

Candidate 6 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

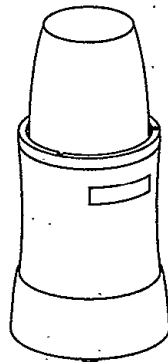
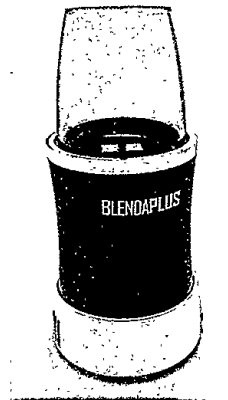


Figure 2

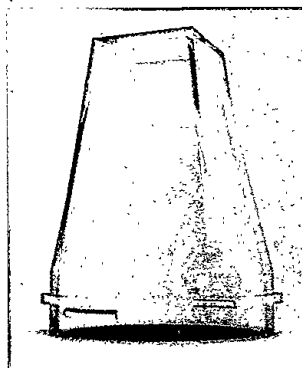


- (a) Describe two illustration/3D rendering techniques applied to produce the realistic looking graphic shown in Figure 2.

2

- Shaddows, lighting (makes the object look 3D instead of flat)
- raytracing / raycasting (makes materials look like they do in real life adding realism)

- (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)

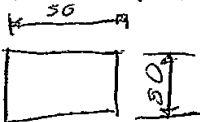
- (i) You must use the additional information provided on the supplementary sheet for use with question 1 (b) (i) to answer this question.

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 create 2D sketch + dimensions




② create work plane 106mm away from sketch ① & create a 2D sketch on the plane using circle tool + dimension

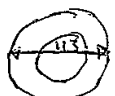


③ loft shape


④ create 2D sketch on the bottom of the circle ~~then extrude~~ using circle tool with a diameter of 105mm then extrude sketch by 10mm to produce this shape



⑤ now create another 2D sketch on the bottom of the object using the circle tool



⑥ extrude sketch by 6mm to produce this



⑦ now shell the object leaving a wall thickness of 6mm.

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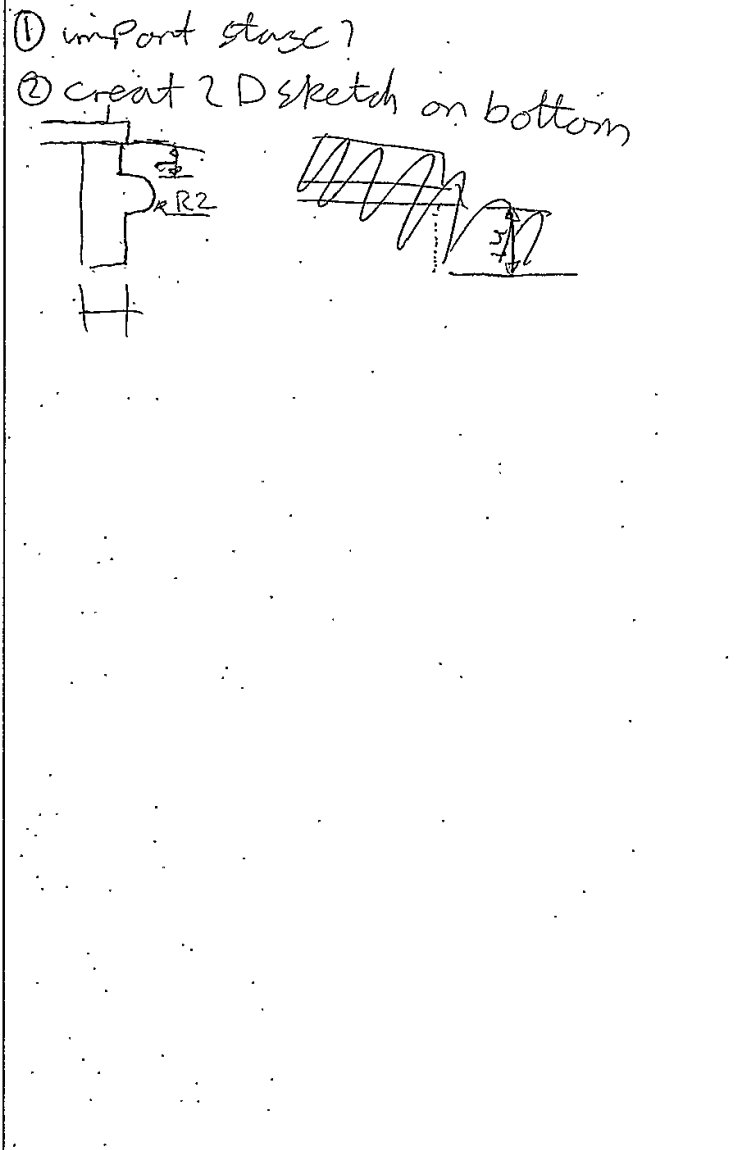
1. (b) (continued)

- (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.

