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

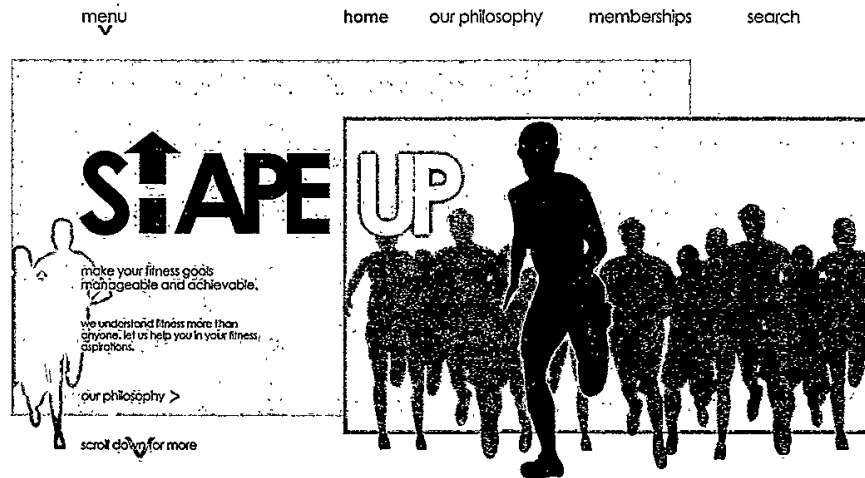
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**Candidate evidence**

# Candidate 3 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

Information has been kept to a minimum as to not confuse or bore the viewer.

Use of running pictures shows clearly what the company's goal is.

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

Body text is aligned with the title above.

Menu.

Menu text is aligned horizontally.

- (ii) Depth

2

Silhouette of runner taped layered over background  
ground showing that he is faster.

Body text layered over orange runners.

- (iii) Contrast

2

Black silhouette contrasts with the orange backgr-  
ound.

Orange runner's contrast with white back ground.

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

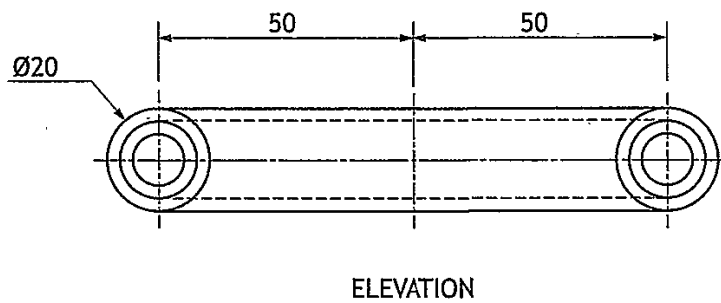
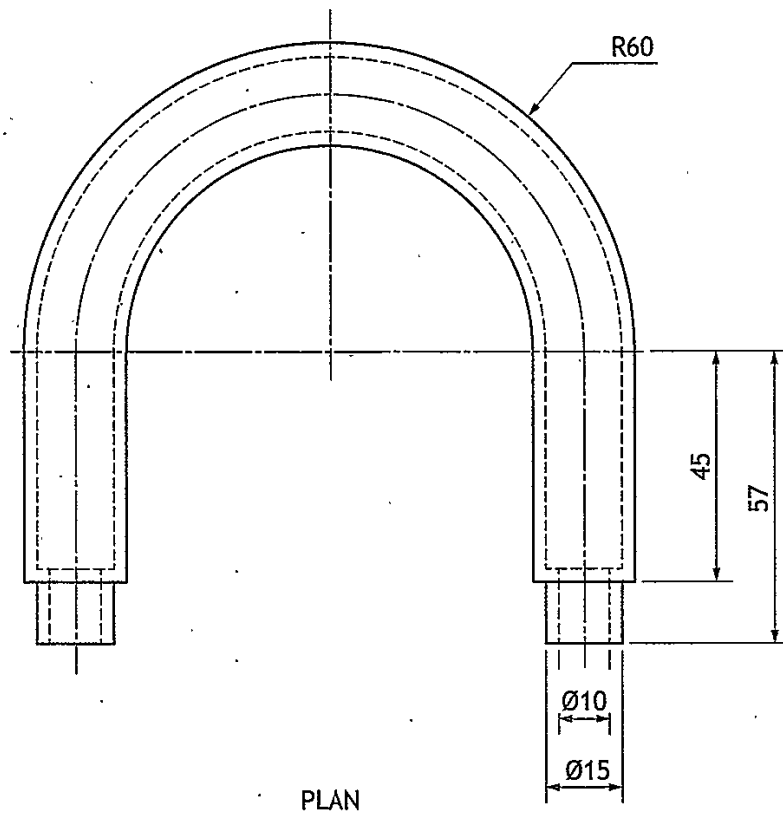
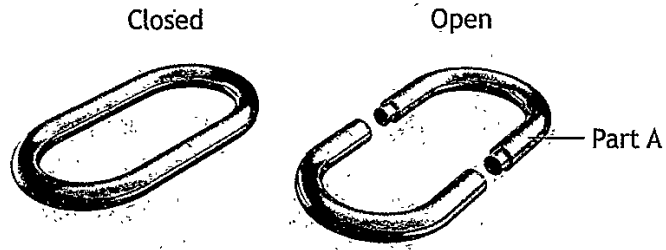
2

The internet is used globally by millions.

