

Candidate 3 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

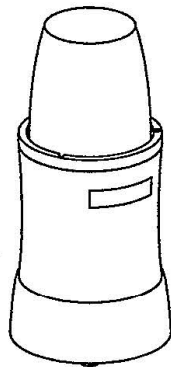


Figure 2



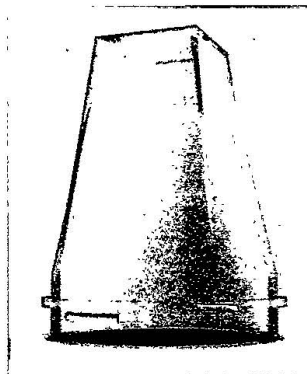
(a) Describe two illustration/3D rendering techniques applied to produce the realistic looking graphic shown in Figure 2.

2

• Materials

• Emboss

(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.

- Create a circle with a diameter of 113
- Create an additional circle at $\varnothing 105$ inside of original circle
- Extrude $\varnothing 113$ circle by 4 and $\varnothing 105$ by 10
- Create another circle on top of model by $\varnothing 47$



- Offset a plane and extrude it by 110mm
- Use loft tool to connect
- Sketch a square that is 50x50 all round on the plane



- loft together



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1. (b) (continued)

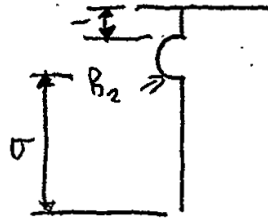
- (ii) You must use the additional information provided on the supplementary sheet for use with question 1 (b) (ii) to answer this question.

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.

5

- Sketch out a half circle with a radius of 52.5
- Create a Plane ~~at~~ on the side of the half circle
- Sketch another half circle on the plane by R_2

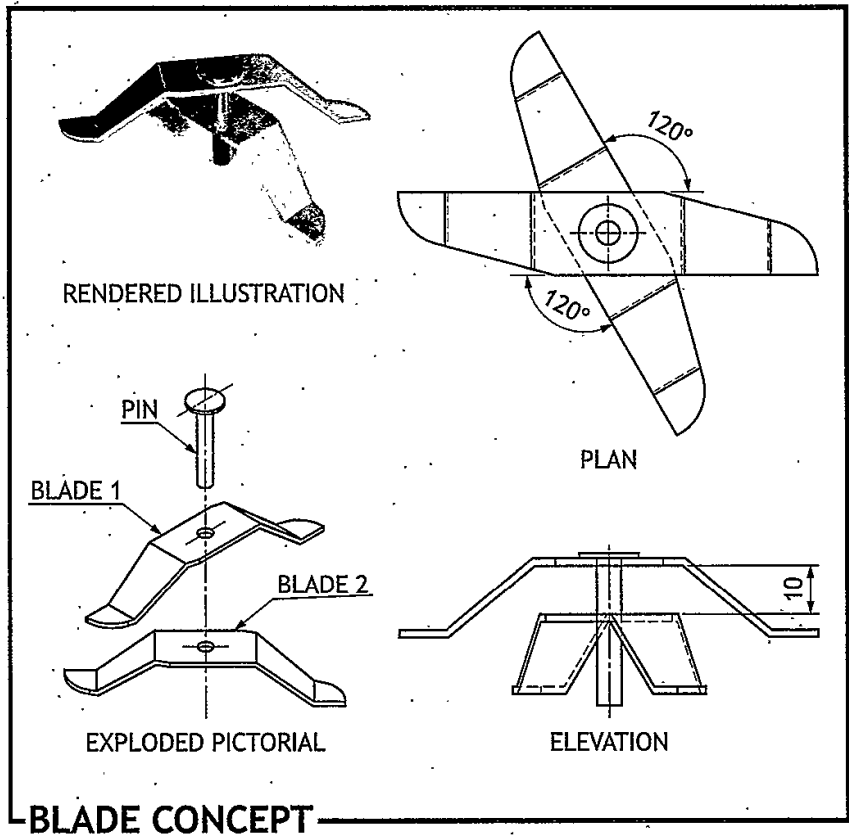


- Fully revolve profile.

