Candidate 3 evidence

Total marks — 80

Attempt ALL questions

1. An invitation to the 50th anniversary of the Golden Camera film and television awards is shown below.

front of invitation

back of invitation

This is an extract of the invitation design brief:

> The invitation must be made eye-catching through the use of contrast, exude luxury and link clearly with the 50th anniversary celebration. The design should show that the event is relevant to the modern era but pay homage to the golden age of film. The black silhouette is to be embossed with the brand logo and the gold areas should include matt, gloss and textured finishes.

1. (continued)

(a) Describe four ways the invitation meets the design brief. 4

The contrast of the black and gold on the front makes it eye-catching and fits the design breif because of the gold out lining the writing and highlighting the brand logo. The gold stripe in the centre of the front adds depth and use of gold and how it has been texturised fits into the design breif of luxury and texured finish.

ADDITIONAL SPACE FOR ANSWERS

1. (a) In the design of the front and back a modern font has been used since it is more blocky writing and the first letter follows the angle of the camera therefore sticking to the design breif it shows the modern-era but still fits into the invitation.

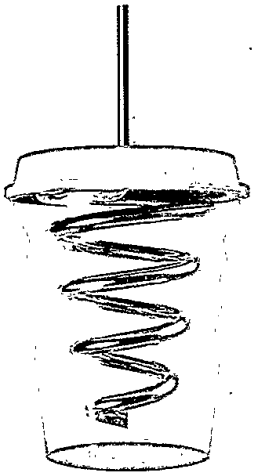
on the front 'Anniversary' has been glossed to make it stand out from the rest of the matte writing / camera. In contrast the back has the camera glossed and the wording matte again sticking to the design breif and making both sides of the invitation stand out.

(b) Explain why it is important that each of the following graphics technologies are specified for printing the invitation:

- Pantone reference
- calendaring
- duplexing
- paper weight. 4

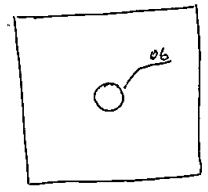
Pantone is used throughout the design industry so it is more known and easier for the printing establish-ment to have the correct colours, Therefore if it is specified for the invitation it makes finding the exact colour palette easier and more exact to the planned design. Diplexing should be specified and is important because they want the invitation to be double sided instead of single sided. Paper weight should be specified because it is important that the invitation is light for people who recieve it so the can view it easier.

2. A 3D CAD model of a reusable cup is shown below. It consists of a cup, a lid and a detachable straw.

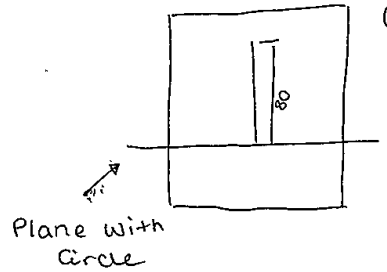


Refer to **supplementary sheet 1 for use with question 2 (a).**

(a) Describe the 3D CAD modelling techniques used to create the straw.
Refer to the dimensions in your answer.
You may use sketches to support your answer. **8**

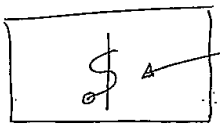


① Starting a new sketch on a workplane start with a circle in the centre using given dimensions

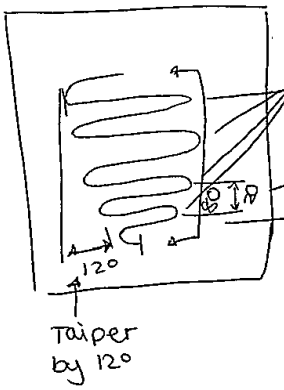


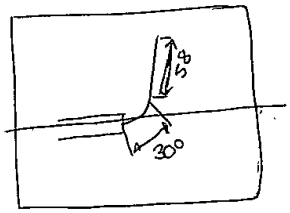
② create new Plane vertical from the existing one and dimensioning the line from the Circle using given dimensions.

