

- Then ~~reverse~~ ^{fillet} the top section R60mm.



- Then use the mirror tool to replicate on the other side



- Start 2D sketch and then draw a circle $\phi 15\text{mm}$.

- Then draw another circle, $\phi 10\text{mm}$.

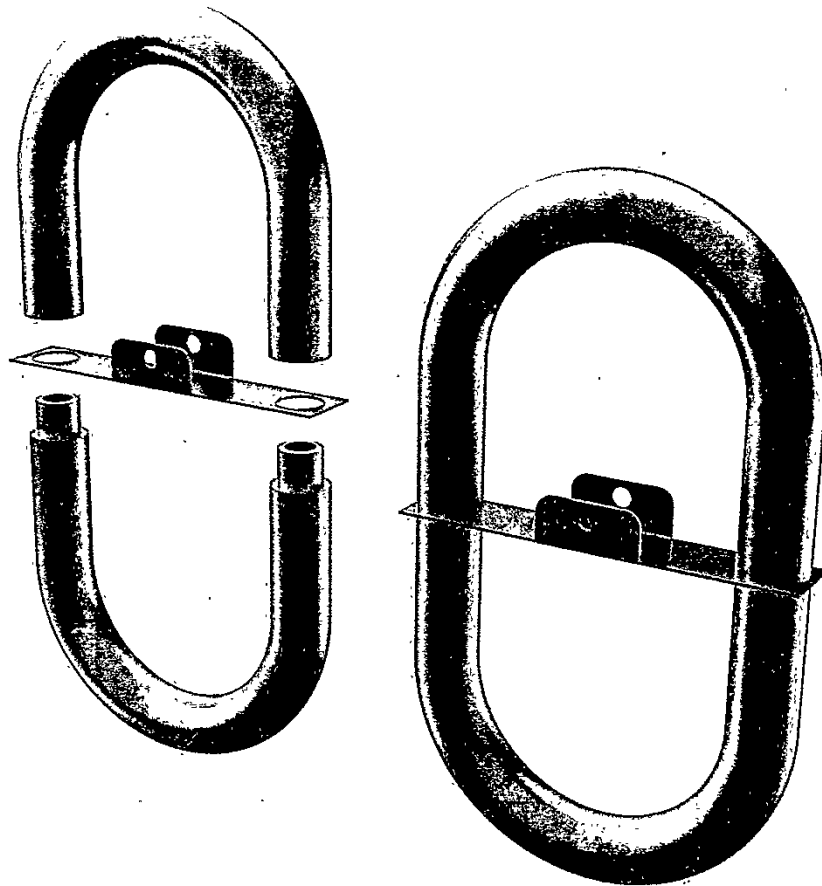
- Finish sketch and extrude add 12mm.

57
45
12

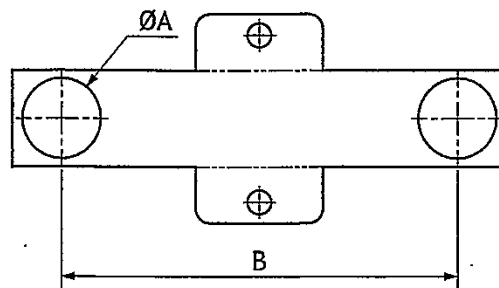
- Then shell with thickness 5mm and use the mirror tool ~~to~~ again to repeat on other side.

2. (continued)

3D CAD illustrations of the bicycle lock with its packaging and a drawing of the packaging are shown.



The packaging sleeve for the bicycle lock is made from card and fits between both parts of the lock. A surface development of the packaging sleeve is shown below.



NOTE: The thickness of the card is not shown and the surface development is not to scale.

2. (continued)

(b) Calculate the minimum dimensions on the surface development for

(i) diameter A 20mm 1

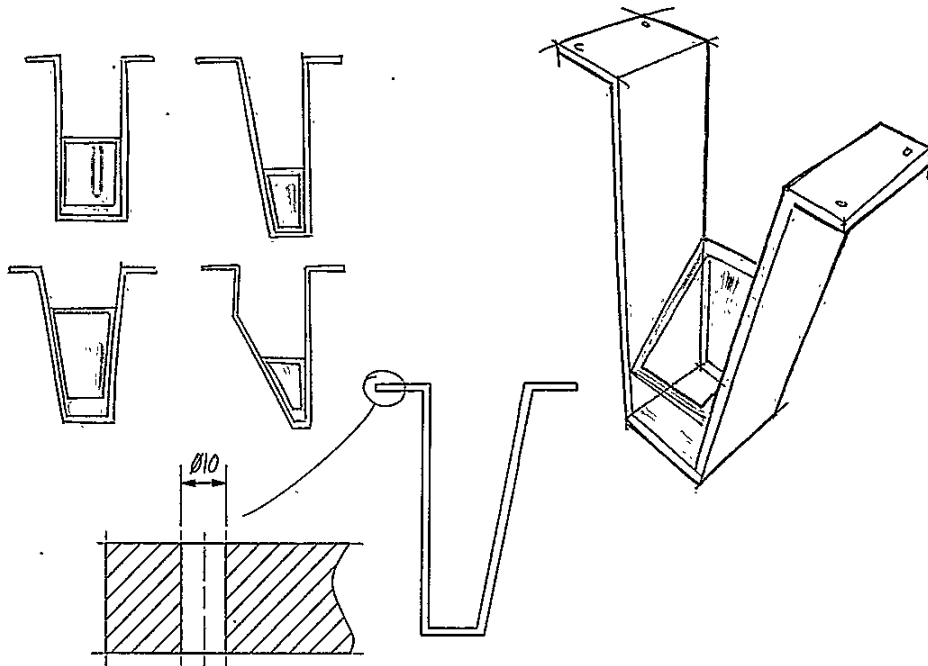
(ii) length B 58mm 1

(c) Describe how the environmental impact of manufacturing the packaging sleeve can be reduced. 1

- Make the packaging from recyclable materials.

[Turn over

3. A designer has created preliminary sketches for a ceiling-mounted display sign for an airport. The preliminary sketches are shown below.



- (a) Explain the purpose of preliminary sketches.

2

- To generate ideas quickly.
- To generate lots of ideas.

