

Candidate 8 evidence

Total marks — 90
Attempt ALL questions

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1. Graphics of a new blender are shown below in Figures 1 and 2.

Figure 1

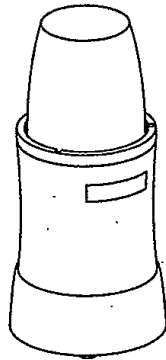


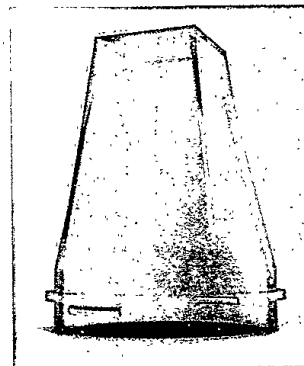
Figure 2



(a) Describe two illustration/3D rendering techniques applied to produce the realistic looking graphic shown in Figure 2. 2

- Shadows - Shading on ground gives idea of light source
- Reflections - ~~catching the~~ a light source
- Reflections - Gives an idea of the material

(b) An alternative design is shown below for the plastic cup component. The CAD technician decides to produce this component in two stages.



Alternative cup design

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1. (b) (continued)

- (i) You must use the additional information provided on the supplementary sheet for use with question 1 (b) (i) to answer this question.

Describe, using 3D CAD modelling techniques, how the technician would complete Stage 1 as shown in the working drawings.

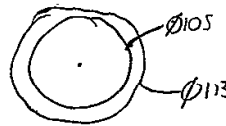
6

You may use sketches to support your answer.

① Draw a circle of $\varnothing 113$, extrude it 4mm up

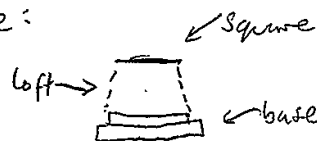
② Draw a second circle with centre the same as the 1st circle, and $\varnothing 105$ on top of the first circle

Extrude this circle
up 10mm

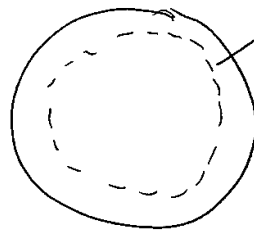


③ From the top of the ~~sketch~~ design, offset a plane 10mm above and draw a square on it with dimensions 50mm x 50mm, with centre same as circles

④ Loft the top of the base to the square:



⑤ Draw a circle on the bottom ~~edge~~ of base and extrude subtract into design 4mm



⑥ Then shell the rest of the inside of the design 4mm

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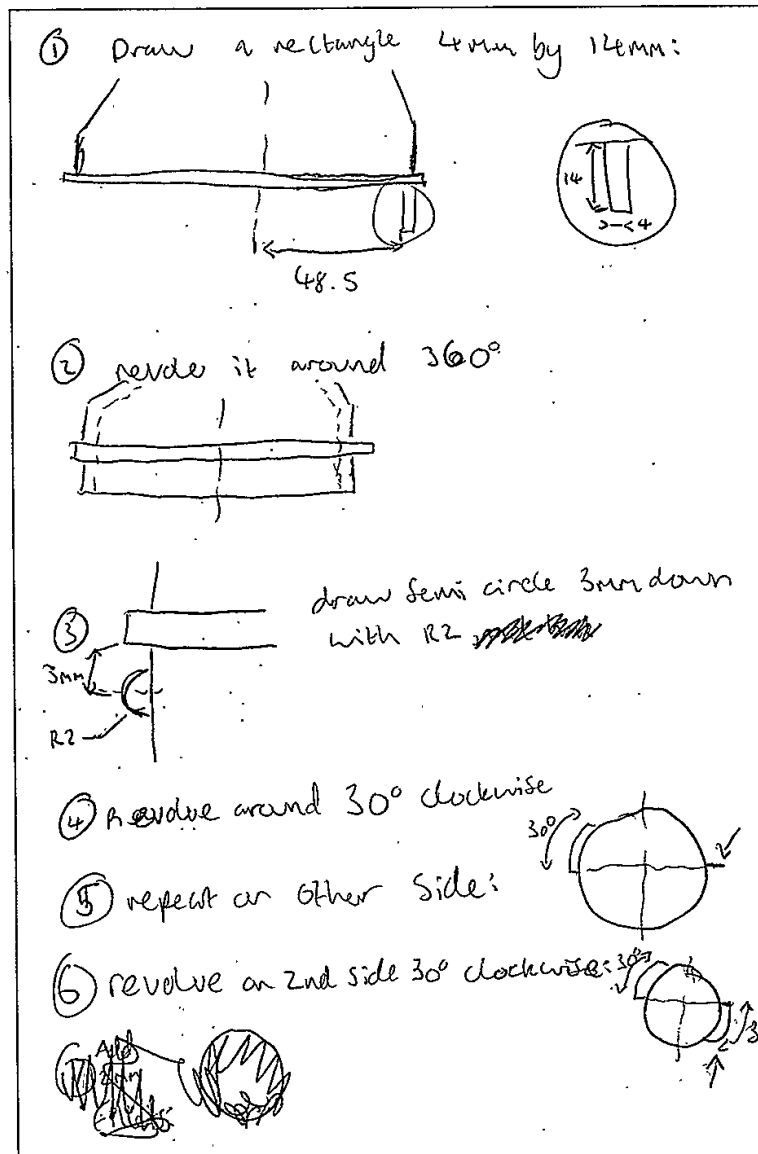
1. (b) (continued)

(ii) You must use the additional information provided on the supplementary sheet for use with question 1 (b) (ii) to answer this question.