2. (a) (continued)



Using a helix alter using given dimensions as well as taiper it so that the spiral is like the design





Again using crossing workplain take top circle and create a sketch vertice + using given dimensions and extrude along a path to create final part.

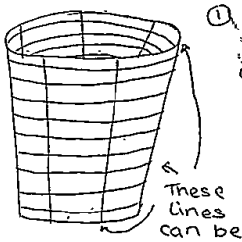
2. (continued)

Morphing (freeform modelling) was used to create a series of **grip indentations** on the cup.

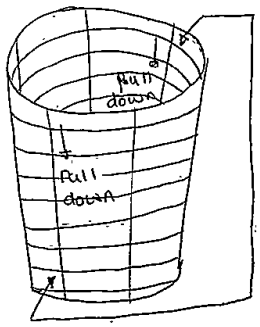
Refer to stages 1 to 4 shown on **supplementary sheet 2 for use with question 2 (b).**

(b) Describe, using morphing (freeform modelling) techniques, how the **grip indentations** on the cup were created.

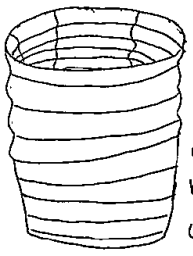
You may use sketches to support your answer. 4



① Free-form modelling is used by taking any visible line or on the cup and manipulating it however you want. (Almost like moving mesh)

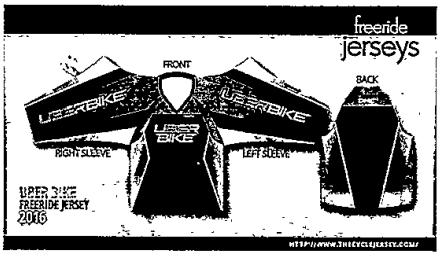


② These two lines are used in stage two, clicking on free-form modelling you can pull both these pieces down to make the grips and you can choose your desired dimension when you think it looks right.

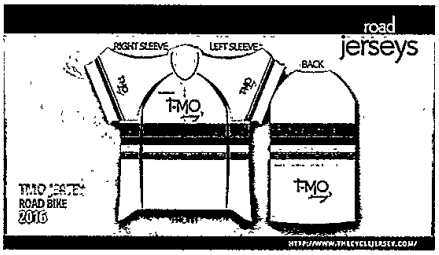


once desired grip has been morphed it can be reverted back to 3D-model with the changes made to the cup.

3. A sportswear company manufactures cycle jerseys which can be customised.
Two examples of cycle jerseys on their website are shown below.



example of long sleeve jersey



example of short sleeve jersey

(a) Describe, giving one reason, why cycle jerseys are shown on the website as surface developments. 1

Surface developments give cyclists an overall view of the clothing without having to view multiple photos. This way everything can be seen in 2D showing the full design of the jerseys. And edited easier

(b) Explain two differences between ppi and dpi when working with digital and printed media. 2

dots per inch (dpi) is used in digital and printed media, and gives different quality images depending on increase or decreasing in dpi. pixels per inch (ppi) is a lot smaller than dpi therefore you can get a much more realistic image and better quality depending on number of ppi.

zooming in on an image would be clearer using pixels (ppi) on digital media because pixels is a smaller and used on digital equipment where as printing the jersey dpi would be better for the printing quality because it is enhancing print colour.

[Turn over

3. (continued)

Refer to **supplementary sheet for use with question 3 (c) and 3 (d).**

(c) Explain the importance of the artwork guidelines to the company.

You should consider image resolution, file types, colour space, and using CAD/CAM to cut the jersey.