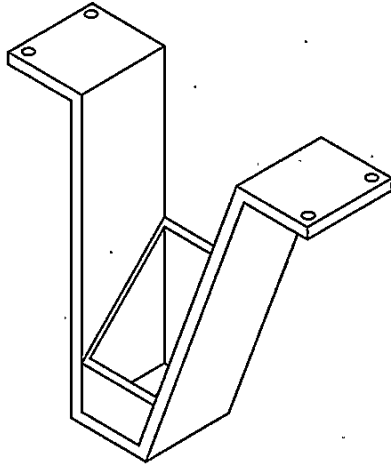
- (b) State two input devices that could be used to make a digital copy of the preliminary sketches.

2

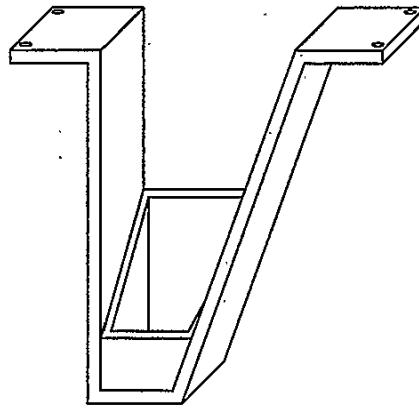
- Graphics tablet.
- Digital camera.

3. (continued)

Two pictorial views of the display sign are shown below.



Pictorial A



Pictorial B

(c) State the names of the pictorial views.

2

Pictorial A Isometric.

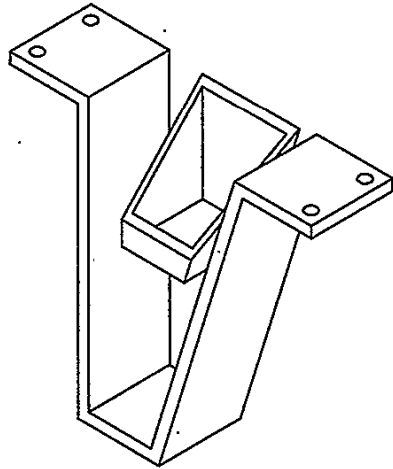
Pictorial B Oblique.

[Turn over

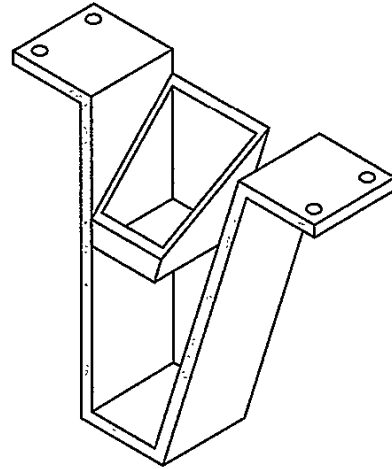
3. (continued)

(d) The designer used constraints to assemble both parts of the display sign.

The before and after of stage 1 of the assembly is shown below. The grey areas show the surfaces that were constrained in stage 1.



Before



After

(i) State the name of the CAD constraint used above.

1

- Centre axis / align

(ii) State the names of two other constraints used in 3D CAD modelling.

2

- Mate

- Align

(e) The designer added more parts to the assembly from a CAD library.

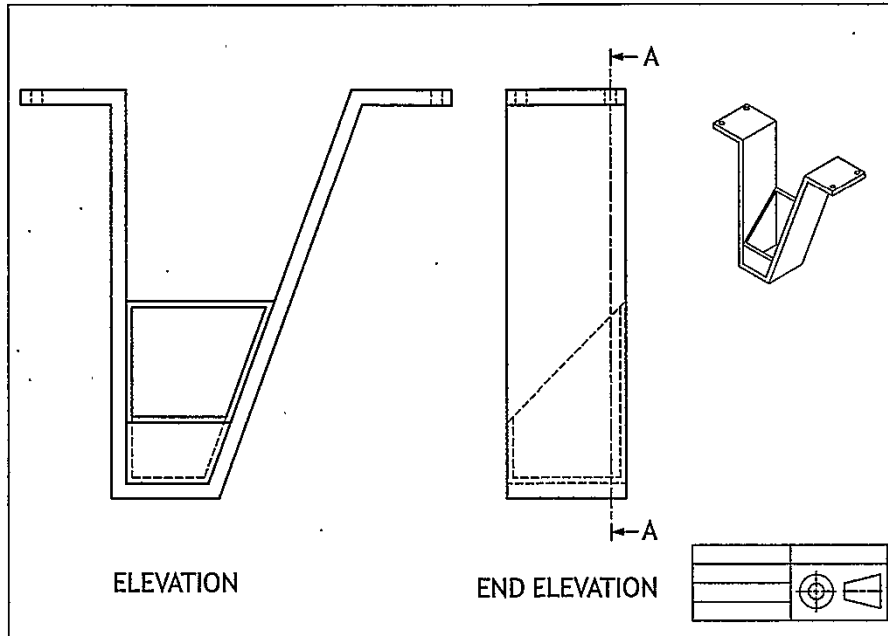
Explain one advantage to the designer of using a CAD library.

1

- You can use ^a ~~the~~ models more than once. ~~the~~ part.

3. (continued)