Website can be shared internationally by customers  
in seconds -

[Turn over

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

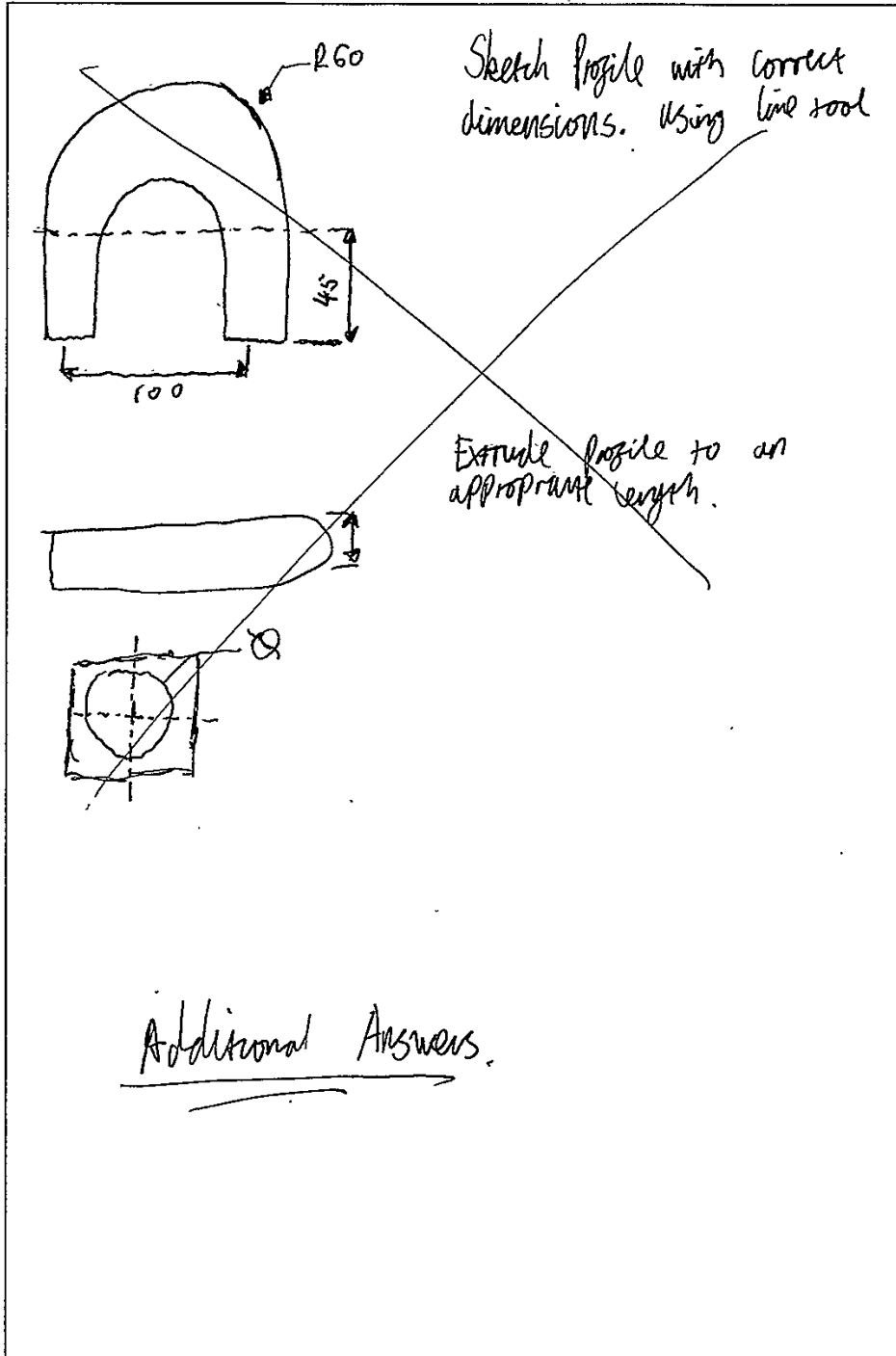


2. (continued)

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

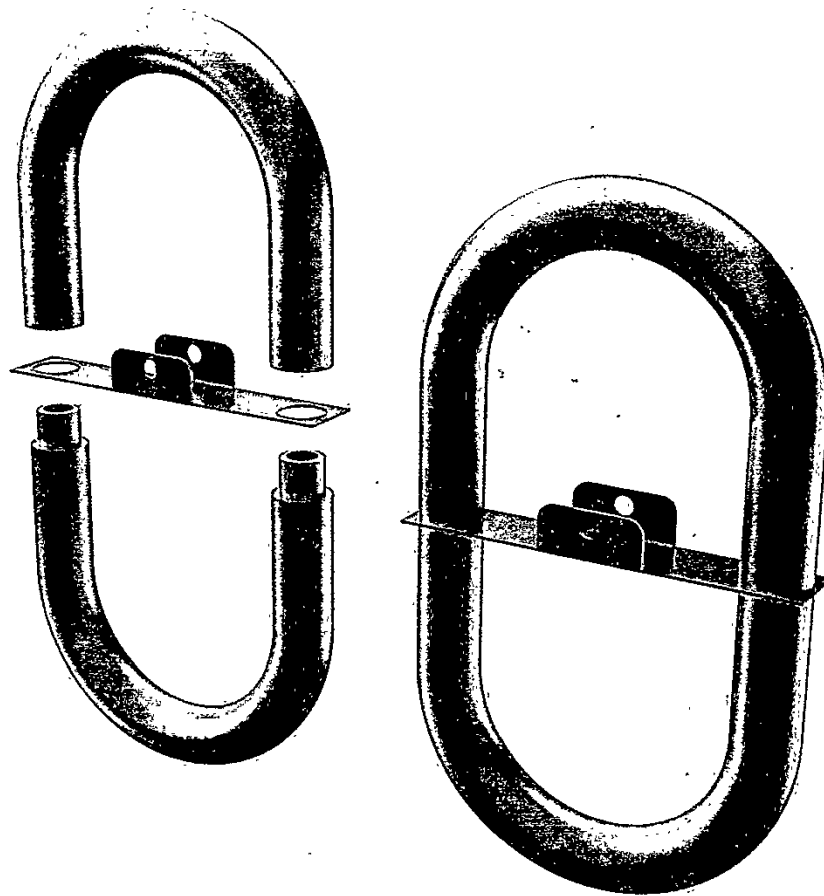
You may use sketches to support your answer.

6

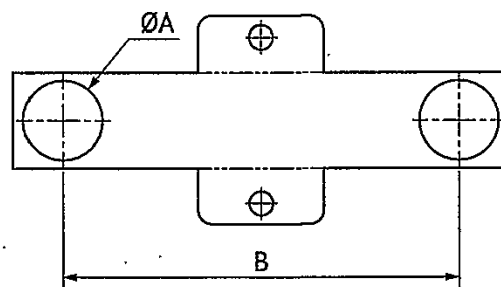


2. (continued)

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 15 mm 1

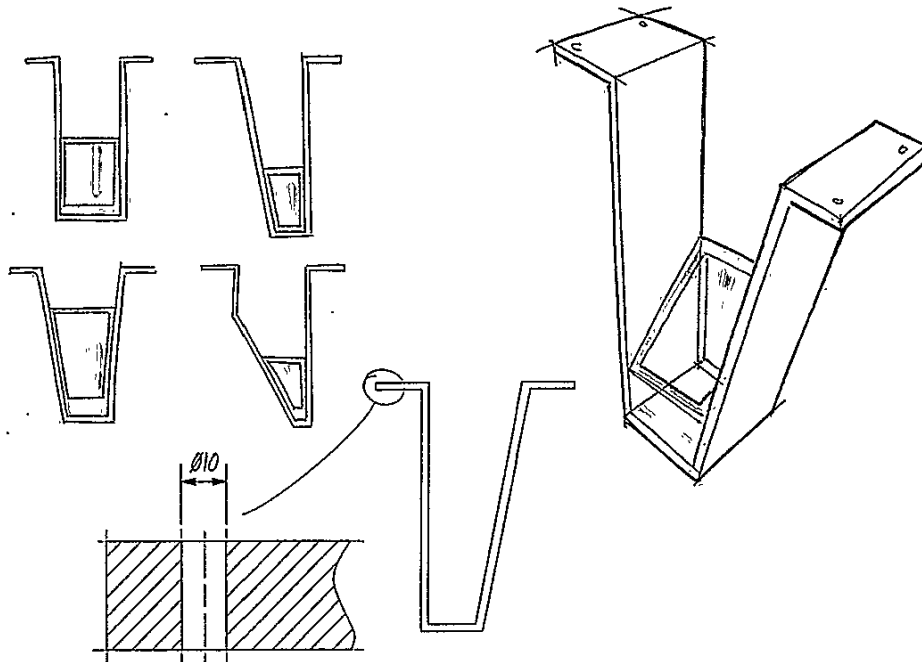
(ii) length B 100 mm 1

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

Use a recyclable material for packaging

[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

~~Helps understand how the product will form~~  
 all views. Gives client options on which design  
 they prefer. Shows how it will relatively look like.