The CAD technician adds additional features to allow the lid to lock into position, shown in red in Stage 2.

Describe how, using only the 'revolve' 3D modelling technique, the CAD technician created the additional features.

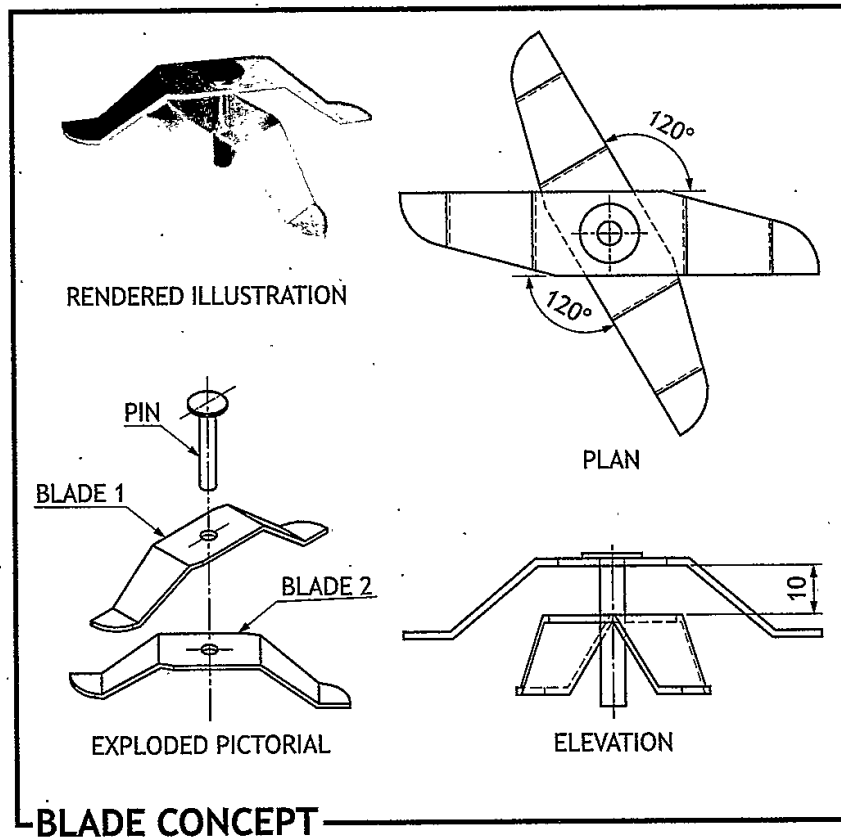
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1. (continued)

- (c) A concept design for the blade sub-assembly for the blender is produced. The two blades shown have been constrained to the pin using 3D CAD modelling software.



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1. (c) (continued)

Describe the steps required to constrain the blades and pin to each other. You may annotate Figure 1 to help with your answer.