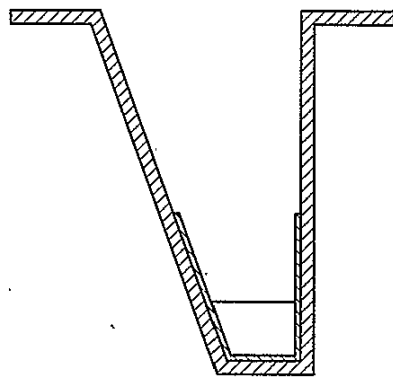
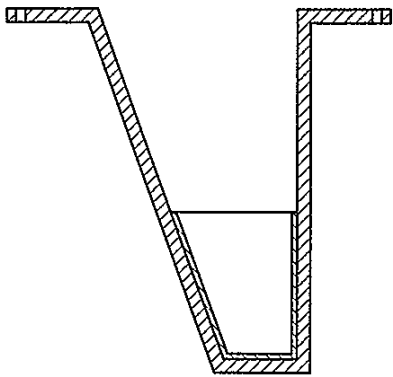
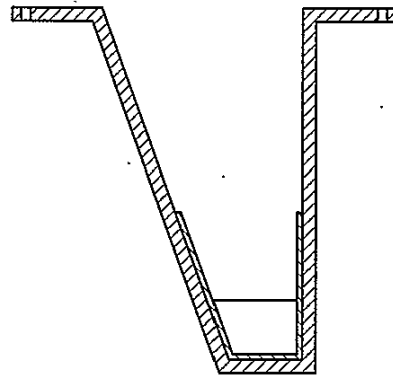
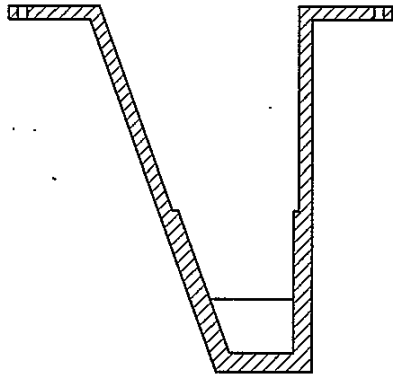
The finished production drawing of the assembly is shown below.



3. (continued)

(f) Identify the correct sectional end elevation A-A from the production drawing shown opposite, by ticking (✓) a box below.

1



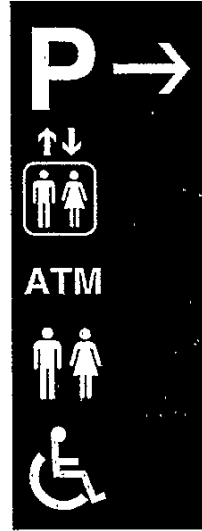
[Turn over

3. (continued)

Two ideas for the airport signs are shown below.



Sign 1



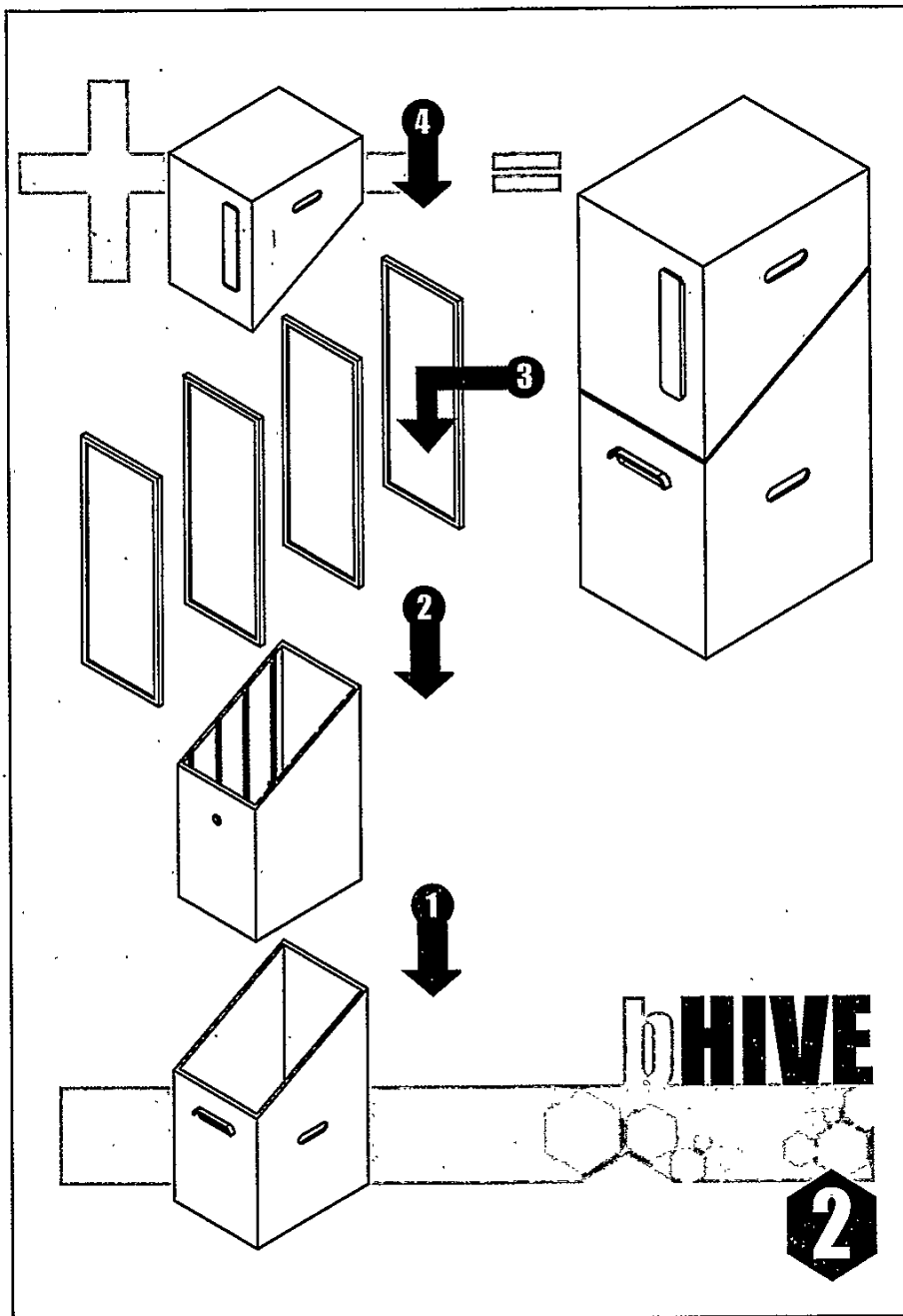
Sign 2

- (g) Explain, giving two reasons, why sign 2 is more appropriate for the airport sign.

2

- Easier to see and understand.
- There is no language barriers when using symbols.

4. A graphic designer has produced an instruction manual for a beehive, shown below.



4. (continued)

(a) Explain an advantage to both the user and the manufacturer of not including text within the instruction manual.

(i) User - Easier to see and understand as not being bombarded with text. 1

(ii) Manufacturer - ~~Easier~~ Easier to mass produce as creating instructions takes less time. 1

Before the final printing of the instruction manual several changes were made to reduce environmental impact.