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

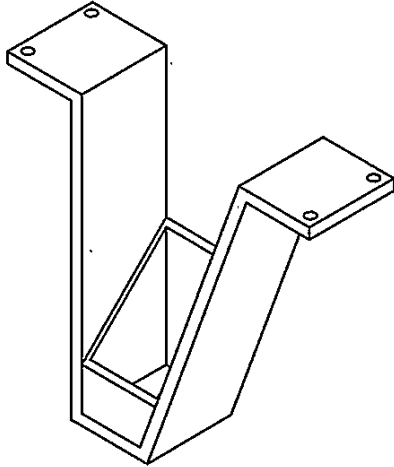
2

CAD Library  
 Copy & Paste

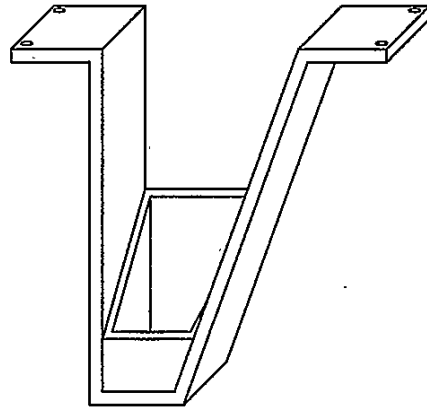


3. (continued)

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 View

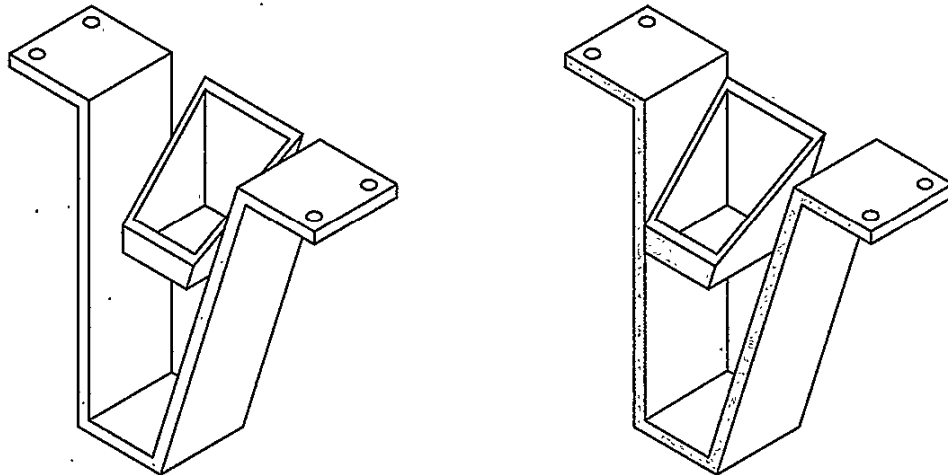
Pictorial B Oblique drawing

[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

Mate

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

2

Align

Centre - axis

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

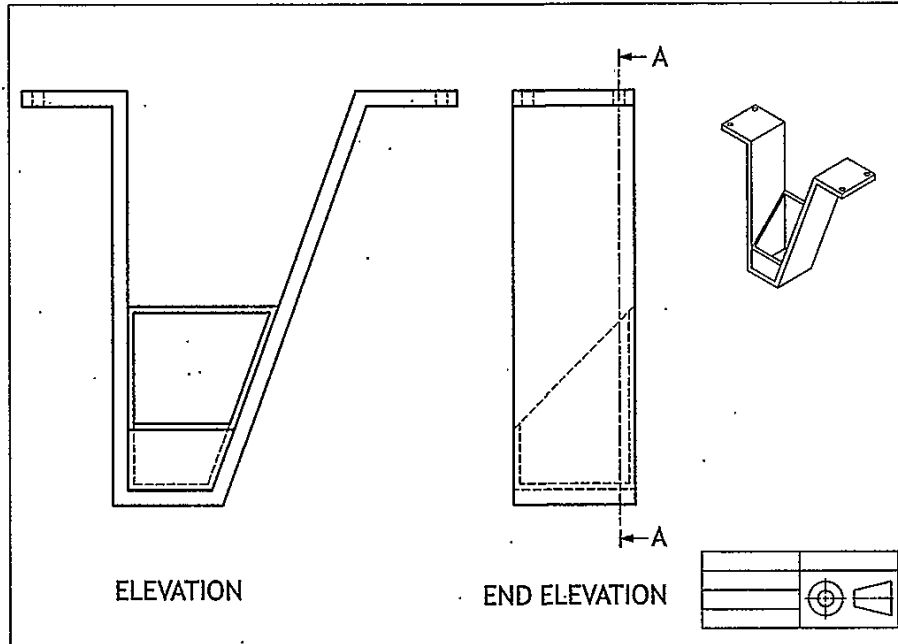
Explain one advantage to the designer of using a CAD library.

1

able to produce multiple components quickly

3. (continued)

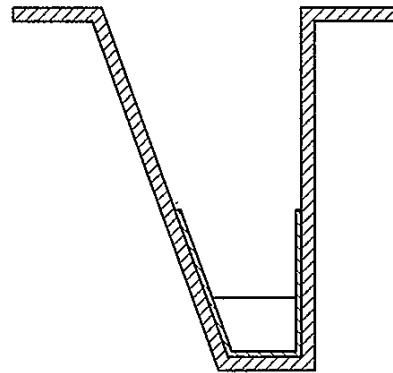
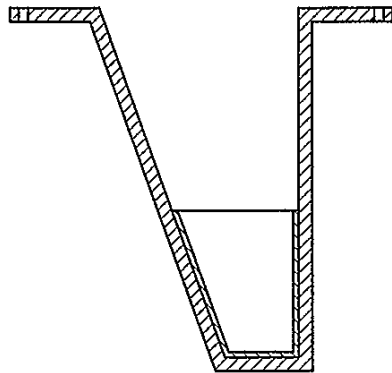
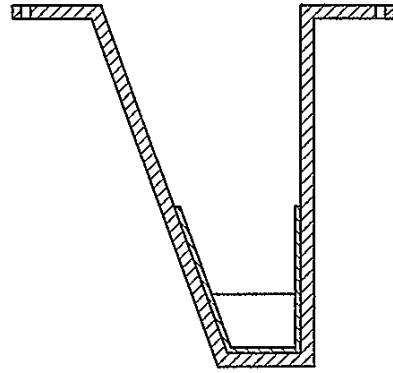
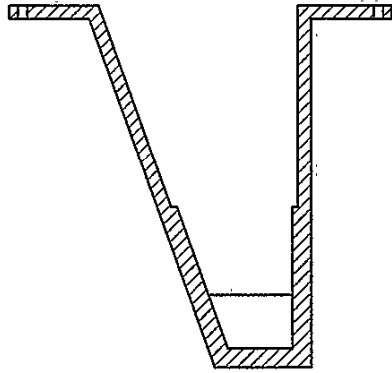
The finished production drawing of the assembly is shown below.