Do not refer to the print process in your response. **8**

The art-work guide lines ensures that they are using the correct and best materials too get the best design you can. Using their template will maintain the design in a space so that the design fits properly and that the design can be viewed clearly and so it can be at the highest resolution. If they don't follow the guidlines the design could not fit the jersey and would be altered and lose part of the design. Colour was stated best to be used CMYK colour codes, no limit is put on the amount so colour can be used where they want but use space provided to get colours in the right position:

3. **(continued)**

Refer to **supplementary sheet 3 for use with question 3 (c) and 3 (d).**

The company considered various printing options for the cycle jersey but there were a number of disadvantages of using screen printing.

(d) Explain, considering the information in the artwork guidelines, why screen printing is not suitable for this purpose. 3

It would not be suitable because screen printing is not clear enough therefore the quality of the resolution of the design is lost.

The company is going to produce a promotional video of the manufacturing process. Various graphic media file formats are being considered.

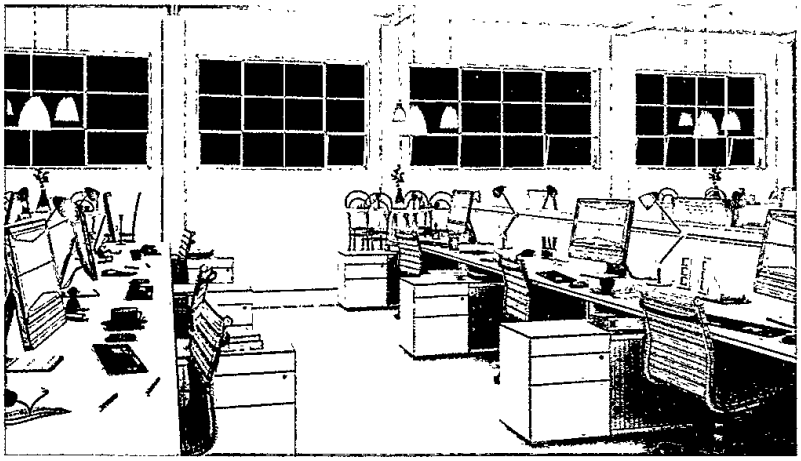
(e) Describe one advantage of each of the following graphic media file formats.
You must give a different advantage for each graphic media file format. 2

mpeg

3gp

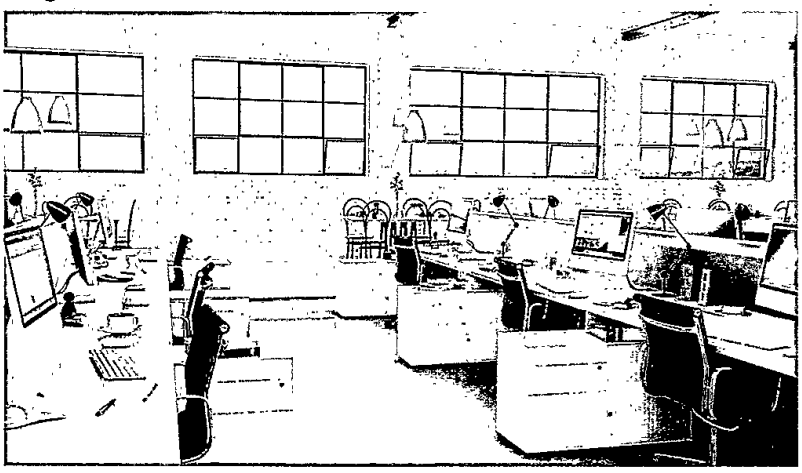
4. A commercial interior design company has designed the office shown below.
One of the company's designers produced the 3D model shown in **Image 1**.

Image 1



The designer then applied illustration techniques to the 3D model shown in **Image 2**.

Image 2



(a) Identify three different illustration techniques, other than applied lighting and HDRI, and describe how they have been used to enhance **Image 2**. **6**

Technique 1 Depth of field

Description The use of clutter, desks, uneven flooring and decrease in lights and the tables in the back emphasise the depth of the room and the amount of furnature positioned into the room.