(b) Describe one change that could be made to reduce the amount of ink used in the instruction manual opposite. 1

- Make some of the images and text's outline less bold.

[Turn over

4. (continued)

The beehives are available in both primary and secondary colours. The lid and base are sold separately to allow customers to personalise their colour combinations.

- (c) A customer wants to purchase a red lid and a contrasting base.

State the name of a suitable colour.

1

~~Red~~, Purple.

- (d) A customer wants to purchase a violet base and a harmonising lid.

State the name of a suitable colour.

1

~~Red~~ Navy blue

- (e) A customer plans to purchase a beehive for use in a school's garden, they have selected both parts in primary colours.

- (i) State the name of two primary colours that could be purchased.

2

- Red, - Green.

- Blue.

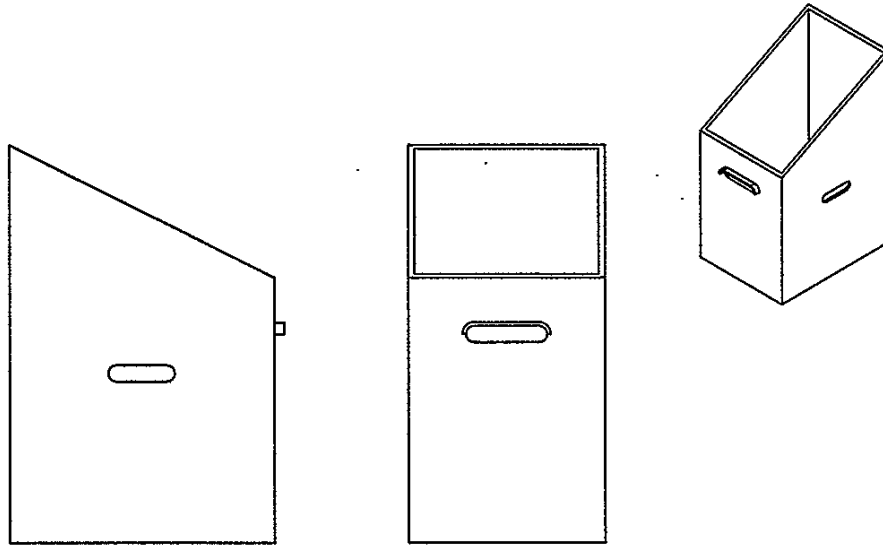
- (ii) Explain why primary colours are suitable for a school garden.

1

- As ~~they~~ students in school will be learning about primary colours, so it is good to see it ~~in~~ ⁱⁿ real life.

4. (continued)

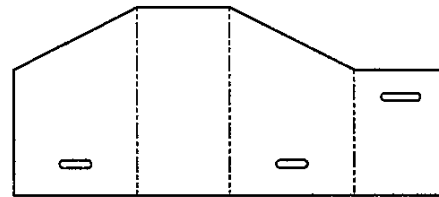
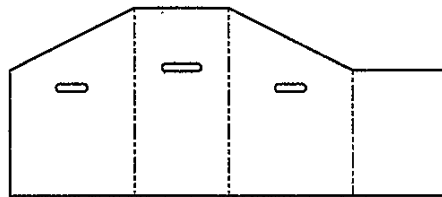
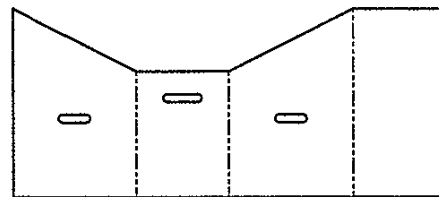
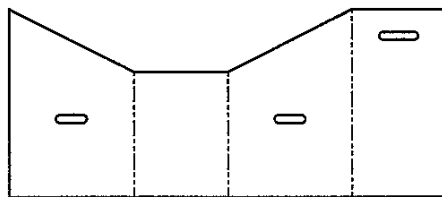
A range of vinyl wraps are being created for the beehive.



Base of beehive

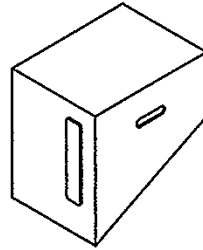
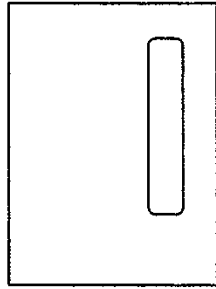
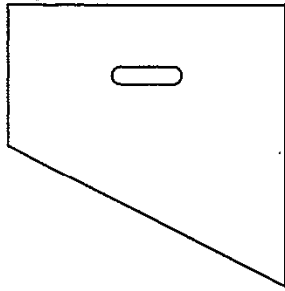
- (f) (i) Identify the correct surface development used to create the vinyl wrap for the base of the beehive by ticking (✓) a box below.

1



[Turn over

4. (f) (continued)

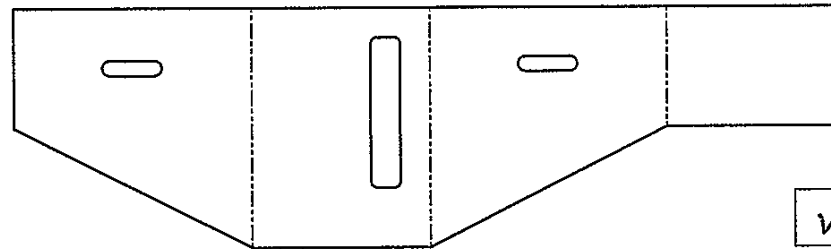
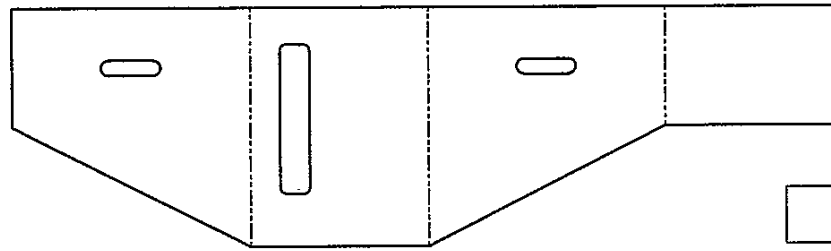
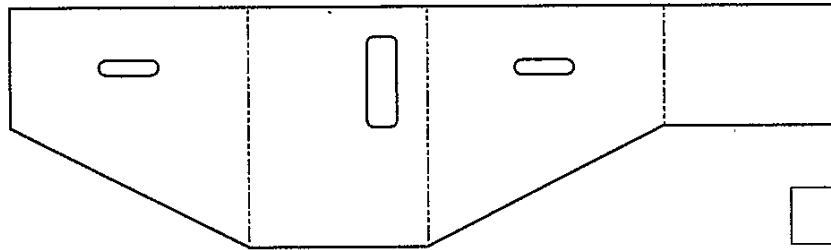
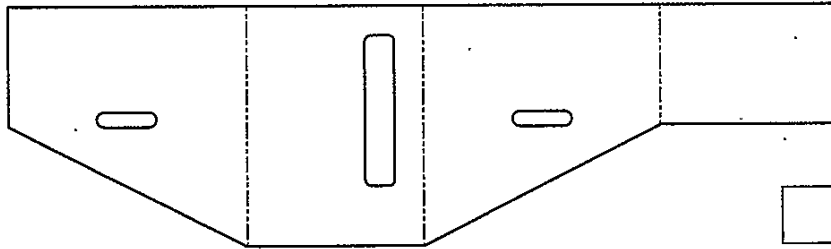