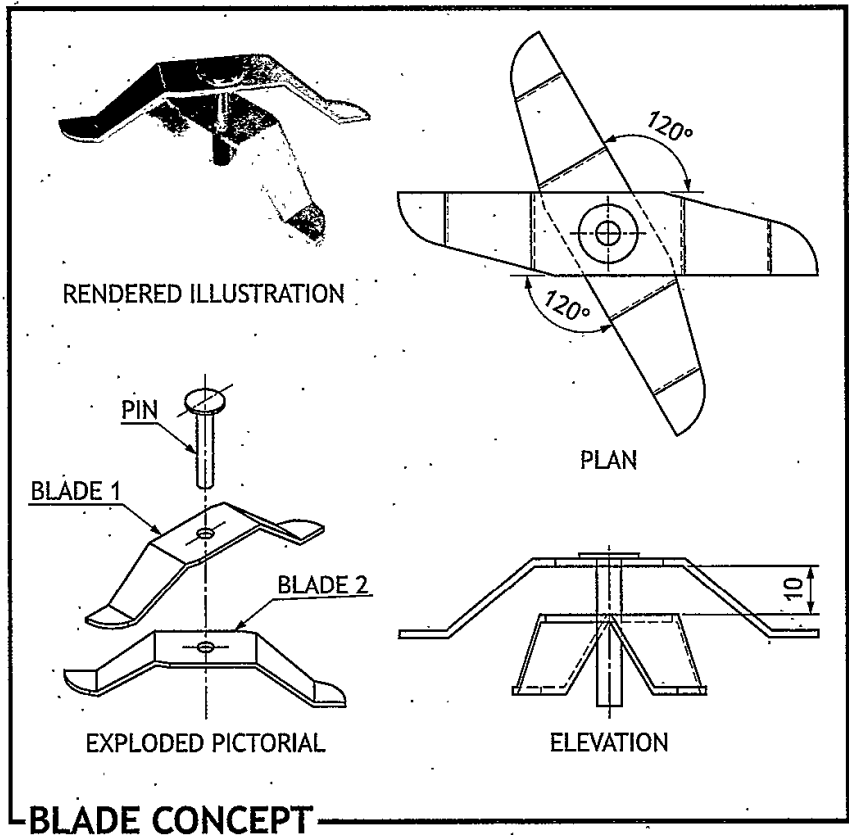
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1. (continued)

- (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.

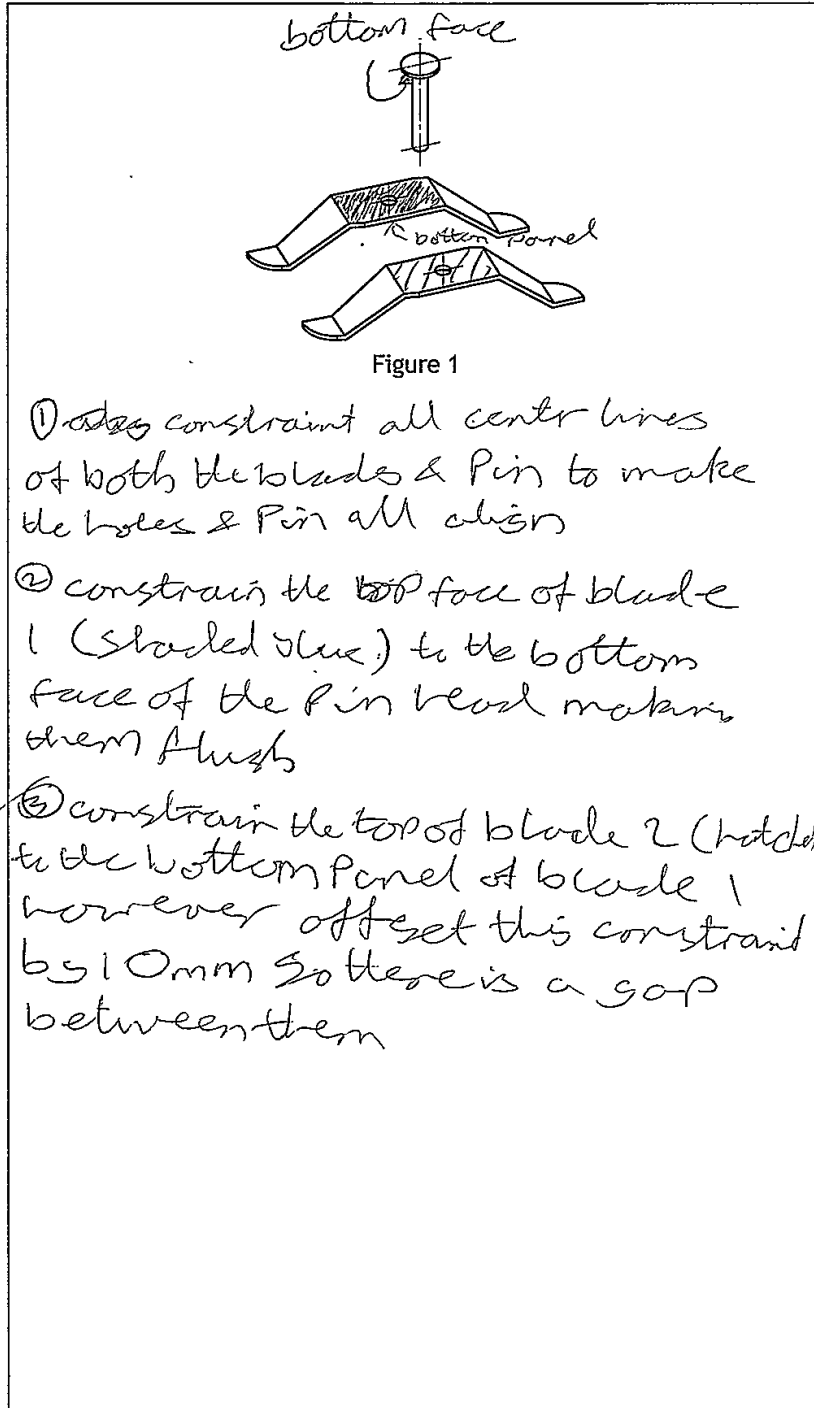


1. (c) (continued)