4

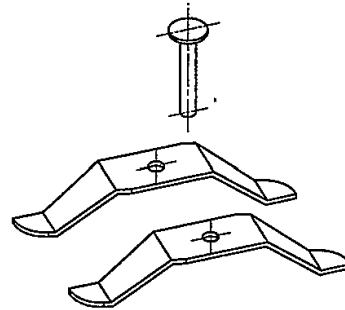


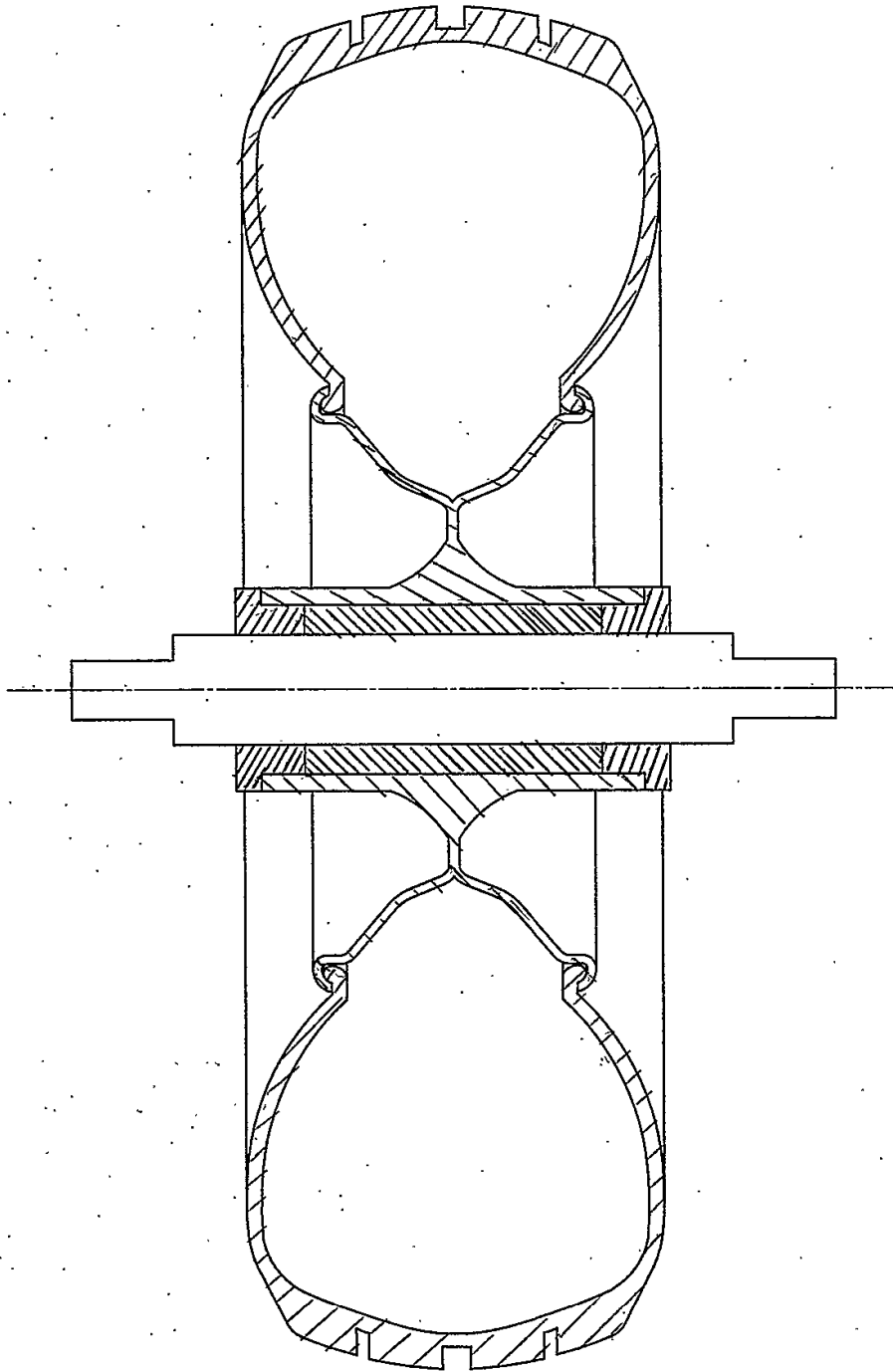
Figure 1

- Constrain the two holes of the blade parts together using their centres, ~~set~~ set the gap between them.
- Offset the gap between them at 10mm
- Then rotate the bottom blade clockwise 120°
- Then constrain the centre of the pin to the centre of the hole of the ~~blades~~ top blade
- Then constrain the pin into the holes ~~top~~ via the top surface of the top blade and the underside of the pin

2. An incomplete enlarged sectional view of a wheel assembly is given below. Using the information provided on the supplementary sheet for use with question 2, complete the sectional view by adding appropriate hatching.

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4



SECTION A-A

3. A graphic designer is producing content for Scotrock, a new Scottish music festival. The logo designs below are exported as vector files.

Version 1



Version 2



- (a) (i) Describe two advantages of exporting the logo shown in the vector format, as opposed to raster.

2

- Vector files can be scaled up ~~without pixelation~~ without any pixelation
- They can be recoloured easily

- (ii) State the name of a vector file extension which the logo could be exported as.

1

PDF

- (iii) The graphic design company operate a paperless office. Describe two advantages for the company of operating a paperless office. Do not include environmental benefits from reduced paper.

2

- The office would be less cluttered
- Files can be found much easier using devices as they can be ~~found~~ found via a quick ~~search~~ search, rather than having to look through several pieces of paper

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3. (continued)

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A draft graphic for the festival security passes is shown above.

- (b) (i) Describe two instances where the designer has used line to enhance the layout of the graphic. 2

- ~~A horizontal~~ line through large box separates title from information
- Used to ~~break up~~ break up text and information, defines different pieces of information

- (ii) Describe two instances where the designer has used alignment in the graphic. 2

- The information on the right is all lined up with each other
- Text on right near bottom is right-aligned
- Edges of large box lines up with edges of main ~~text~~ heading

- (iii) Explain how the designer has used balance in the graphic. 2

- High amount of text on right is balanced by large title on left
- Main heading ~~is centered~~ and sub heading are ~~both~~ centered.

3. (b) (continued)

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- (iv) Describe two instances where the designer has created contrast in the graphic. 2

- The dark grey ~~to~~ ~~lines~~ with the light and black contrasts with the ~~very~~ light white
- The blocky text contrasts with the elegant, script "Event Safe." text

- (c) The designer presents a proposal for a bus timetable design as shown below.