Lid of beehive

4. (f) (continued)

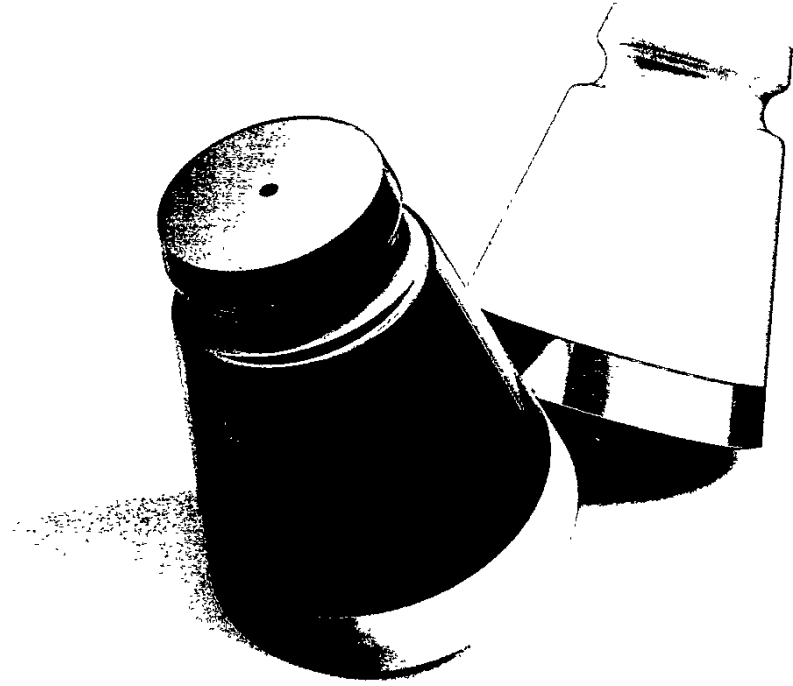
(ii) Identify the correct surface development to create the vinyl wrap for the lid of the beehive by ticking (✓) a box below.

1



[Turn over

5. A new range of salt and pepper shakers are being developed.
A 3D CAD illustration of the salt and pepper shakers is shown below.

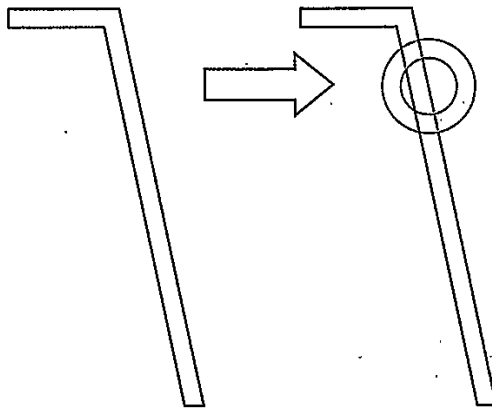


5. (continued)

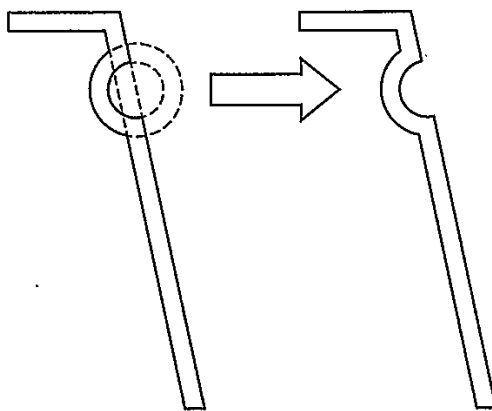
A series of 2D drawing tools were used when modelling the shaker.

- (a) State the name of the 2D CAD drawing tool highlighted in red that is used at each stage.

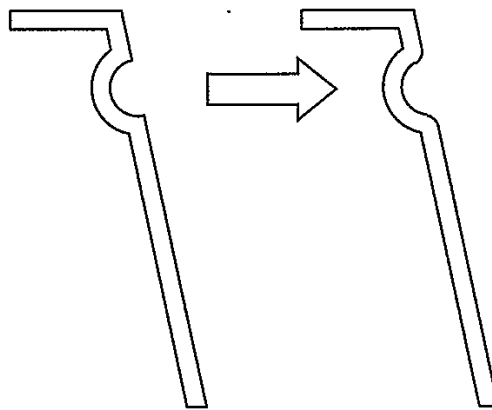
3



(i) tool used: Circle.



(ii) tool used: Trim.



(iii) tool used: Fillet.

5. (continued)

The base of the shaker will be made in a range of different woods. For promotional purposes the designer produced a 3D CAD illustration.



- (b) State the name of the technique used to give the greyscale model the appearance of wood.