4. (a) (continued)

Technique 2 Applied textures - Materials

Enhances image two and makes it more realistic

Description Number of different materials used Concrete and bricked back wall, risen wood floor and glossy concrete flooring adds to the reflections and shadows of the room.

Technique 3

Description

(b) Describe two advantages of using HDRI techniques to enhance **Image 2.** 2

HDRI

(c) Identify three types of lighting applied in **Image 2** and explain why each has been used. 6

Lighting type 1 Spotlights → Used up above in image 2 & outside windows

Explanation Spotlights can direct light around a room and creat a realistic atmosphere / environment.

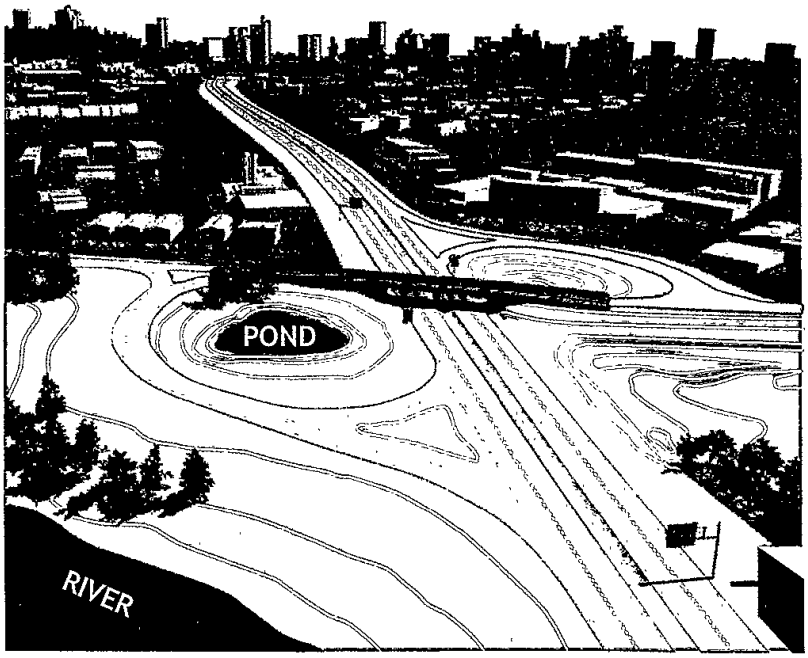
Lighting type 2 Direct Lighting / ~~Ambient~~ → lights above desks image 2

Explanation ~~Direct Lighting~~ Direct lighting is light positioned where the designer wants to emphasise or highlight.

Lighting type 3 Ambient Lighting → used on the desk lighting

Explanation Ambient light is used on a small space to show lighting but doesn't make great impact on render.

5. A construction company is designing and building the road junction shown in the graphic below.



5. (continued)

A structural engineer carried out an FEA test on a computer model on the bridge within the junction.

(a) Describe two ways a structural engineer would use the FEA test results. **2**

They would use the results to improve the strength of materials used on the bridge, as well as improve weaker parts of the structure so that its structure won't collapse with a certain weight.

(b) A model maker used information from a topographical survey carried out on the area around the junction.

Explain why the topographical survey would provide useful information to a model maker. **2**

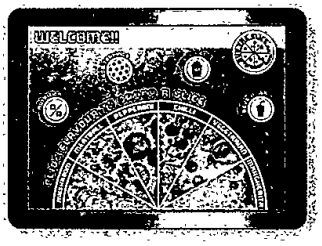
Topographical survey would show the contours of the ground therefore being useful because the model maker can design the bridge to fit into the landscape properly

(c) An animator created two simulations of traffic flow. The first simulation shows the current traffic flow. The second simulation shows the anticipated traffic flow after the junction is complete.

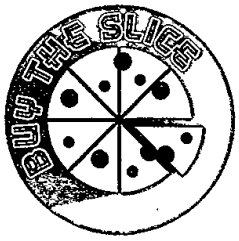
Explain, giving three reasons, why motion tweening was used to animate the vehicles used in the traffic flow simulation. **3**

Motion tweening can give an accurate simulation of the vehicles moving showing the traffic flow. It is also quicker too animate and render making the design process of the junction quicker.