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

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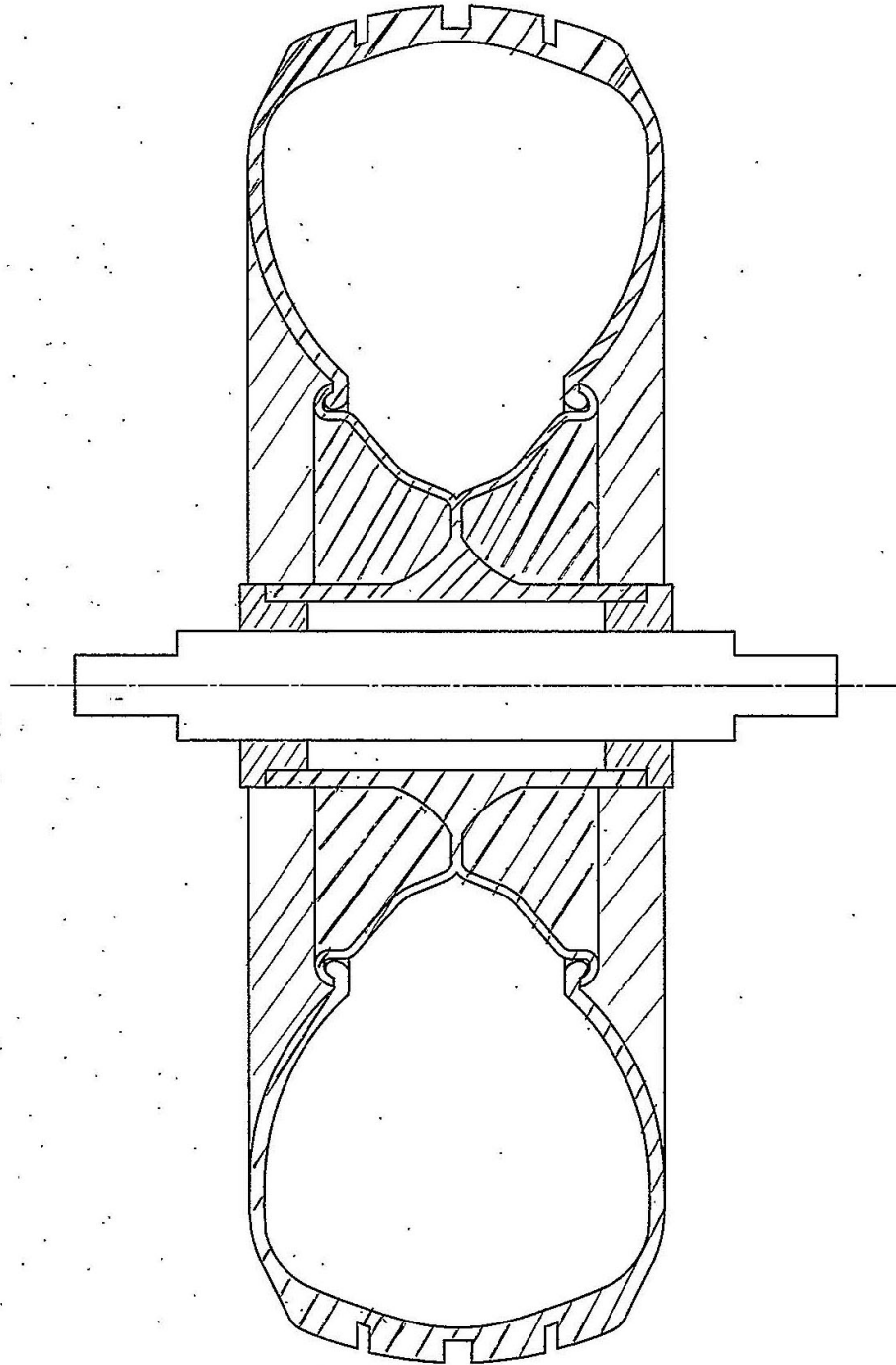
4



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.

• Vector graphics can be scaled to size without pixelation
 • Smaller file size

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

jpeg

- (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.

• everything is digital meaning it can be accessed anywhere & everywhere by an employee
 • cuts costs as there won't be any surplus getting wasted such as paper being buried

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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

- line has been used to break up the text horizontally
- line has been used to split up the colored boxes just about even in the middle to separate dates from other text

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

- The designer has used alignment by having everything center aligned along with being aligned with all the text circles above making it look like a column, go to back

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

- balance has been created by having a lot of small text on the right of the page compared to the small amount of large text on the left of the page

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ADDITIONAL SPACE FOR ANSWERS

3b ii) alignment has been created
by having the ~~text~~ Press &
Artists be aligned up with
the point just below it in which
the point is just below the center
of text

3. (b) (continued)

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

2

• Contrast has been created by using reverse with the white text on a dark background

• contrast has been created by the large "Scotland Rocks" text compared to the small text circled

- (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

• gives the client an idea of how it will look in the world

• allows you to see it big enough in the surrounding environment

- (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

• easier to update & change what's on the screen

• saves trees getting cut down

• will be better weather resistant than paper also reduces rubbish for if someone drops a paper copy

3. (continued)

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| 2 | |
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| 2 | |
| 2 | |

(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.

texture has been used by having the metal floor in the background of Scotland Rocks

(ii) Describe two ways the designer has used depth within the publication.