- (i) State two advantages of using a sited environment when presenting desktop publishing work to clients. 2

- Show how the design would look in the proposed environment
- Gives an idea of the scale ~~what it looks like~~ compared to other items when produced

- (ii) The festival organisers decide to use digital screens to display the bus timetable instead of printing them. Describe three advantages to the festival organisers of using digital screens over traditional printed timetables. 3

- Can be read in the dark
- ~~Can be read in the dark~~ • Can include animation ~~and other~~
- ~~Can be made in several languages~~
- ~~languages can be~~ • Could be much brighter and will therefore stand out even at distance
- ~~Can be easy and quick~~

3. (continued)	MARKS	DO NOT WRITE IN THIS MARGIN
(d) You must use the graphic provided on the supplementary sheet for use with question 3 (d) to answer this question:		
(i) Describe how the designer has used texture to enhance the impact of the graphic.	2	
<ul style="list-style-type: none"> The metallic texture in the background gives idea of style of music 		
<ul style="list-style-type: none"> Gives a feeling of depth and adds interest to the design 		
(ii) Describe two ways the designer has used depth within the publication.	2	
<ul style="list-style-type: none"> Drop shadow under headings creates depth 		
<ul style="list-style-type: none"> Heading boxes boxes placed on top of line design at side - creates idea that they are in front 		
(iii) Describe two ways the designer has used emphasis within the publication.	2	
<ul style="list-style-type: none"> Coloured boxes around heading gives emphasis to them and makes them stand out 		
<ul style="list-style-type: none"> Large scale of text: 'SGT ROCK' heading gives it emphasis and draws attention to it 		
(iv) Describe two ways the designer has used unity within the publication.	2	
<ul style="list-style-type: none"> Consistent use of blues throughout 		
<ul style="list-style-type: none"> Consistent use of geometric shapes and patterns such as rectangles 		
<ul style="list-style-type: none"> Metal texture courses from bottom all the way up 		

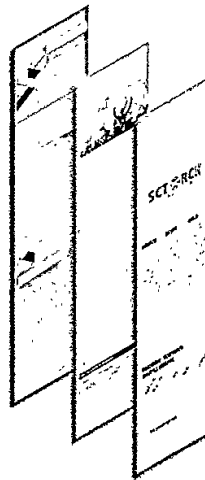
3. (d) (continued)

- (v) Explain two ways the designer has used grid structure within the publication.

2

- The body text in the centre has grid structure to make it look neat and easy to read
- The table at the bottom has grid structure which makes it simple to understand and look neat

The layout was produced using layers in desktop publishing software.



- (vi) Describe two advantages to the graphic designer of using layers to produce this layout.

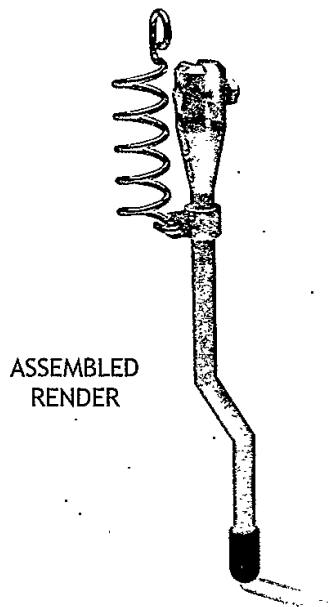
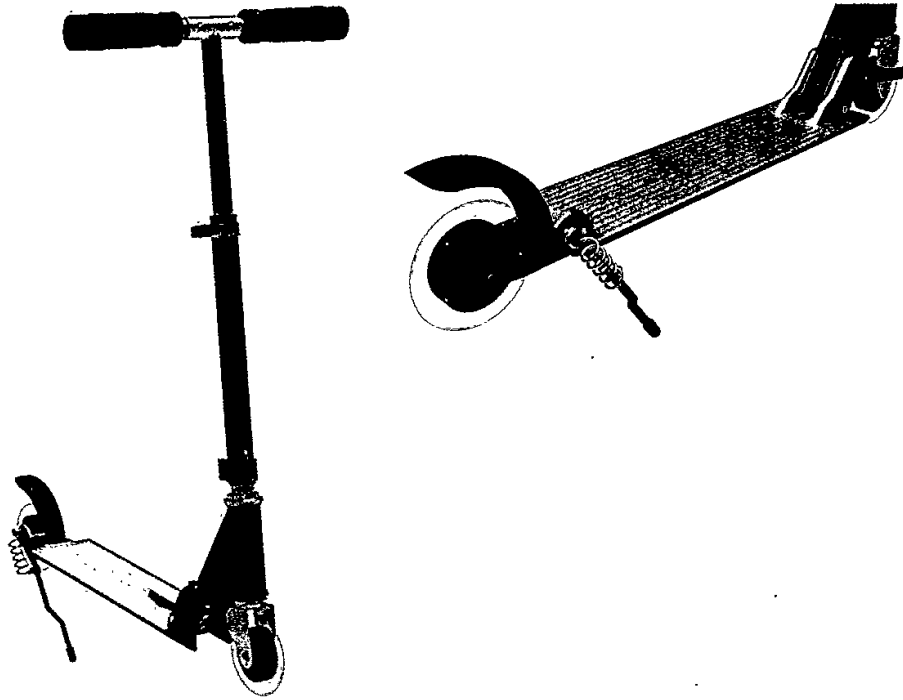
2

- A master page can be made and used throughout and in future publications
- Images and text can be created on separate pages which will make the pages less cluttered when being designed

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4. Parts for a retractable kickstand for a scooter are shown below.