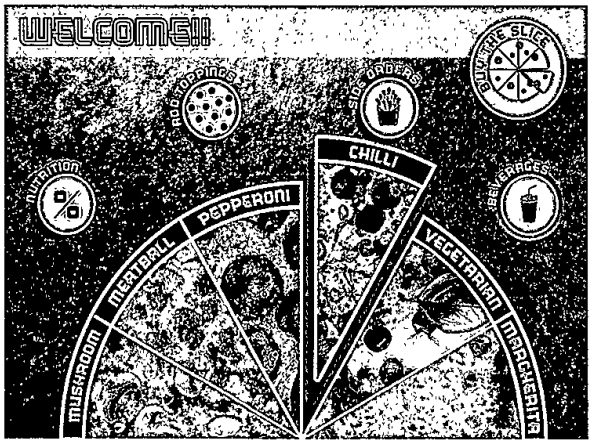
6. A pizza company are introducing interactive screens for ordering instore as shown below.



interactive screen before use



company logo



interactive screen during use

(a) Explain why the interactive screen has been designed to be easy to navigate. **3**

It has been designed too be easy so that people can order quicker and so not too over-complicate the process, therefore the pizza company will have more orders. An ~~younger~~ older age group (elderly) might use it since interactive screens are used more often now. So making it easy to navigate for them makes it ~~easer~~ easier for them to understand.

6. (continued)

(b) Describe how the designer has used focal point, silhouette and negative space in the design of the company logo. **3**

The pizza in the centre has used most of the space and is the larger image therefore emphasising that it is the focal point. The designer has done this because this is what they want customers to interact with first. The silhouette of the pizza in the blue bubbles, shows small images of additional information and other foods and beverages that you can add. Shows the basic image of the

[Turn over

6. (continued)

Two images from the interactive screen are shown below.