3. (continued)

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

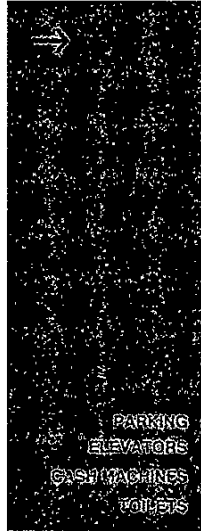
1



[Turn over

3. (continued)

Two ideas for the airport signs are shown below.



Sign 1



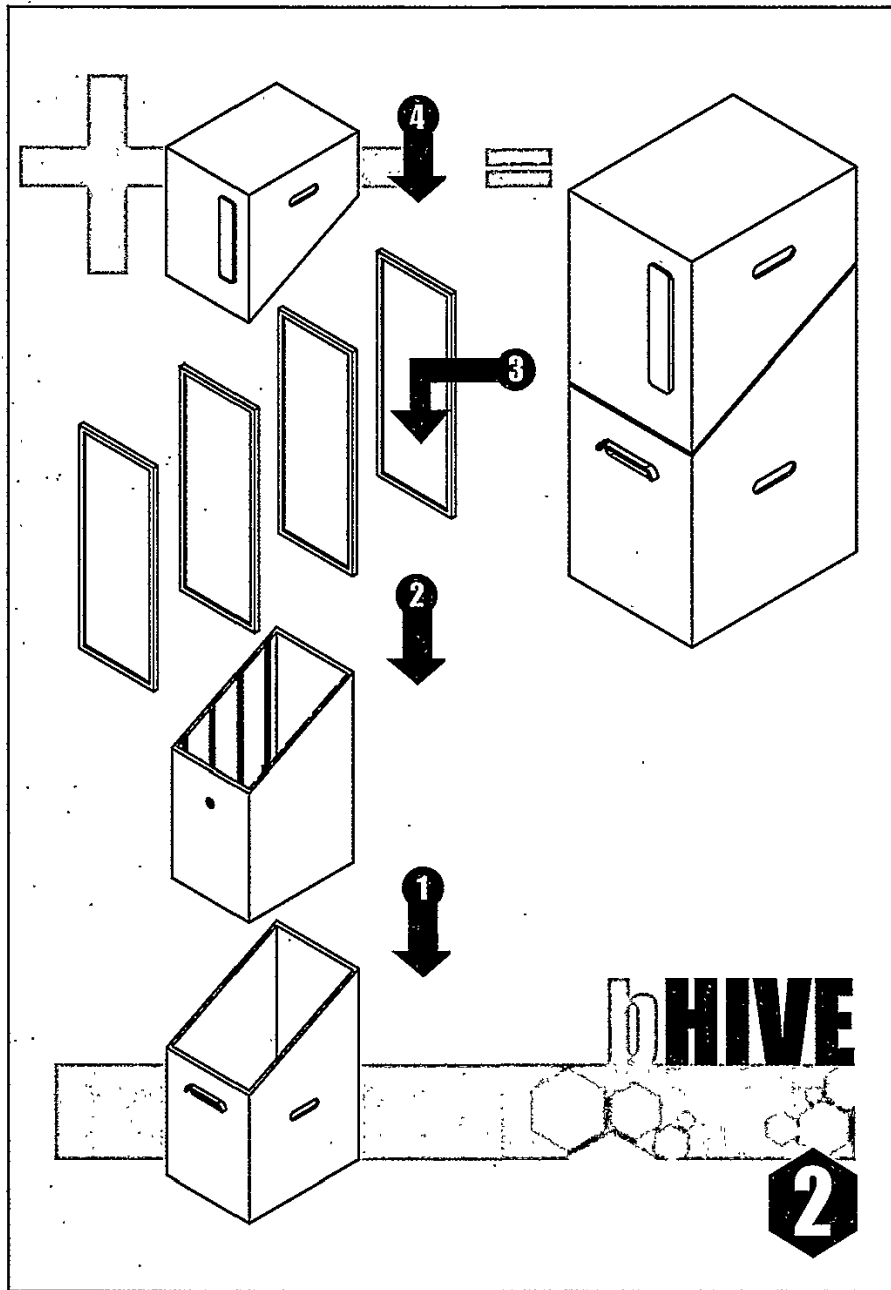
Sign 2

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

2

Use of pictograms help people identify more quickly with sign. Sign 1 has dull and not very colourful and can easily be ignored while Sign 2.

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 Use of pictures much more easy to follow. Text can be confusing 1
- (ii) Manufacturer without having to provide text the manufacturer is able to produce much more quickly the product. 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

Making the instruction manual smaller would mean less ink needs to be used.

[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

Green

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

State the name of a suitable colour.

1

Yellow

- (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 & Orange

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

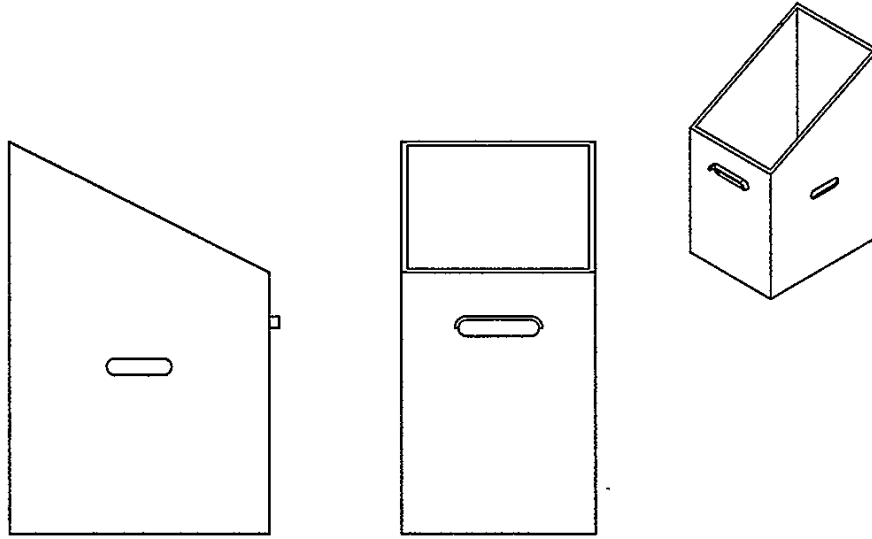
1

Makes garden bright and therefore more appealing to students. Stands out.