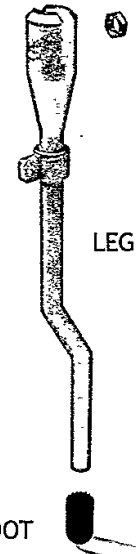
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SPRING



LEG



EXPLODED
RENDER

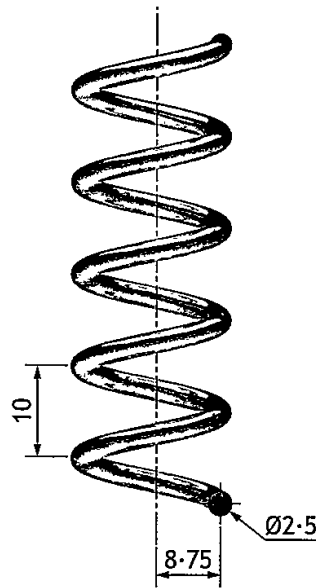
FOOT

4. (continued)

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- (a) The spring was modelled as a separate component using 3D CAD.
Describe the 3D CAD modelling technique used to model the spring.
You must make reference to the dimensions given.
You may use sketches to illustrate your answer.

3



Helix: Draw profile of $\text{Ø}2.5$ circle with
~~Set radius at 8.75~~ Centre 8.75mm away from
Centre axis of helix

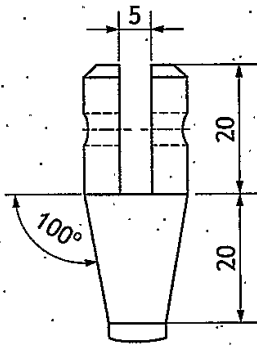
Draw 5 revolutions of helix with each 10mm
apart - total height of 50mm

4. (continued)

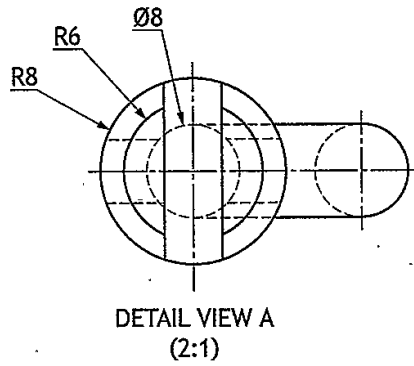
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- (b) The leg was 3D CAD modelled as a single component.
Describe the modelling techniques used to generate the component.
You may use sketches to illustrate your answer.

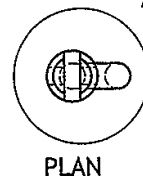
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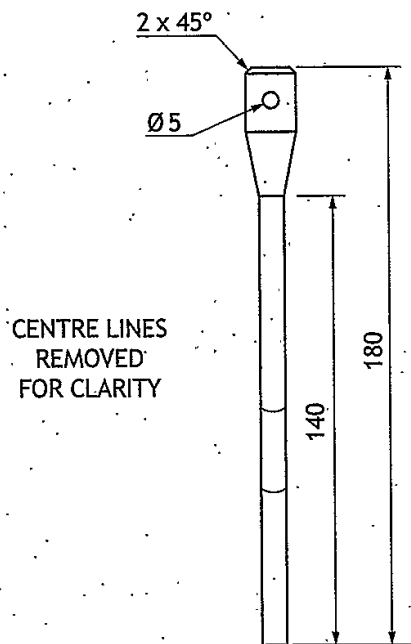
DETAIL VIEW B
(1:1)



DETAIL VIEW A
(2:1)

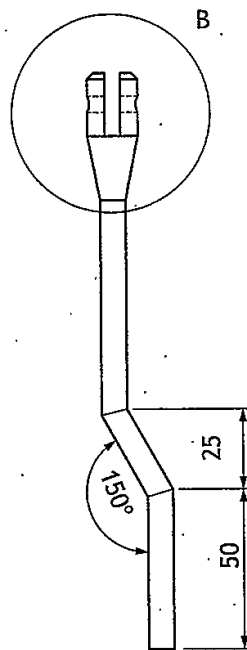


PLAN



CENTRE LINES
REMOVED
FOR CLARITY

END ELEVATION



ELEVATION

SCALE 1:2

4. (b) (continued)

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1. Draw circle $\phi 8$



← new axis
← axis with circle

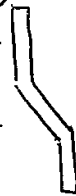
2. on new axis draw line:



3. ~~Extrude line along~~
Extrude along a path with $\phi 8$ circle as profile and line as path:



4. from top of part draw $\phi 8$ circle from the centre



and then offset a new plane 20 mm up

5. on new plane draw circle $\phi 16$ and left:



9. final stage:



2x45° chamfers
Add 2 2mmx4.0 chamfers to the top edges

6. then on top draw $\phi 16$ circle and extrude 20mm

7. then extrude ~~the~~ subtract 5mm gap from top down 20mm

8. Draw $\phi 5$ circle on centre plane:



~~Add 2x45° chamfers to the top edges~~



Extrude subtract all the way through

4. (continued)