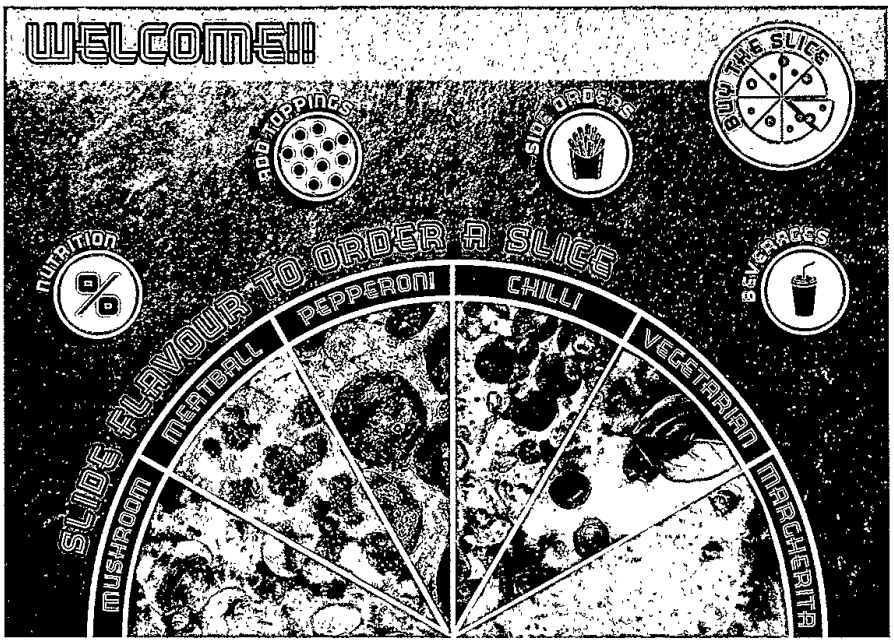


Image A Interactive screen before use

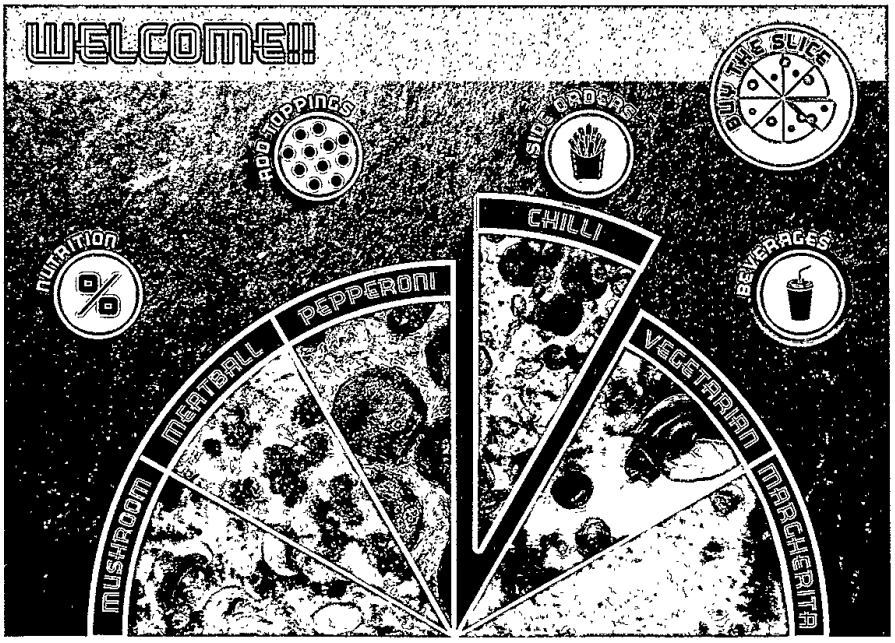


Image B Interactive screen during use

6. (continued)

(c) Describe two ways each of the following design elements and principles enhances the interactive screen.

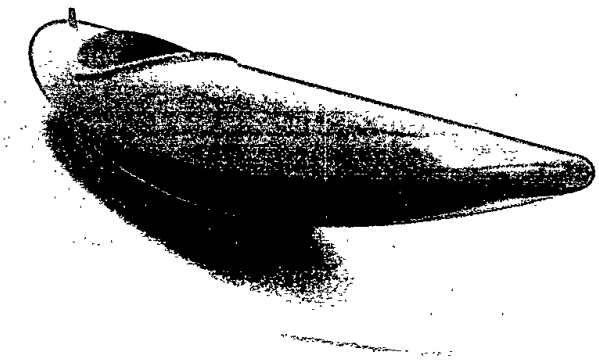
(i) Radial balance The circles are used to emphasise the pizza shape as well as the different sizes of the circles showing the importance of each circle and directs you to what you ~~should~~ should interact with first. 2

(ii) Texture Texture on the pizza for a more realistic image on screen. Textured background to add depth and dimension to interactive screen. 2

(d) Describe, using the correct graphic terms, the animation techniques and video edits that will change **Image A** to **Image B.** 2

Transitions between the buttons for the next choices - such as the nutrition, additional toppings, sides and beverages.

7. A 3D CAD model of a prototype kayak is shown below.



Refer to **supplementary sheet 4 for use with question 7.**

A CAD technician has created technical graphics for a kayak manufacturing company but has made errors applying British Standards.