1

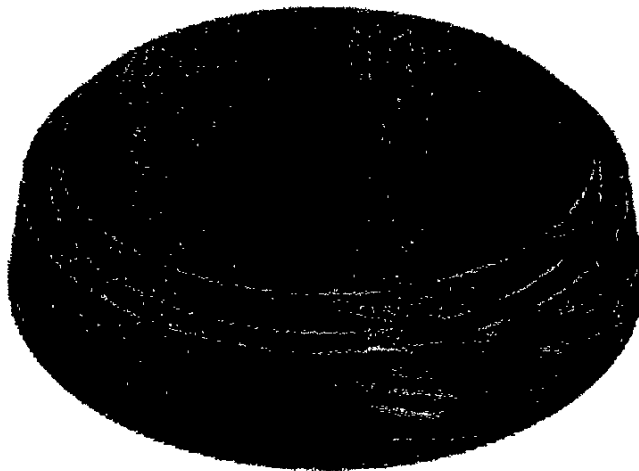
- ~~Render~~ Appearance tool.

- (c) Describe two benefits of using 3D CAD models for manufacturing.

2

- It gives a realistic representation of what the product looks like.

- It gives an accurate representation of the rendered quality. The initial renders were dark, pixelated and poor quality.



- (d) Describe one way the designer could improve the final renders.

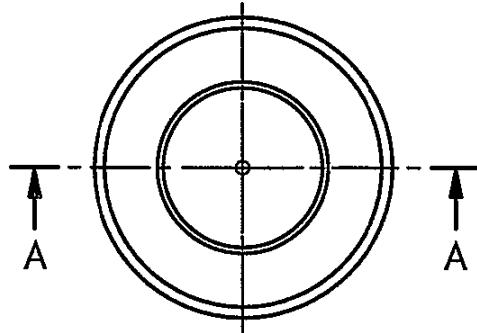
1

- Use the ray tracing tool.

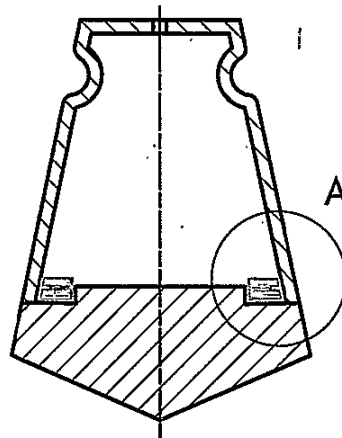
5. (continued)

Modifications were made to the base section of the shaker. A sealing ring was added to stop the two sections separating.

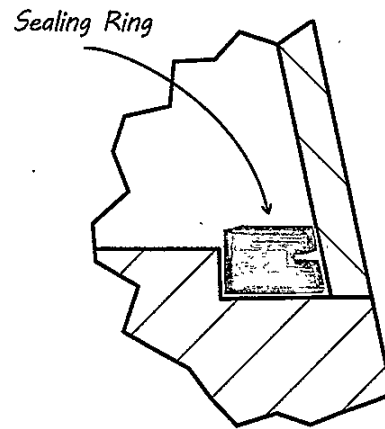
The designer's development sketches for the changes are shown below.



PLAN



Section A-A



Detail A

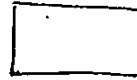
5. (continued)

- (e) Describe, using 3D CAD modelling techniques, how the sealing ring would be modelled.

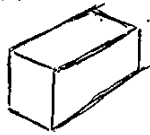
Do not refer to dimensions. You may annotate the line drawing on the opposite page and use sketches to support your answer.

3

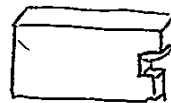
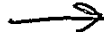
- First draw a rectangle.



- Then draw ~~extrude~~ extrude the rectangle.



- Then draw another rectangle and trim away the excess material.



6. The Scottish Space Exploration Association (SSEA) are launching a proposal for a base on Mars.

Three promotional badges have been developed for the proposal.



Badge 1



Badge 2



Badge 3

Describe one way the designer has used the following design elements and principles in any of the badges.

- (a) (i) Dominance 1

- Dominance has been created through the use of reverse, which makes the word Mars dominant.

- (ii) Line 1

- Line has been used to show that where they want to go is space as many of the lines used is to show planets.

- (iii) Unity 1

- Unity has been created through there not being many fonts used, which makes the badges look neat and tidy.

- (b) (i) State whether the font style used in the badges above is Serif or Sans Serif. 1

- San serif.

- (ii) Explain why this font style is a suitable choice. 1

- It is ~~easy~~ easy to read and stands out on the page.

6. (continued)

Detail from badge 3 is shown below.



(c) State the name of the two DTP techniques applied to the word 'expedition'. 2

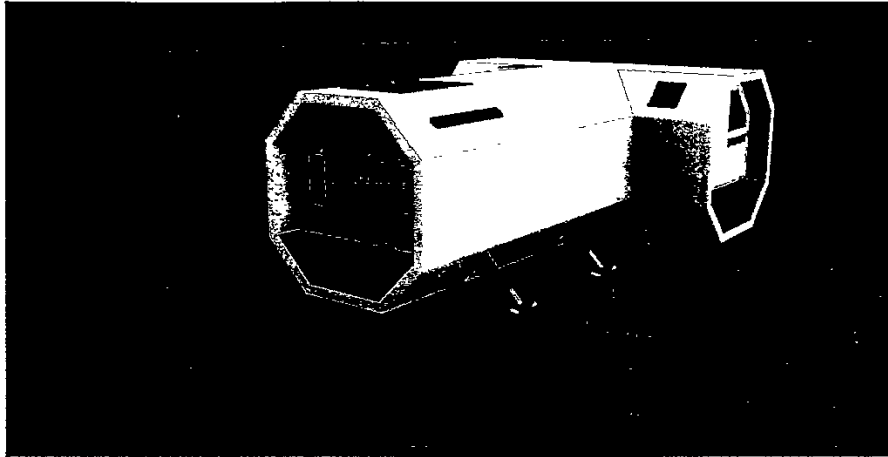
Technique 1 Text along a path.