• depth has been created by adding drop shadows to the 2 boxes
 • depth has been created by the use of dark & light colours next to each other

(iii) Describe two ways the designer has used emphasis within the publication.

• emphasis has been used on parts of text by using bold making them stand out more, emphasis has been used by having the graphics on the layout large making them stand out.

(iv) Describe two ways the designer has used unity within the publication.

• Unity has been created by using a repeated colour scheme links everything
 • Unity has been created by having text the same font & size

3. (d) (continued)

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

2

a grid structure has been used
with the Bronze, Silver & gold text
which are all the same size & length
of columns which are all aligned
to book

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

layers can be turned off so you
can only see one element such
as text

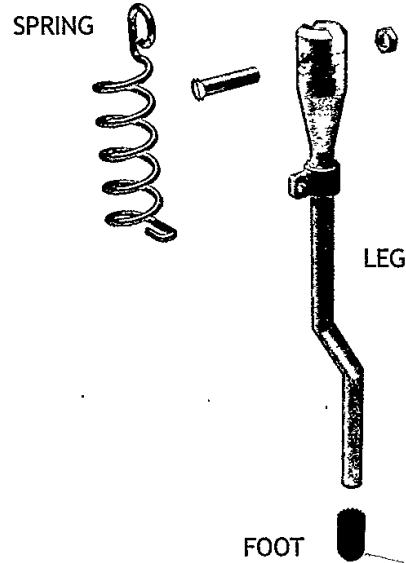
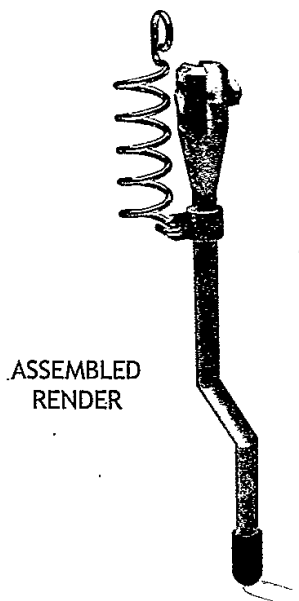
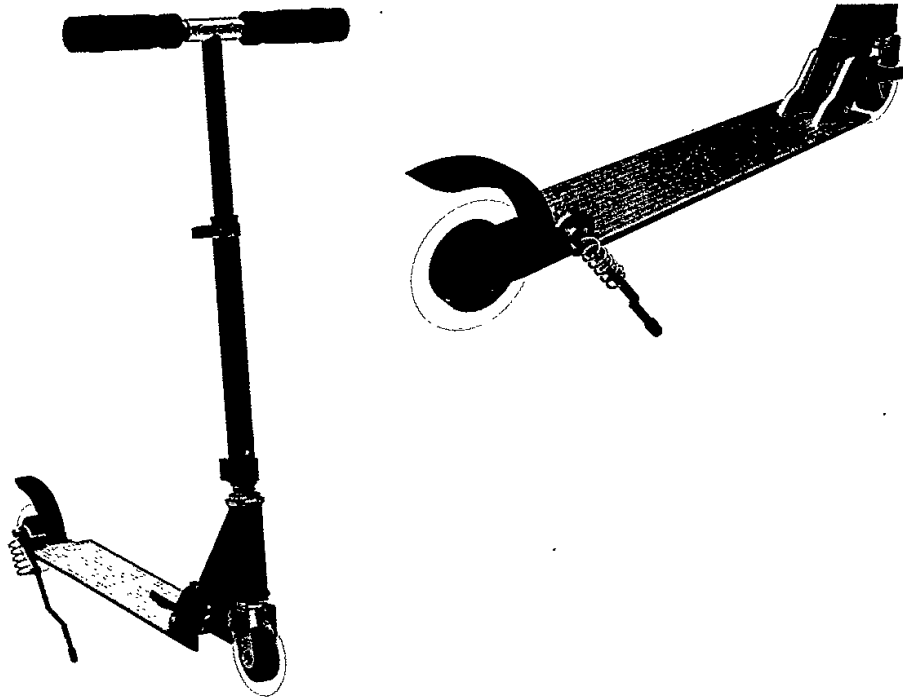
layers can be locked for
when your happy with an element
so it can't be altered

[Turn over

3d v) a grid structure has been used in creating a border that all the text stays within keeping all the text in a rectangular box

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

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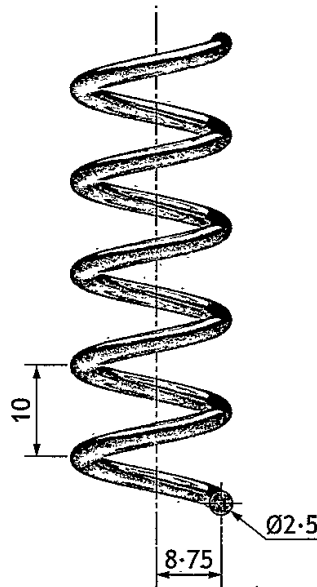


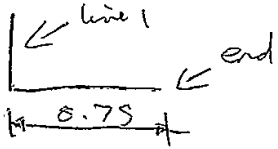

4. (continued)

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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



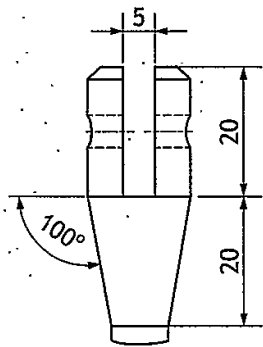
- ① create ~~2D~~ this 2D sketch using line + dimension
- 
- ② create a 2D sketch facing the end using the circle tool + dimension
- 
- ③ now use helix/coil selecting the circle as the profile, line 1 as the center & setting the spacing between coils 10mm to produce the image above.