(a) Describe three British Standards errors in the kayak technical graphics on **supplementary sheet 4.** **3**

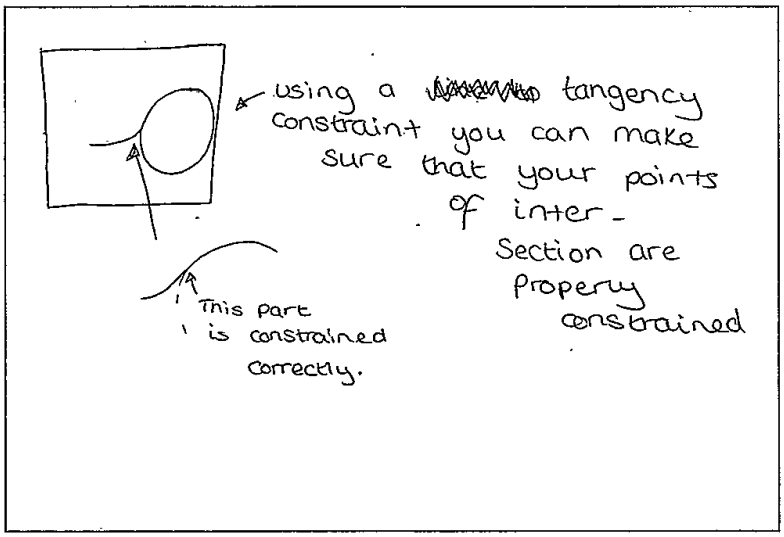
The circles on the Kayak do not have centre lines such as the seat mount holes and the rope attachment point. The third angle projection symbol has not been used. instead it is the first angle projection () The Deck has also not been named in the features table

7. (continued)

(b) (i) Describe how a 2D CAD sketch constraint was used to create the rope attachment point.

Refer to the dimensions in your answer.

You may use sketches to support your answer. **2**

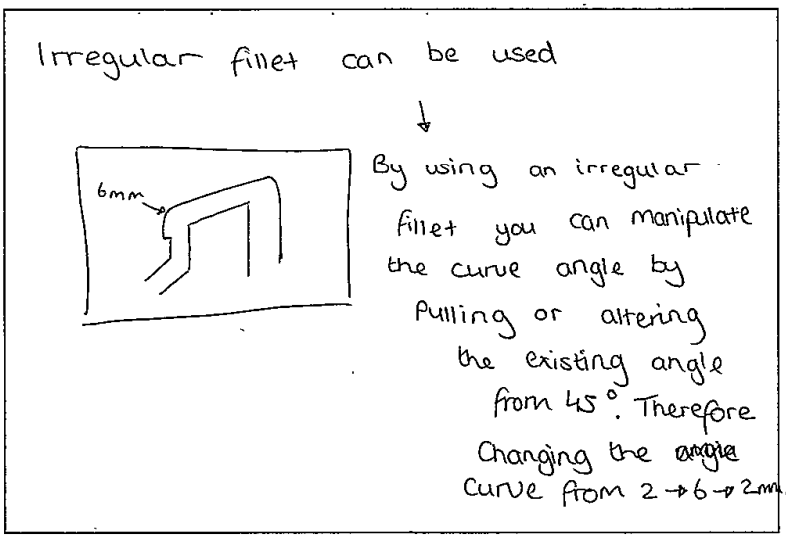


The cockpit coaming feature has a fillet that changes from 2 to 6 mm and back again.

(ii) Describe the 3D CAD modelling technique used to create this feature and how it was applied.

Refer to the dimensions in your answer.

You may use sketches to support your answer. **2**



7. (continued)

The manufacturing company has written about the prototype kayak in its literature.

> The prototype kayak was put through a rigorous series of tests. Using our state-of-the-art technology, we were able to show the kayak's improved performance and the kayaker's full range of movement when they descended our specially designed course.

The company used a range of graphic technologies in the design and testing of the prototype kayak.

(c) (i) Describe how CFD digital testing could be used in the design of the prototype kayak. 2

CFD can be used to simulate the kayak in water pressure therefore checking that the kayak can withstand the pressure as well as sutible materials applied to it.

(ii) Describe how motion capture technology was used by the manufacturing company. 2

Motion capture shows the rotation and movement of the kayak therefore showing of the product and showing its range of motion realistically.

[END OF QUESTION PAPER]