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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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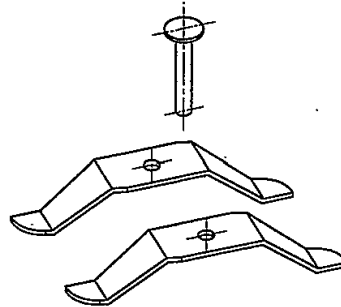
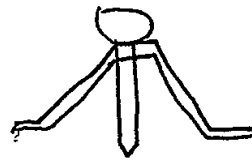


Figure 1

- Have the two blades ~~on top~~ of each other facing 120° angles opposite each other.
- Mate the pin to the top of the first blade.
- Then select the face of the blade and the bottom of the pin head and mate together

- ~~mate~~ move the second blade halfway up the pin stem.

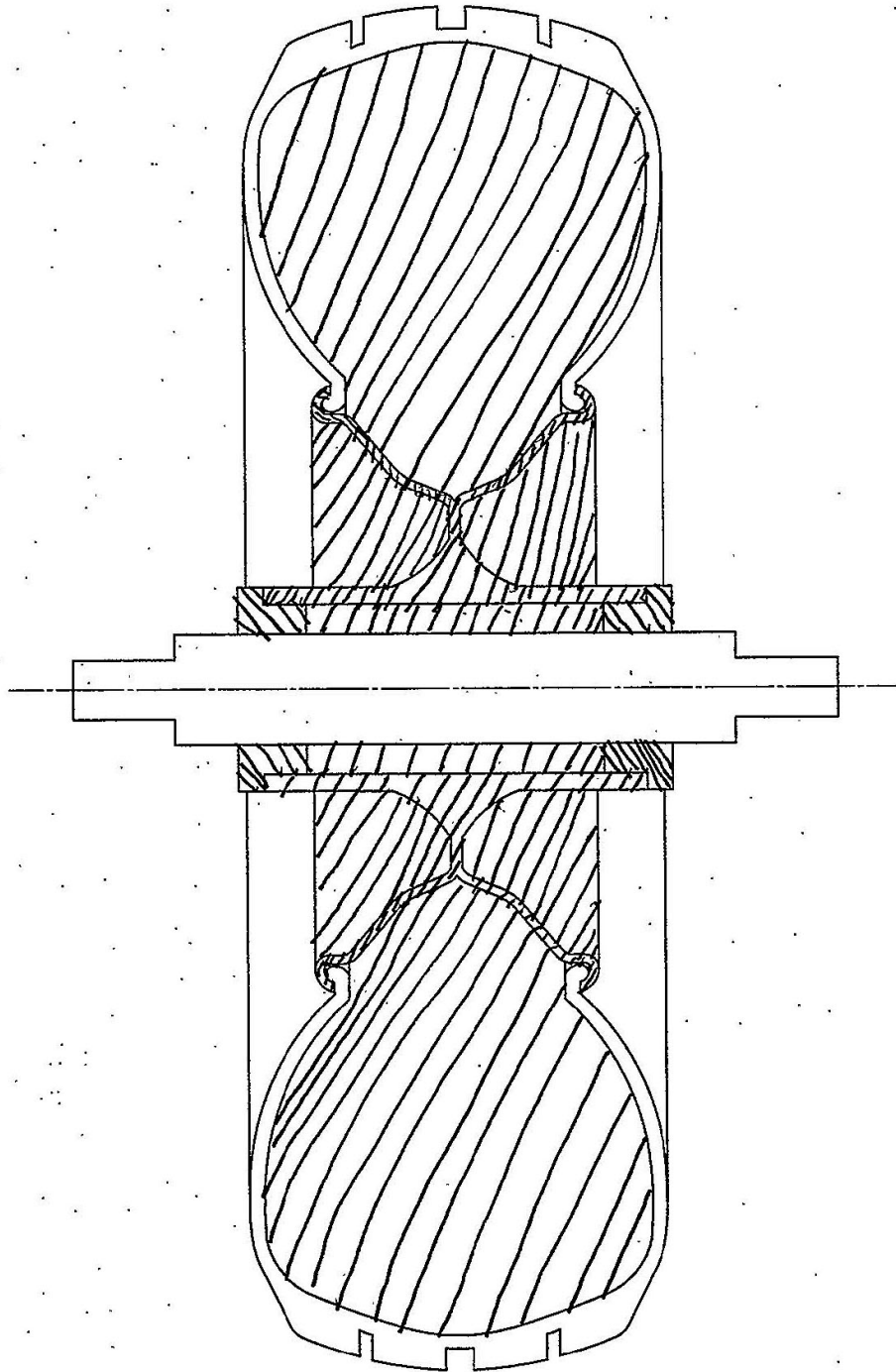


2. An incomplete enlarged sectional view of a wheel assembly is given below. Using the information provided on the supplementary sheet for use with question 2, complete the sectional view by adding appropriate hatching.

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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

• Logo will not lose any quality

• Vector graphic will not use as much space as raster

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

1

.Vga

- (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

• More Storage Space

• Saves Money from Printing Costs.

[Turn over

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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

• Has split off page in center to show a visual separation between the colored boxes

• Lines above and below text to draw attention to important information

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

• Title is in line with '002' and '001' at the bottom of each page.

• Flash bars are in line with date of concert.

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

• The graphic designer has created balance through use of similar text styles and colour throughout each graphic.