4. (continued)

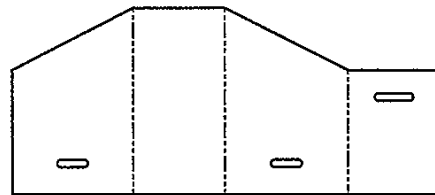
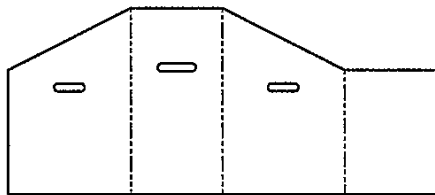
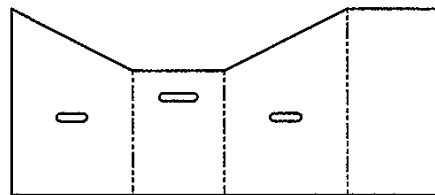
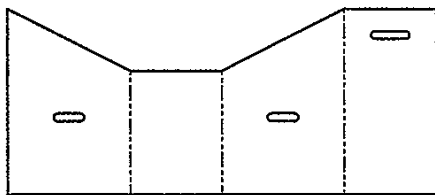
A range of vinyl wraps are being created for the beehive.



Base of beehive

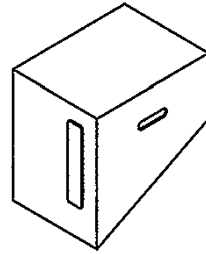
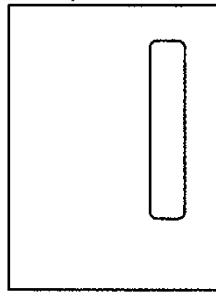
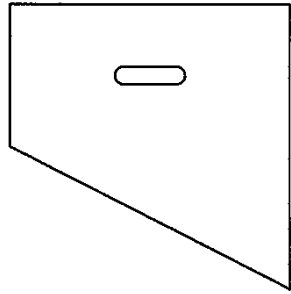
- (f) (i) Identify the correct surface development used to create the vinyl wrap for the base of the beehive by ticking (✓) a box below.

1



[Turn over

4. (f) (continued)

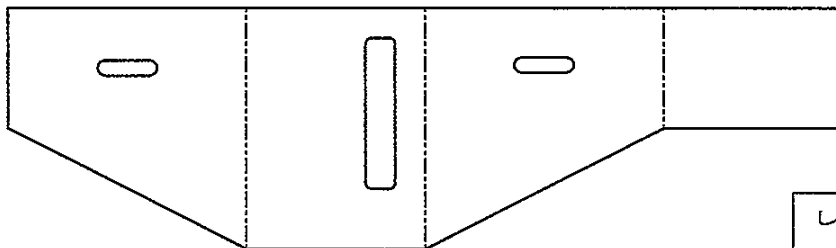
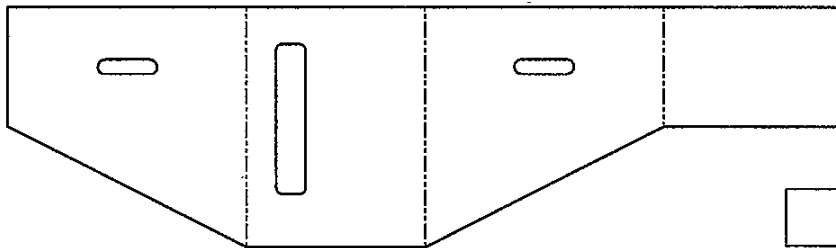
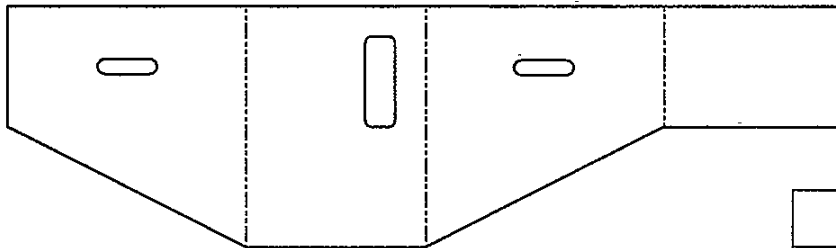
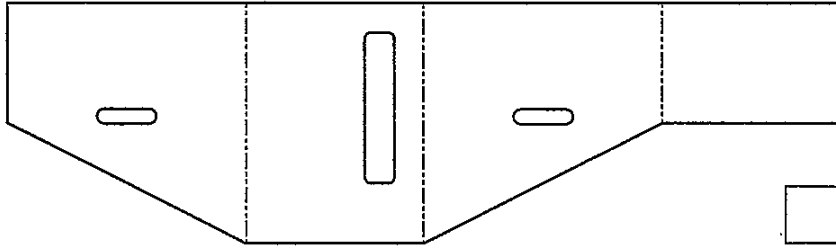


Lid of beehive

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.

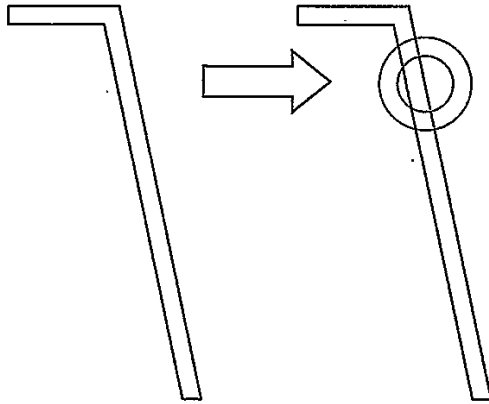


5. (continued)

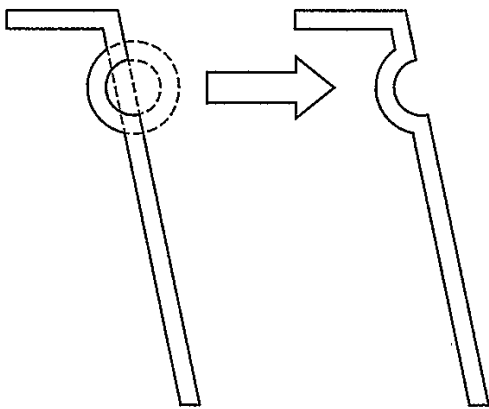
A series of 2D drawing tools were used when modelling the shaker.