4. (continued)

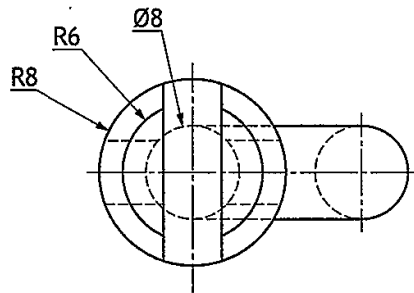
- (b) The leg was 3D CAD modelled as a single component.
 Describe the modelling techniques used to generate the component.
 You may use sketches to illustrate your answer.

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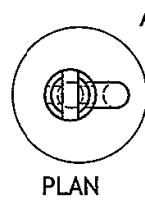
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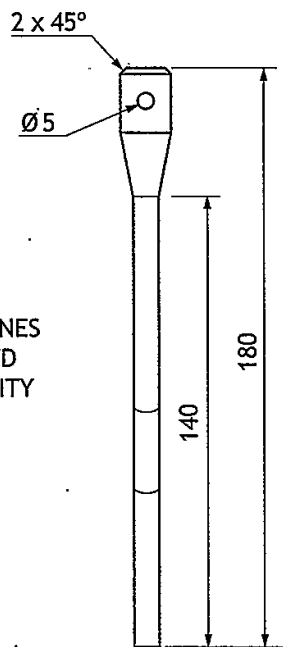
DETAIL VIEW B
 (1:1)



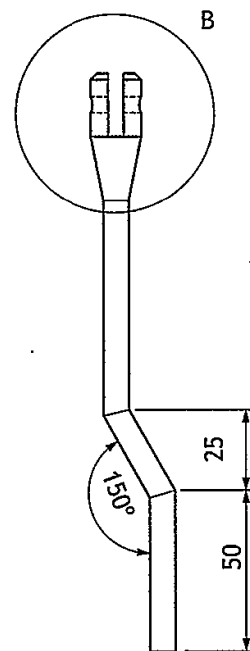
DETAIL VIEW A
 (2:1)



PLAN



END ELEVATION



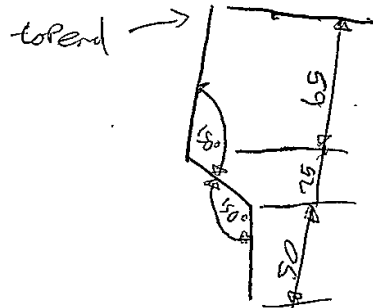
ELEVATION

SCALE 1:2

4. (b) (continued)

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① Create sketch using line + dimension



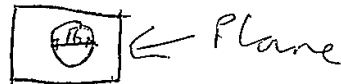
② create 2D sketch parallel to sketch ① & use circle tool



③ extrude along a path using sketch ① as the Path & sketch ② as the Profile.

④ create a plane & offset it 20mm from the top end

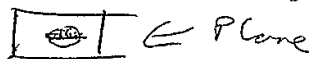
⑤ create 2D sketch on plane using circle tool + dimension



⑥ create a loft between sketch 5 & the top end face to produce this



⑦ now create a 2D sketch on the same plane using the circle tool + dimension

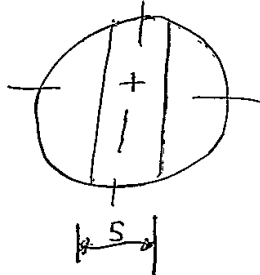


⑧ extrude sketch ⑦ by 20mm

⑨ Chamfer top edge by 2mm at 45°

go to back to see rest

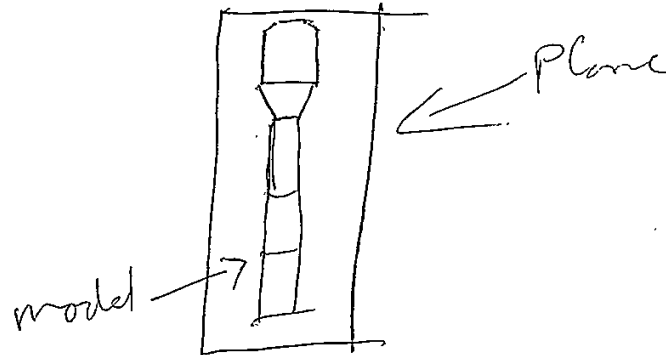
6b) (10) on the very top create a 2D sketch
using line tool + dimension



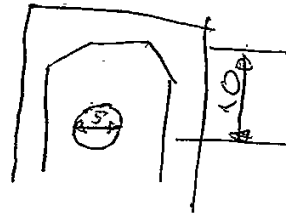
(11) extrude cut sketch (10) by 20mm

ADDITIONAL SPACE FOR ANSWERS

Q4b) (i) now create a Plane
facing the model in such a
way the slit made in sketch (10)
is horizontal & not facing you