<p>3.6 (iv) The different font types create a visual contrast.</p>	
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3. (b) (continued)

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

2

green and white contrast with each other
on the second page

• Circle ~~top~~ in title creates a visual contrast
with the rectangles in the page

- (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

• Will be able to generate ideas from
on site and hear what client has to say.

• Better communication with client.

- (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

• Cost money to run bus timetables on the
screen all day.

• Older residents may not understand the screen
or may not be able to see it.

• Can be hacked

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ADDITIONAL SPACE FOR ANSWERS	
<p>3. c (ii)</p> <p>· May crash.</p>	

3. (continued)

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(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

• Background texture

• The texture of the circle with the Scottish flag inside creates a visual impact.

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

2

• Through use of shape such as the cut out triangle

• Through the use of images such as the camera.

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

2

• The title of the festival has been emphasised by making it the biggest thing on the page.

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

2

• Taken the green from the title and used it in the background

• Taken the font type from the title and used it in the body text.

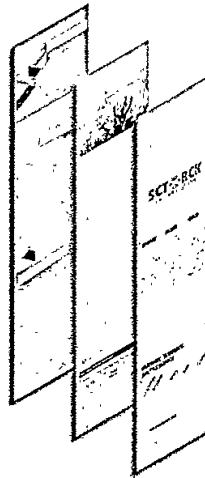
3. (d) (continued)

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

2

- Has separated off the two main bodies to create a grid structure.
- ~~the~~ all text is aligned in body.