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

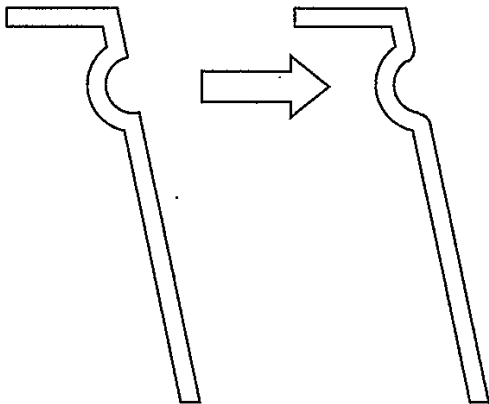
3



(i) tool used: Circle



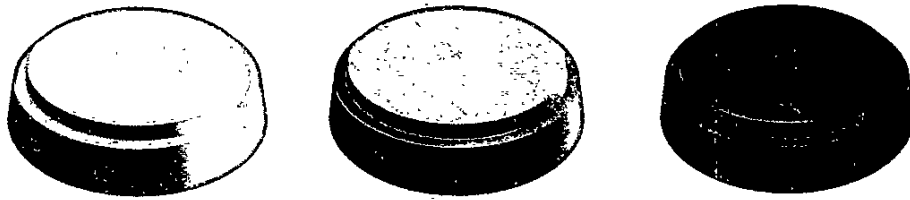
(ii) tool used: Trim



(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

texture

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

2

Work is produced more fast

Work can be shared internationally quickly

The initial renders were dark, pixelated and poor quality.



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

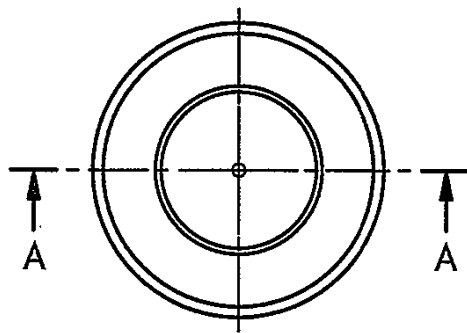
1

Use better lighting to make component more visible.

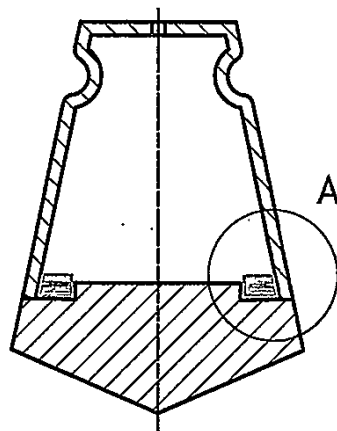
5. (continued)

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

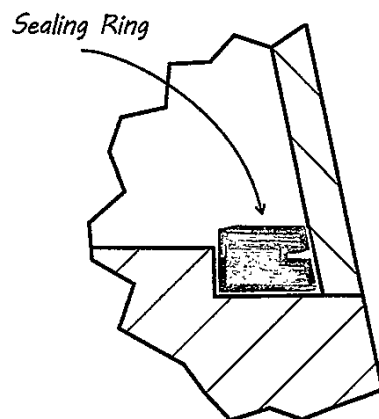
The designer's development sketches for the changes are shown below.



PLAN



Section A-A



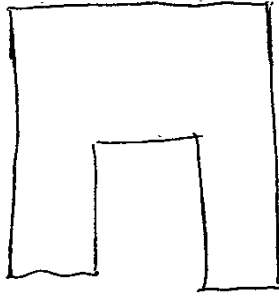
Detail A

5. (continued)

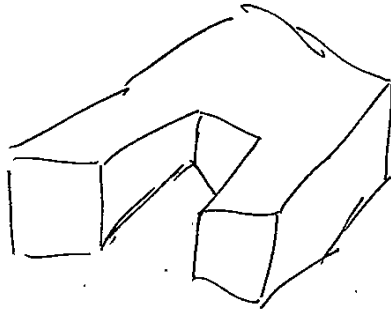
- (e) Describe, using 3D CAD modelling techniques, how the sealing ring would be modelled.

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

3



Sketch Sketch profile  
Using the line tool using  
appropriate dimensions



Extrude Finish  
Sketch & Extrude  
Profile to an appropriate  
height

Use shell tool to adjust the  
thickness of the sealing ring.



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

Mars the word Mars on badge 1 has been aligned to the centre of the badge.

- (ii) Line

1

Use of lines to represent planets rotating in the solar system. on badge 1

- (iii) Unity

1

Frequent use of the colour white on all badges.

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

1

Serif.

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

1

Font is globally known and easy & simple to read.

6. (continued)

Detail from badge 3 is shown below.



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

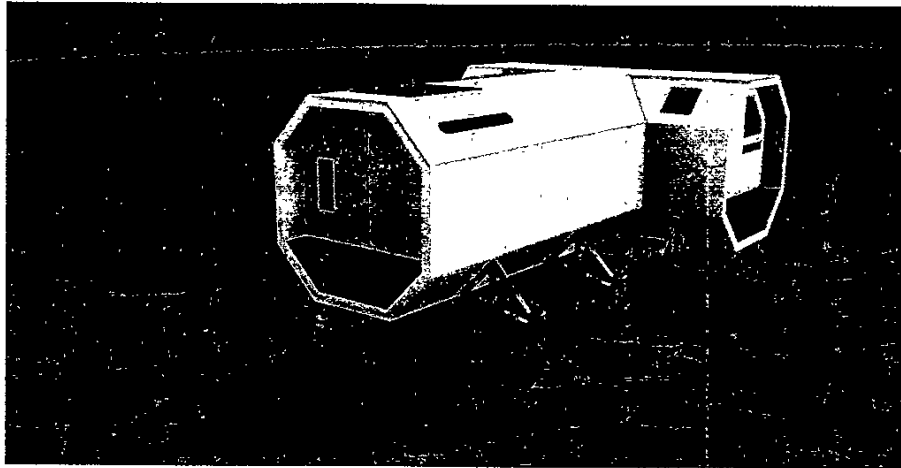
Technique 1 Slant to grid

Technique 2 Rotate

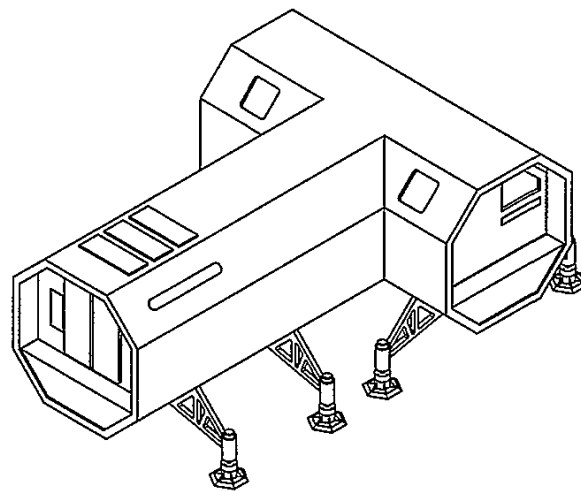
[Turn over

6. (continued)

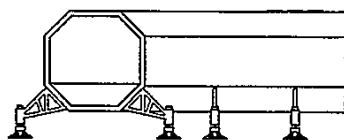
It is proposed that a Mars base will be constructed using identical pods arranged in different ways.