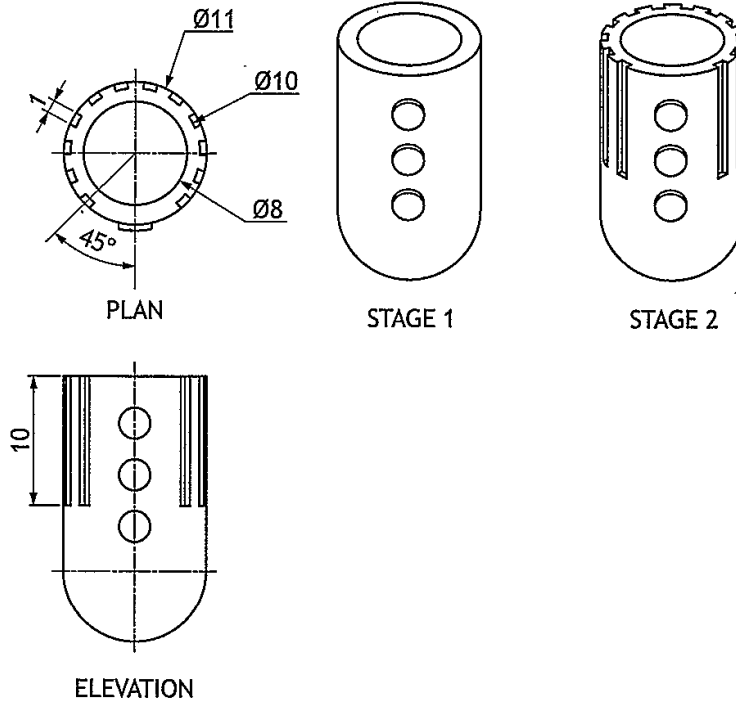
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(c) The foot was 3D CAD modelled using the revolve command.

Describe the modelling edit used to complete the component from Stage 1 to Stage 2.

You may use sketches to illustrate your answer.

3

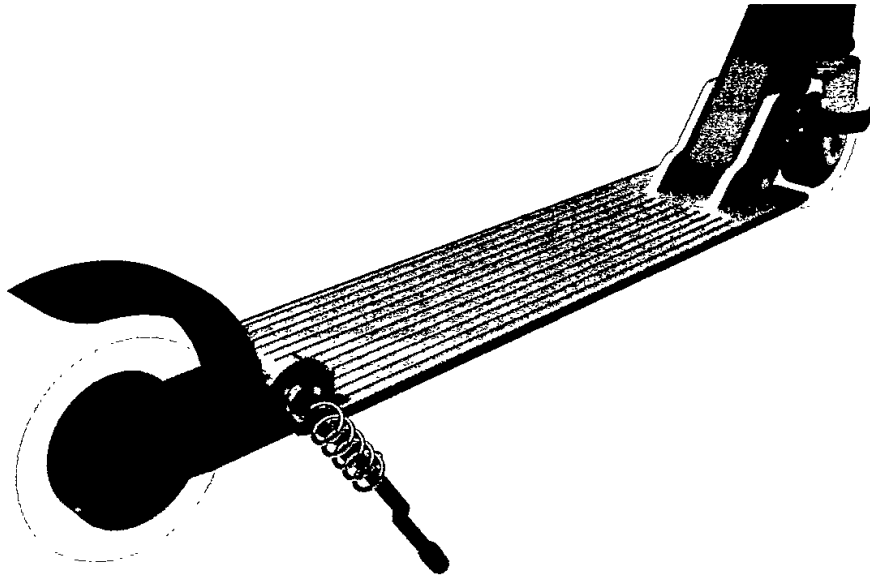


Radial Array:
 Add radial array with ~~PCD 11~~ ~~12 x 1~~ and 12 x 1
 and rotate round 270°
~~PCD 11~~ ~~12 x 1~~
 Extrude Subtract this pattern 10mm down

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4. (continued)

The kickstand is connected to the scooter by an M5 countersink head screw.
The length of the thread is 14mm.



(d) Apply to the views below the correct British Standard conventions for

(i) the diameter of the bolt

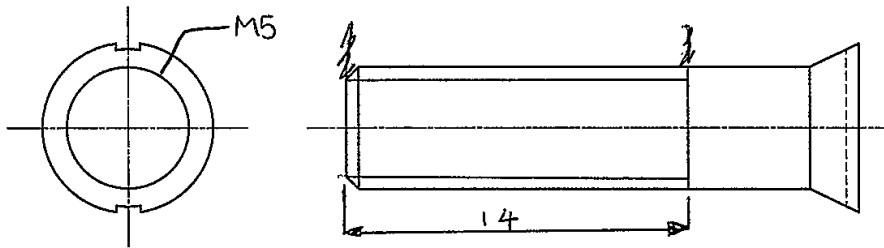
1

(ii) the length of the thread

1

(iii) the convention for a thread.

2



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5. A design company has produced a range of graphics for a music festival.
During the planning process three of the graphics were submitted.