Technique 2 Font style

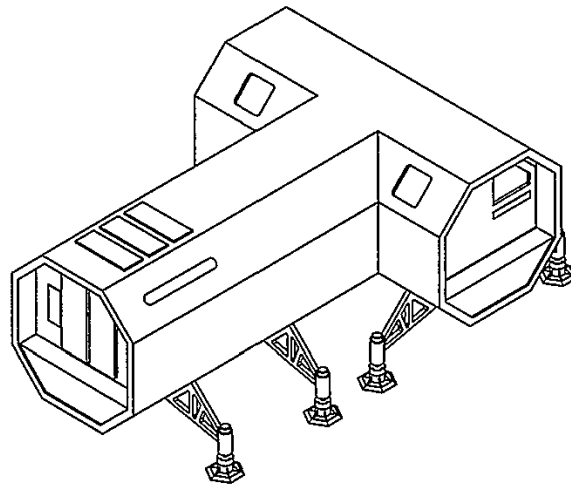
[Turn over

6. (continued)

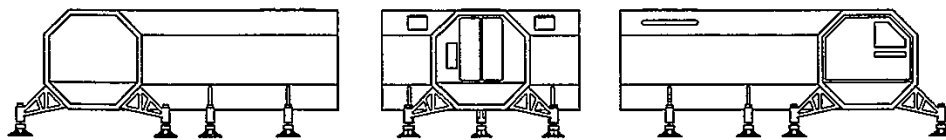
It is proposed that a Mars base will be constructed using identical pods arranged in different ways.



Orthographic elevations and a pictorial view of a single pod are shown below.



Pictorial View



End Elevation

Elevation

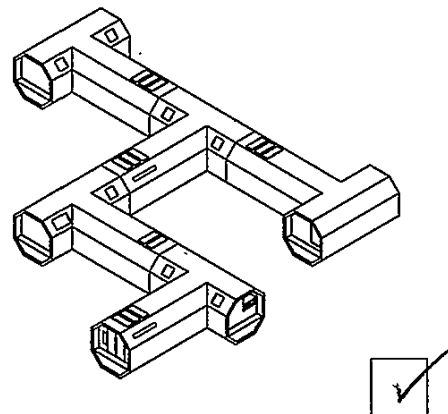
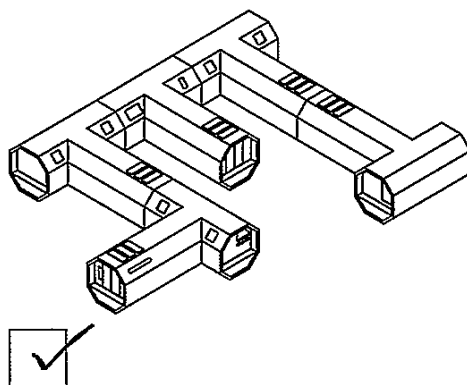
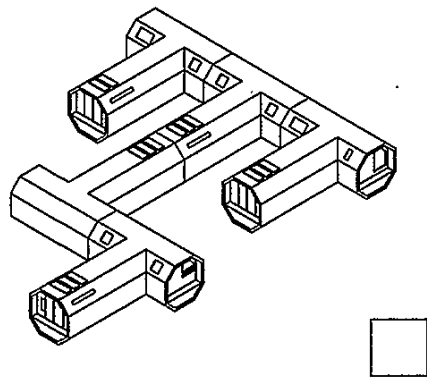
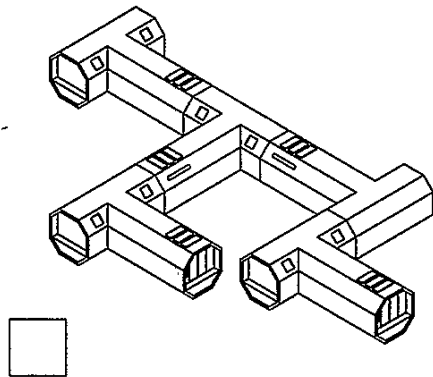
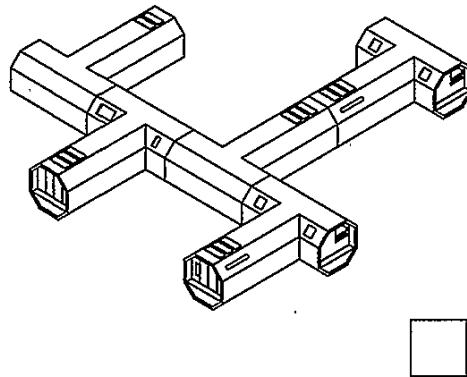
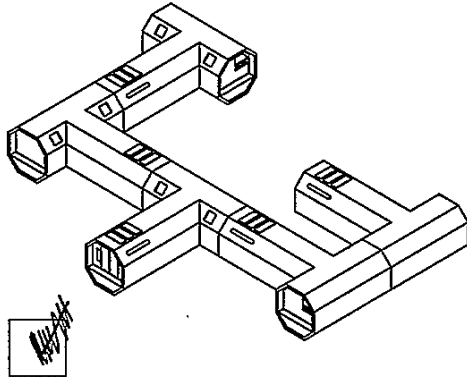
End Elevation

6. (continued)

(d) Several arrangements are shown below. The pod legs have been removed to simplify the drawings.

Identify the two correct arrangements by ticking (✓) two boxes below.