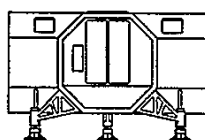
Orthographic elevations and a pictorial view of a single pod are shown below.



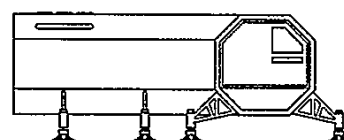
Pictorial View



End Elevation



Elevation



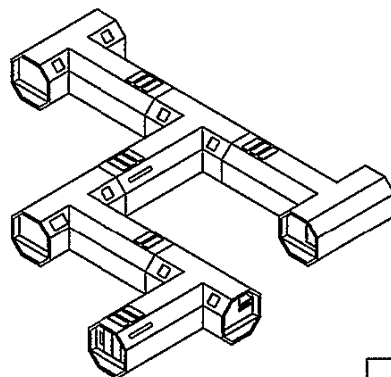
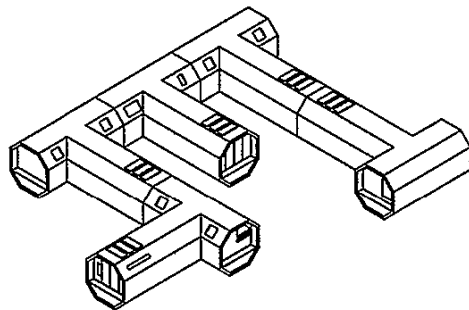
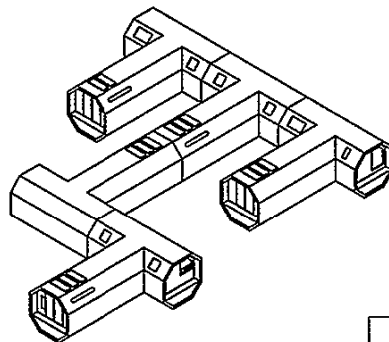
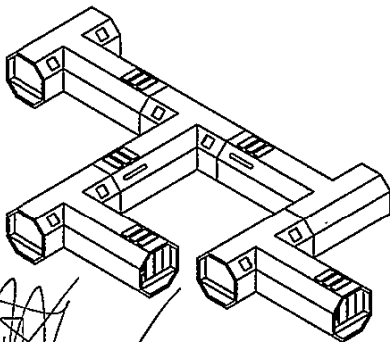
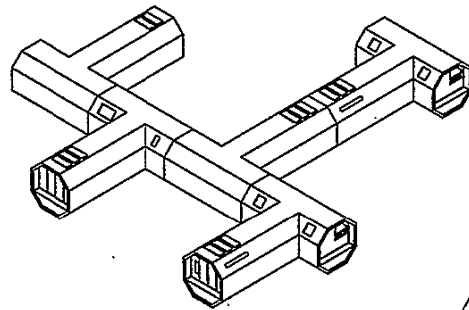
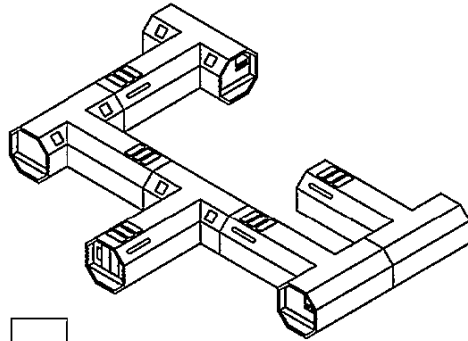
End Elevation

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.

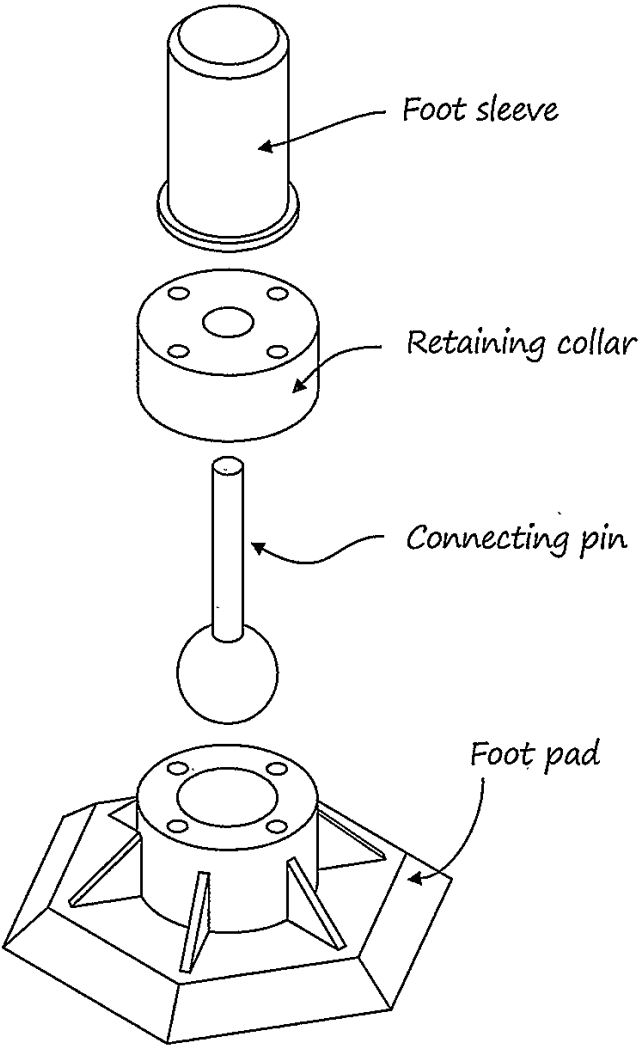
2



[Turn over

6. (continued)