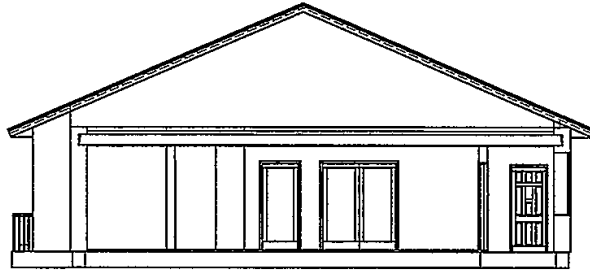


Figure 1

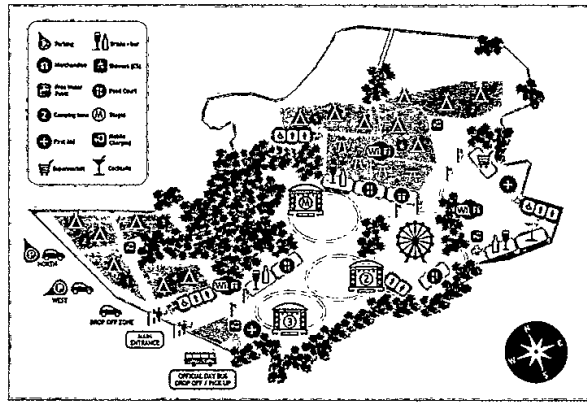


Figure 2

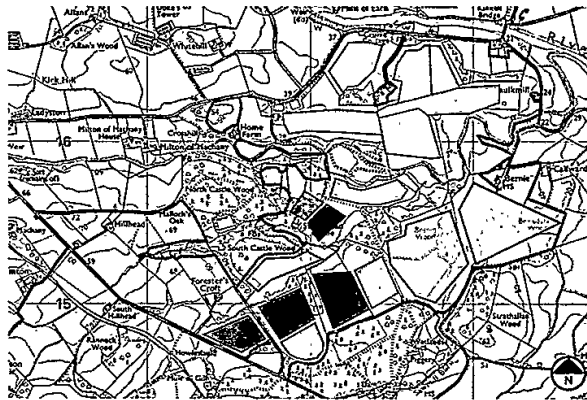


Figure 3

		MARKS	DO NOT WRITE IN THIS MARGIN
5. (continued)			
(a)	Explain, with reference to preliminary, production and promotional graphics, the purpose of Figures 1, 2 and 3.	3	
	<p>Figure 1</p> <p>To give a detailed view of how the building should look from one side from one side when made</p>		
	<p>Figure 2</p> <p>to help people ^{Setting up or attending the festival know} how to get to certain places and know where things are</p>		
	<p>Figure 3</p> <p>To help people ^{involved} be find their way around and not get lost as it is a large area</p>		
(b)	State three features which should be shown on a British Standards location plan.	3	
	<ul style="list-style-type: none"> • North facing arrow • Scale of drawing • Building in relation to other buildings and streets 		

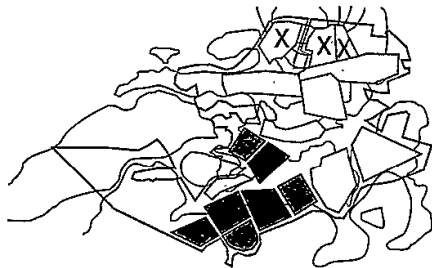
5. (continued)

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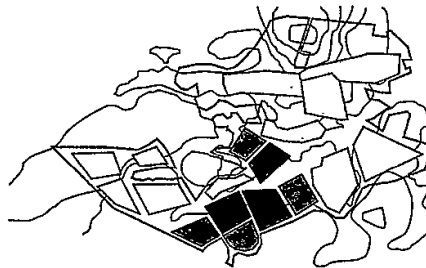
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(c) Changes, shown in the Proposed Plan and Final Plan, were made during the planning stage. With reference to the graphics below, identify two reasons the camping areas marked with an X have been relocated.

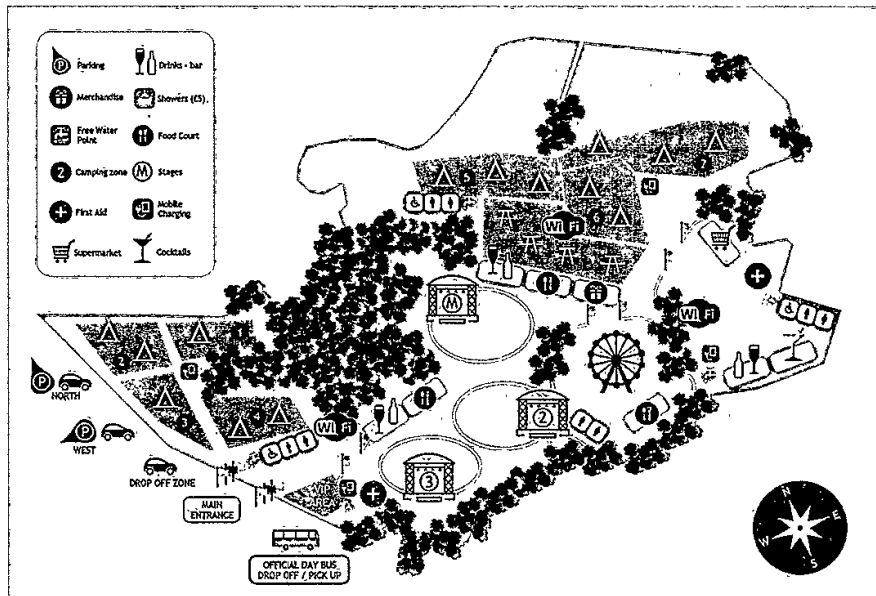
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PROPOSED PLAN