(13) create a 2D sketch on the new Plane
& dimensions



(14) extrude cut sketch (13) by
16mm to create a hole that
cuts all the way through the
model

4. (continued)

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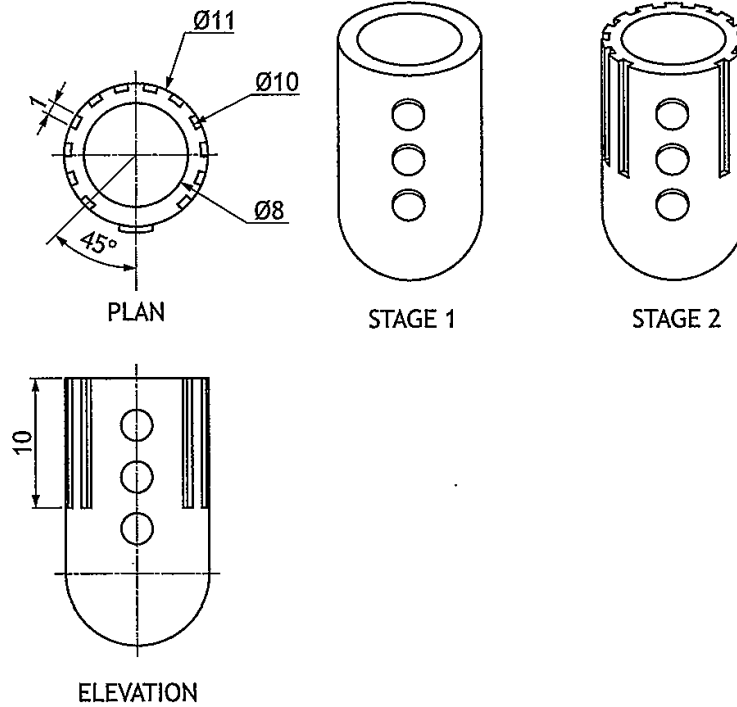
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(c) The foot was 3D CAD modelled using the revolve command.

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

You may use sketches to illustrate your answer.

3



① create 2D sketch on top of stage 1

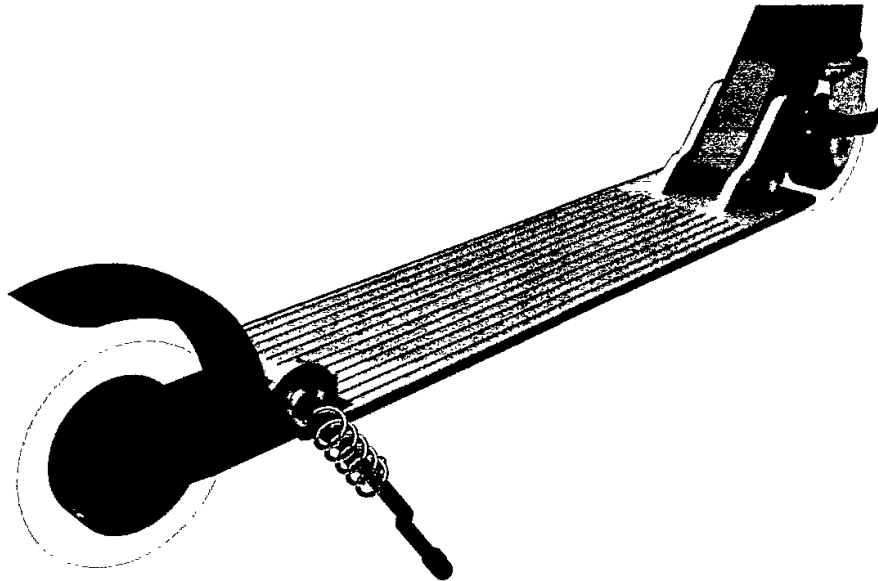
② select circular array repeating sketch 11 times to produce 12 slots in total

③ extrude cut sketch ① (shaded) by 10mm to produce this

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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

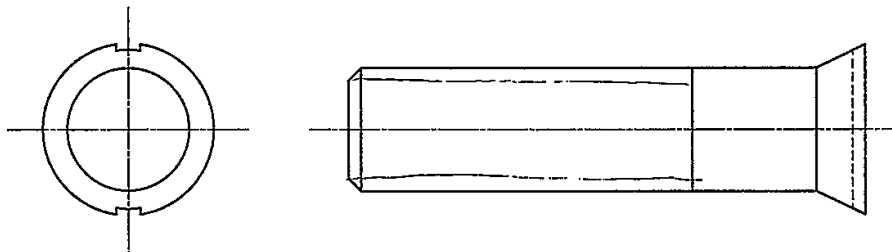
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(ii) the length of the thread

1

(iii) the convention for a thread.