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

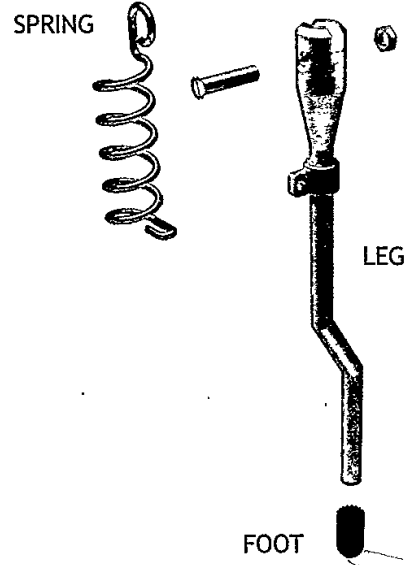
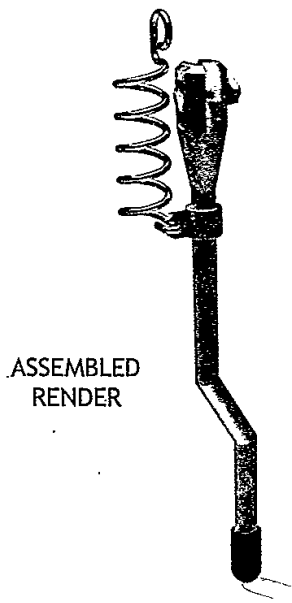
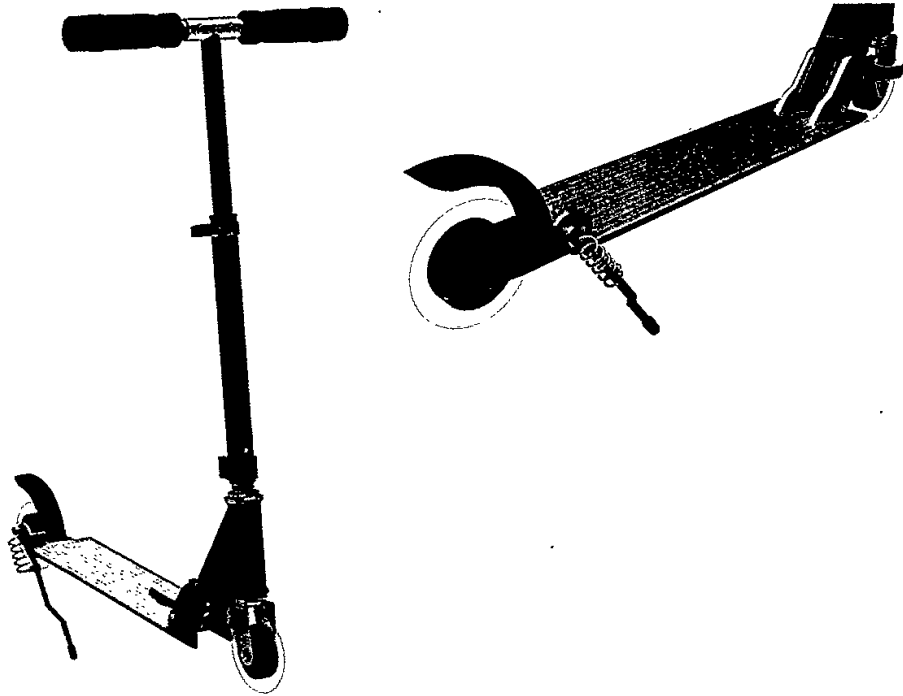
- Creates depth

- Does not clutter everything onto one layer so you can have a background.

[Turn over

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

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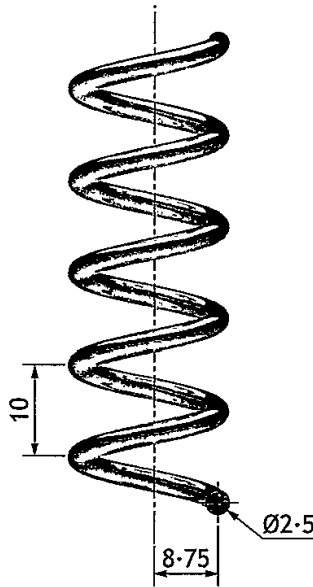


4. (continued)

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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



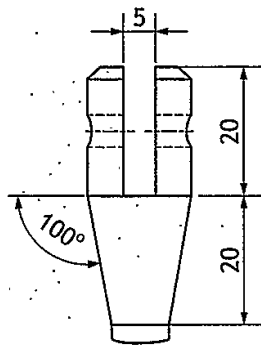
- Create a circle with a diameter of 2.5
- Use Helix tool
- Set the pitch to 10 and 8.75mm from Center axis

4. (continued)

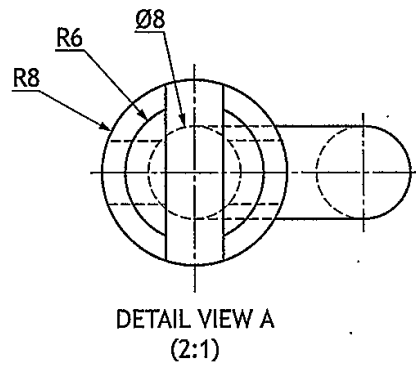
- (b) The leg was 3D CAD modelled as a single component.
 Describe the modelling techniques used to generate the component.
 You may use sketches to illustrate your answer.