FINAL PLAN

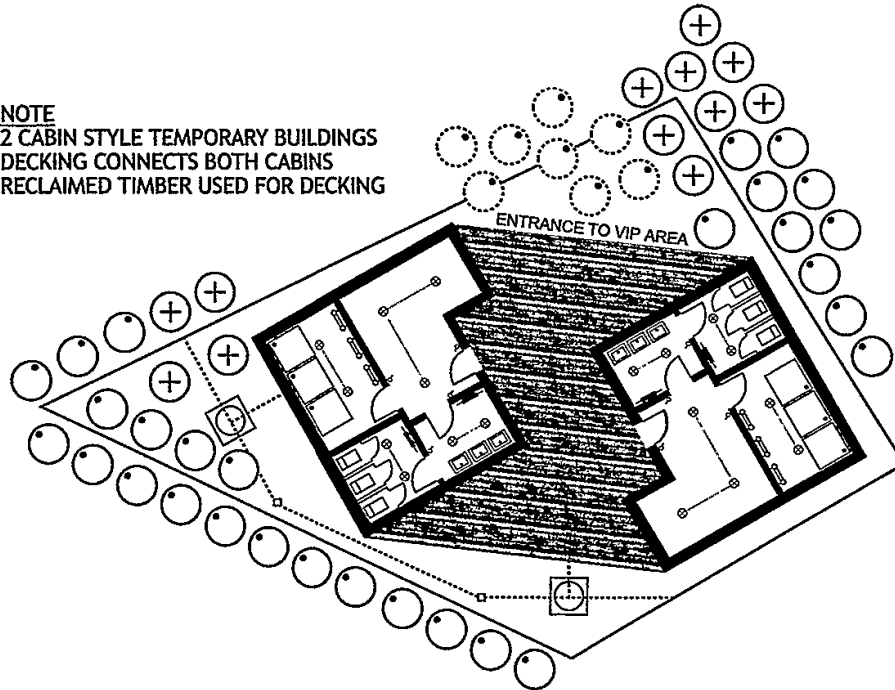


- They are now closer to a drinks bar and food court, so will have less to walk to get food and drink
- Means the wifi will be faster as there are less people connected to the one network in the north of the area
- They are now closer to a ~~first aid station~~ the main entrance which is more convenient as it is less to travel

5. (continued)

The site plan for the VIP area is shown below.

NOTE
2 CABIN STYLE TEMPORARY BUILDINGS
DECKING CONNECTS BOTH CABINS
RECLAIMED TIMBER USED FOR DECKING



Architects had to plan around the existing environment, to create two temporary buildings and an outdoor wooden decking area.

(d) State how many existing trees are within the VIP boundary.

5

(e) The site plan shows some existing trees had to be removed.

State a reason why this was necessary.

To clear space for the entrance to the VIP area

(f) Describe how the architect has considered the environmental aspect of the site.

They have decided to plant some new trees as well as adding some drainage to the area.

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1

2

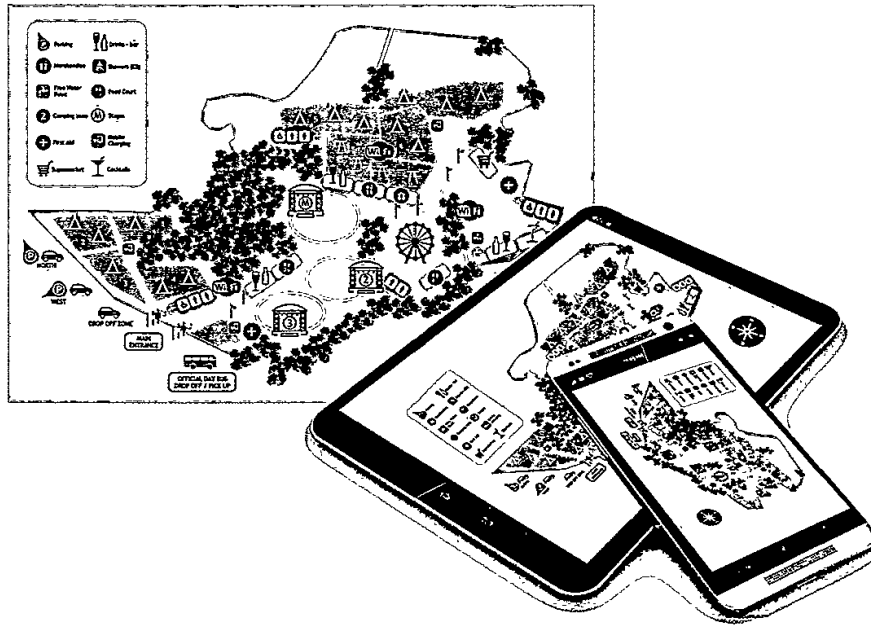
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5. (continued)

(g) State two factors that influence the choice of scale in a floorplan.

2

- The size of the paper used
- The size of the building



(h) The company plans to have both a hardcopy and electronic version of the festival site plan as shown above.

State two things that the designer would have to consider when making the site plan suitable for a range of electronic devices.

2

- ~~Making sure people know how to access it~~
- Making it easy to ~~use~~ find ^{and access} by the user
- If it can be accessed without internet connection

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5. (continued)

- (i) The company has set up a website and social media link for the event, allowing festival goers to connect with fellow attendees and those not in attendance.

Describe why the companies promoting and advertising the event may like this live link.

2

- They will make more profit from the event
- News from the event will be spread to others who aren't there
- The people who use this live link may enjoy it and give it good ratings which could give the companies a better reputation

[END OF QUESTION PAPER]