2



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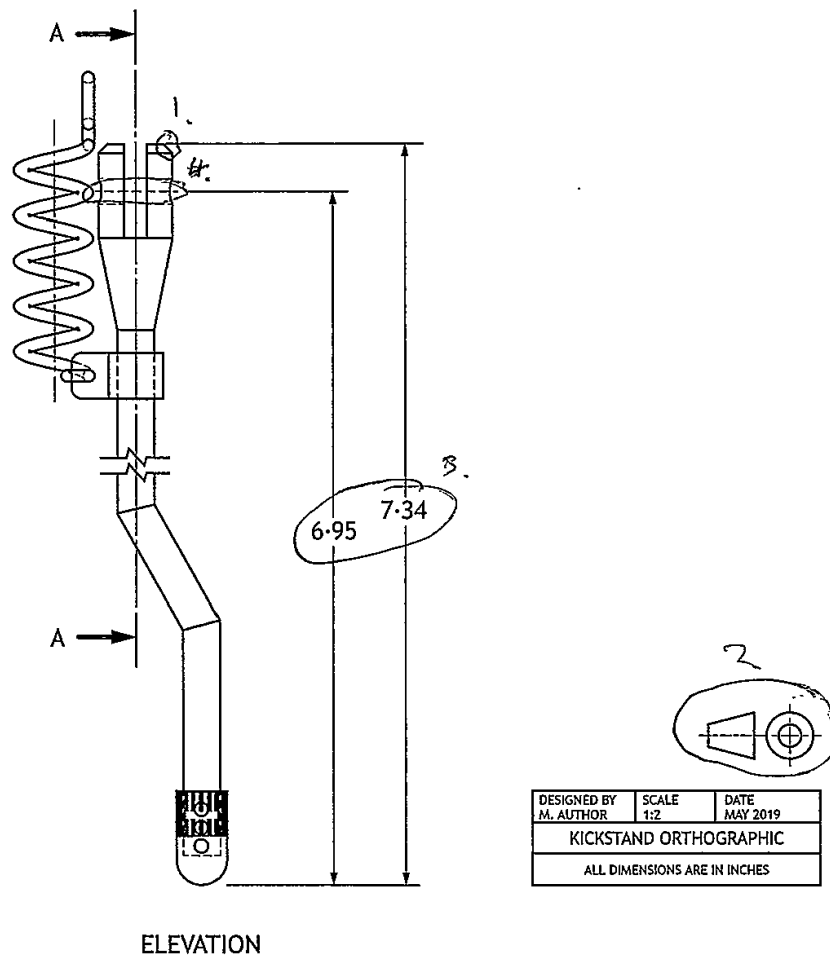
4. (continued)

(e) The assembly technician downloads an orthographic drawing from the company network. The technician immediately notices some issues with the drawing.

Identify from the drawing, five errors which are not correct to British Standard conventions.

5

1. leader line gap is too small
2. 3rd angle projection symbol is incorrect
3. the sizes are inside the lines
4. should be a center line instead of hidden detail
- 5.



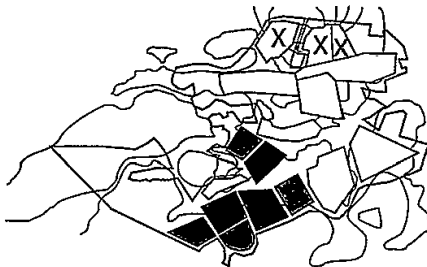
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| 5. (continued) | | |
| (a) Explain, with reference to preliminary, production and promotional graphics, the purpose of Figures 1, 2 and 3. | 3 | |
| Figure 1 | | |
| <u>this is a preliminary sketch of an</u> <u>idea of how the outside of a</u> <u>house may look</u> | | |
| Figure 2 | | |
| <u>this is a promotional graphic of</u> <u>the place showing the user where</u> <u>everything is</u> | | |
| Figure 3 | | |
| <u>this is a production graphic of how</u> <u>where objects should be placed</u> <u>& would be used to show people</u> <u>where to set up</u> | | |
| (b) State three features which should be shown on a British Standards location plan. | 3 | |
| <u>• north line</u> | | |
| <u>• roads</u> | | |
| <u>• contour lines / hills</u> | | |

5. (continued)

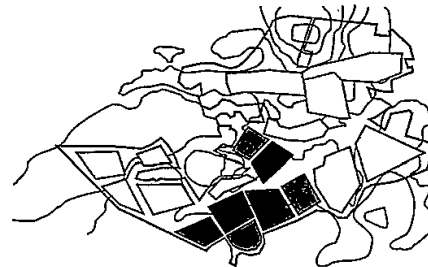
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- (c) Changes, shown in the Proposed Plan and Final Plan, were made during the planning stage. With reference to the graphics below, identify two reasons the camping areas marked with an X have been relocated.

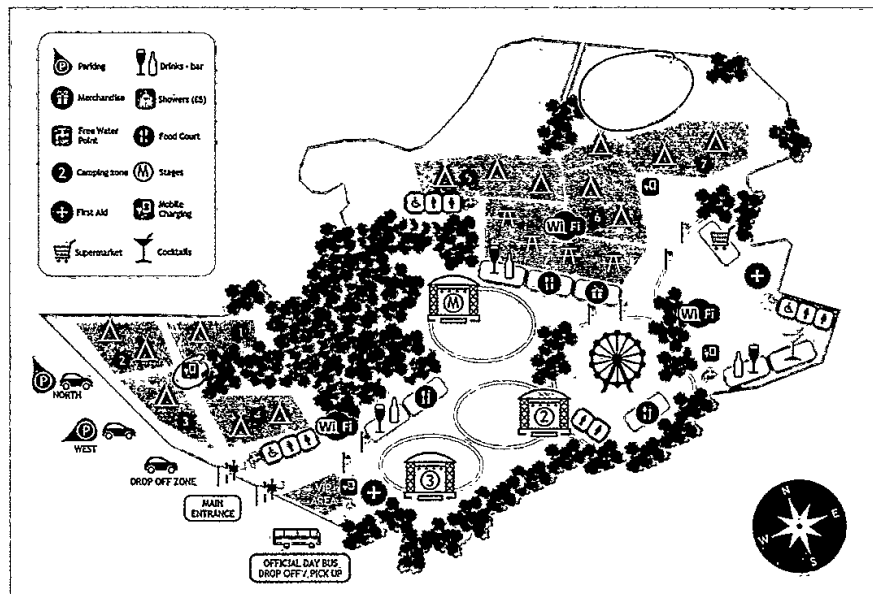
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PROPOSED PLAN