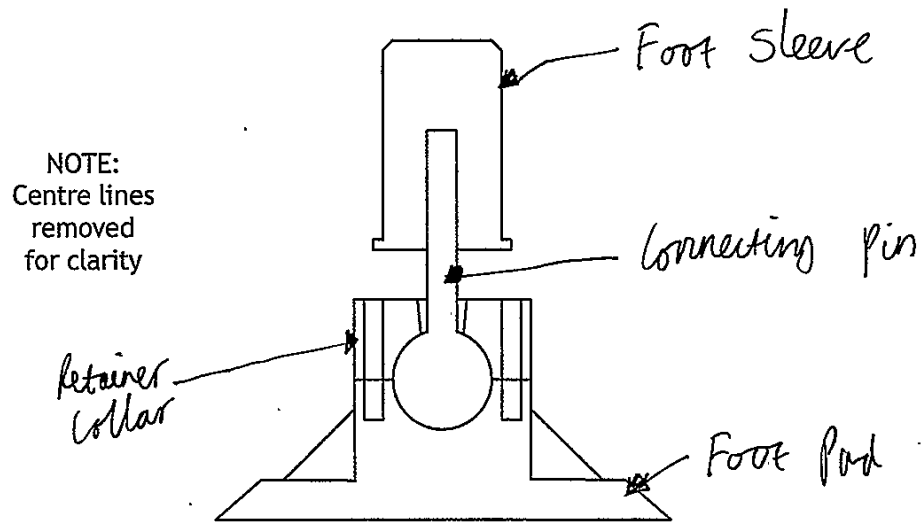
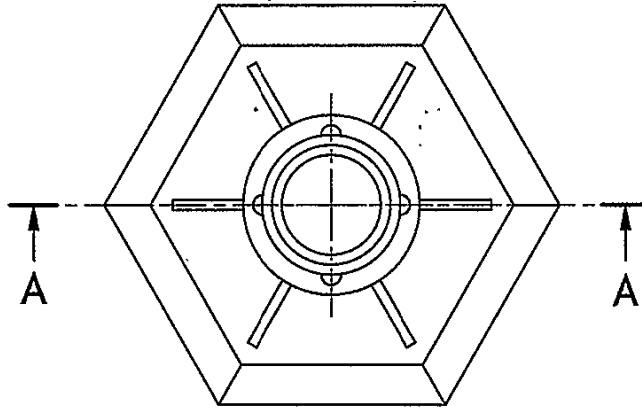
(e) An exploded pictorial of a pod-leg is shown below.



6. (e) (continued)

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

4

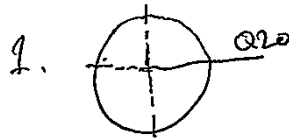


Sectional Elevation A-A

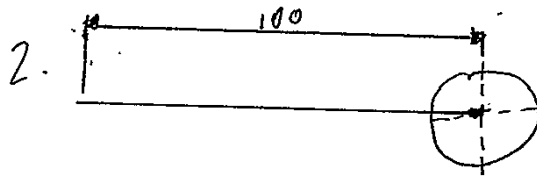
[END OF QUESTION PAPER]

ADDITIONAL SPACE FOR ANSWERS

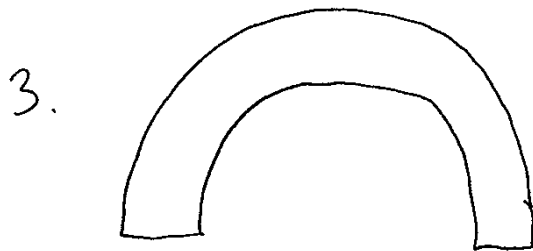
2.  
(a)



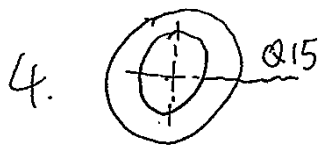
Sketch Circle with diameter 20 mm



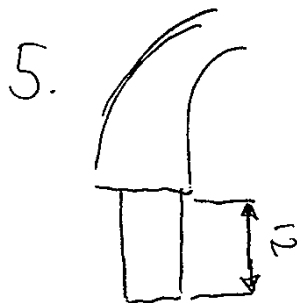
Using line tool sketch a line of 100 mm from centre of circle.



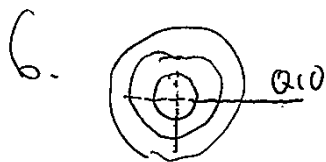
Finish Sketch and use revolve tool and revolve by 180°



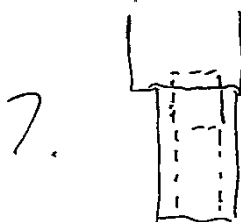
Sketch a circle with a diameter 15 mm on flat Surface of 20 mm circle.



Finish Sketch and extrude entire circle by 12 mm



Sketch a circle with a diameter 10 mm on 15 mm flat Surface



~~Extr~~ Finish Sketch and Extrude by subtraction so it goes through the material.

ADDITIONAL SPACE FOR ANSWERS

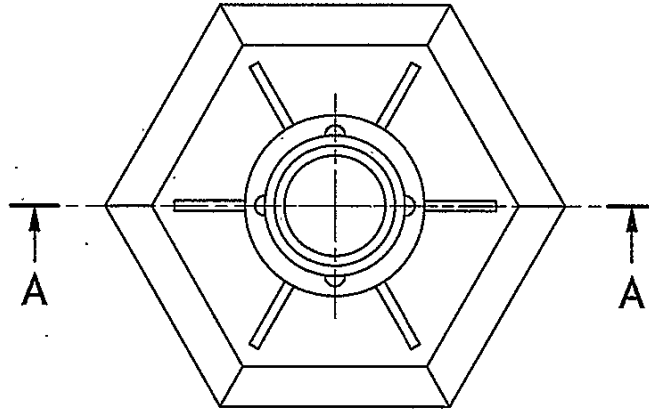
8. Repeat steps 4-7 one more on opposite column.



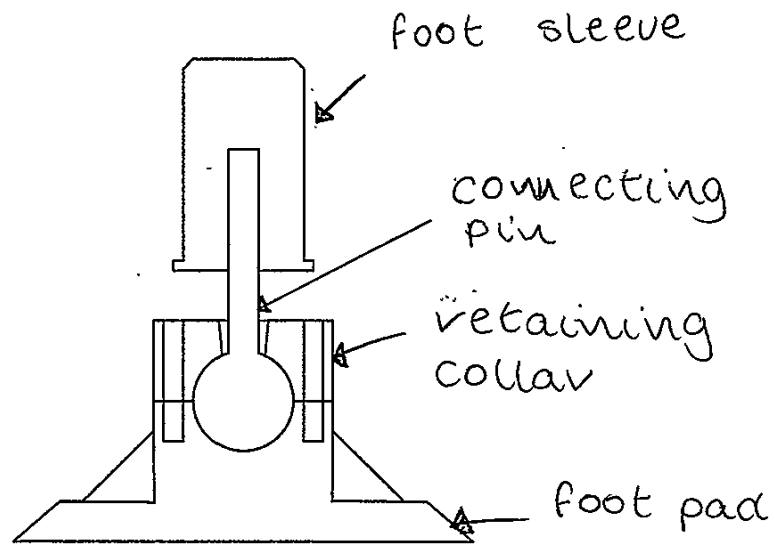
6. (e) (continued)

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]