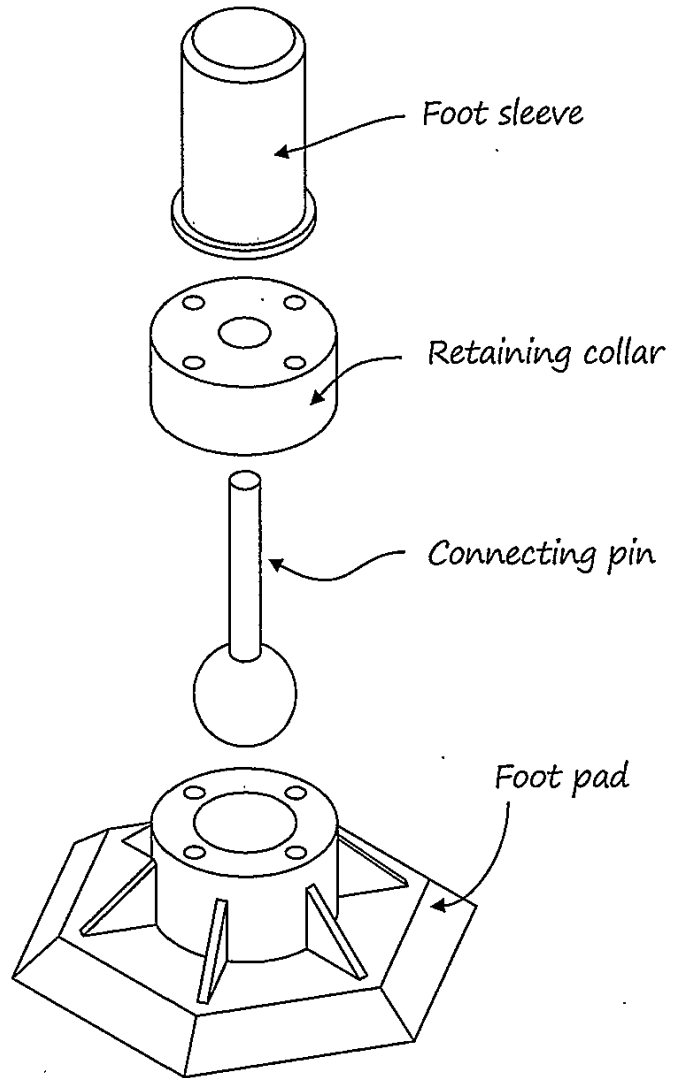
2



[Turn over

6. (continued)

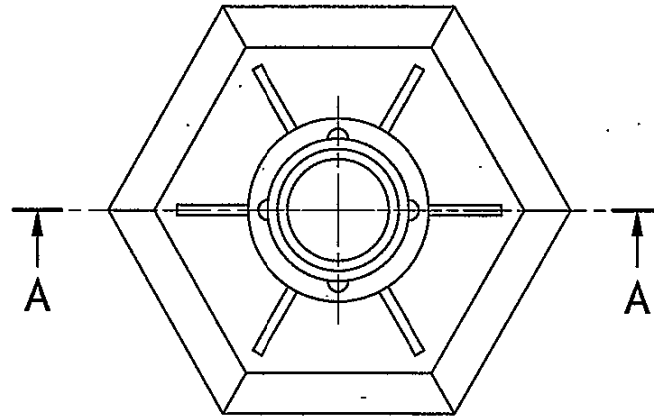
(e) An exploded pictorial of a pod leg is shown below.



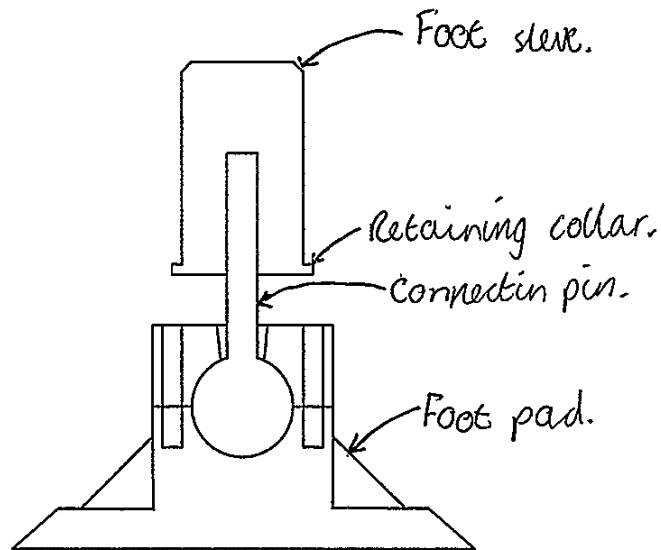
6. (e) (continued)

Identify the foot sleeve, retaining collar, connecting pin and foot pad by labelling the sectional elevation.

4



NOTE:
Centre lines
removed
for clarity



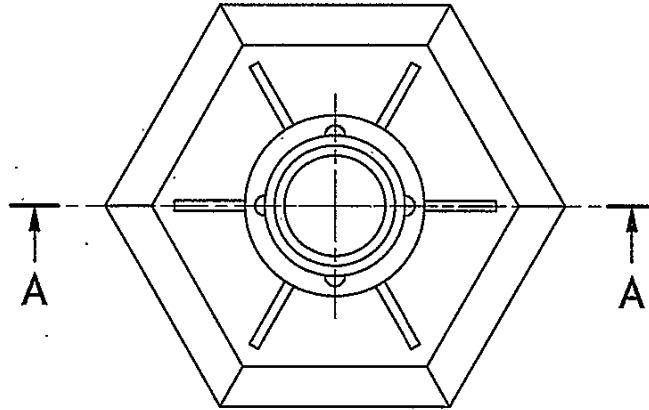
Sectional Elevation A-A

[END OF QUESTION PAPER]

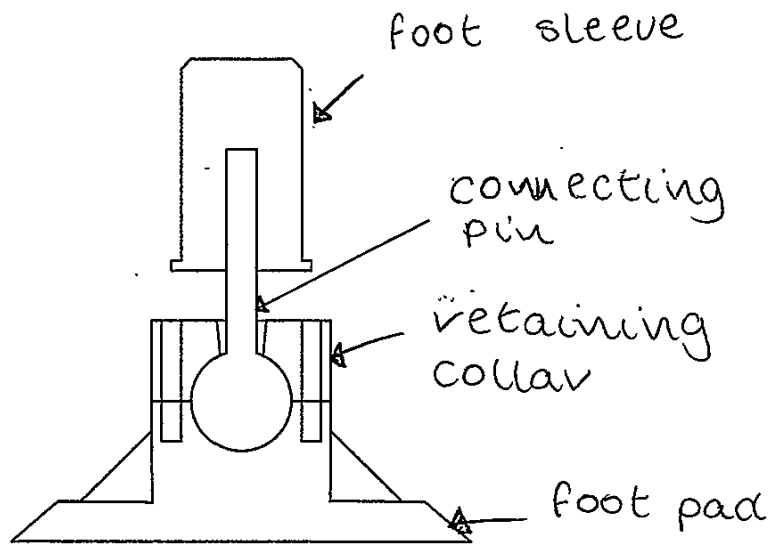
6. (e) (continued)

Identify the foot sleeve, retaining collar, connecting pin and foot pad by labelling the sectional elevation.

4



NOTE:
Centre lines
removed
for clarity



Sectional Elevation A-A

[END OF QUESTION PAPER]