FINAL PLAN

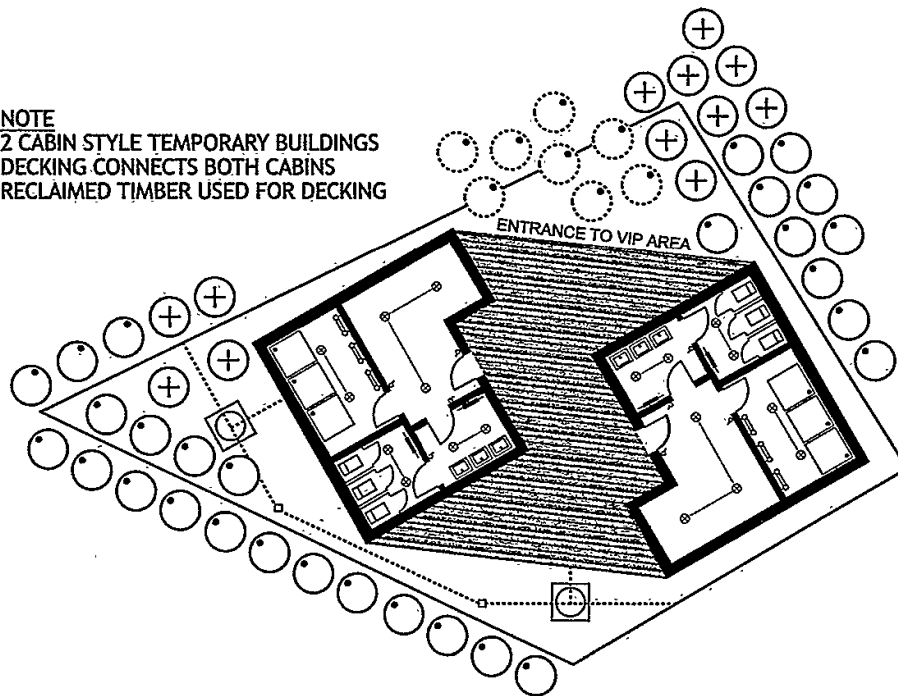


1. as the camping areas were on a steep hill
2. the new location has applications for users such as phone chargers, is closer to the car Parks & closer to the stages it also means there is not a lot of unused land also allows for more tents to be placed

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.

1

28

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

State a reason why this was necessary.

1

as it blocks the entrance

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

2

He has done this by trying to leave as many trees as possible which would create a more private area for the user

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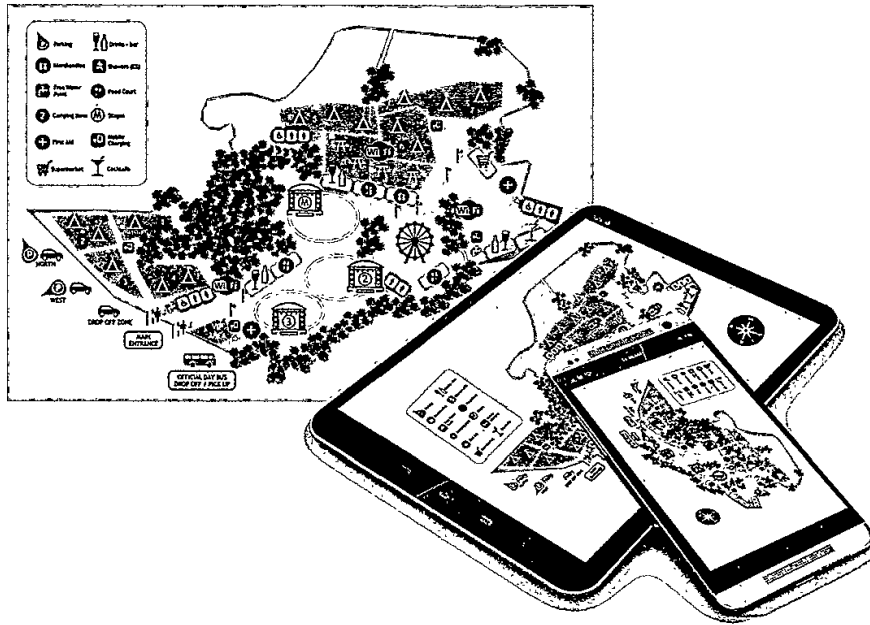
5. (continued)

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

2

• Size of the object / area

• Size of paper



(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

• the graphics need to be vector to allow them to be scaled to fit the users screen

• the graphics are visible & still clear to see on different devices

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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

as it would help spread the word of the event & people who watch the stream could then buy a ticket to go ~~there~~ to the next day of the festival as they like what they see.

[END OF QUESTION PAPER]