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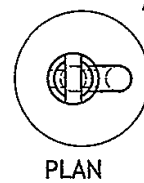
6



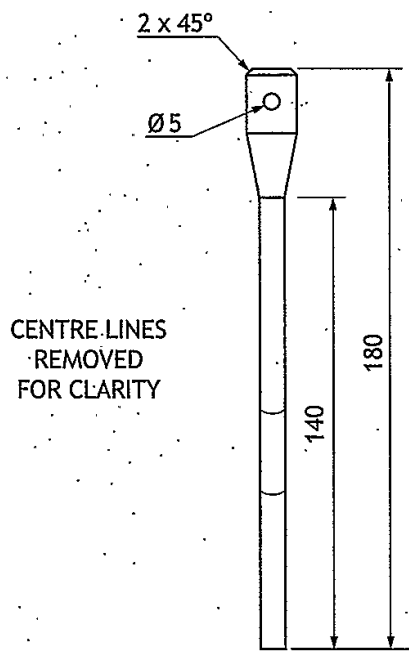
DETAIL VIEW B
 (1:1)



DETAIL VIEW A
 (2:1)

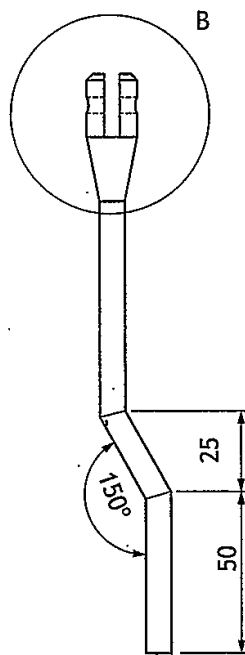


PLAN



END ELEVATION

CENTRE LINES
 REMOVED
 FOR CLARITY



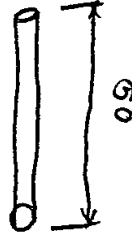
ELEVATION

SCALE 1:2

4. (b) (continued)

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- Create a circle with ~~Ø~~ 8
- Extrude by ~~50 mm~~ 50 mm



~~Off set a plane from top by 20 mm and create another circle on top with a diameter of 12~~

- Create another circle with the same diameter going at an angle by 25 mm
- Set angle to 15° from stem
- Extrude up a further 65 mm directly upwards



- Off set a plane from top by 20 mm and create another circle on top with a diameter of 12
- loft together
- Create 2 half circles on top with a 5 mm gap between them
- Extrude by 20 and chamfer by 2x45°
- create a plane on the side of the half circle and create a circle with Ø5 and ~~extrude~~ subtract through

4. (continued)

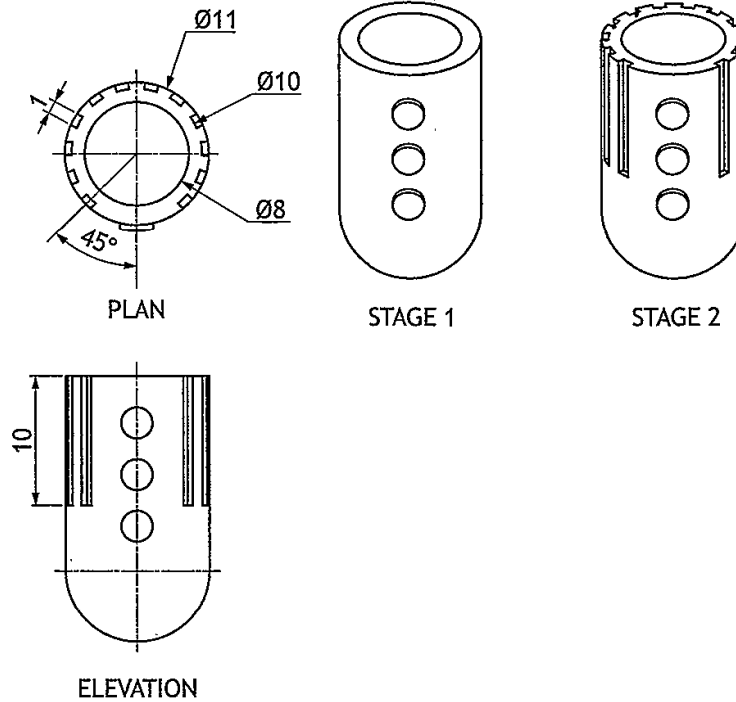
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(c) The foot was 3D CAD modelled using the revolve command.

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

You may use sketches to illustrate your answer.

3

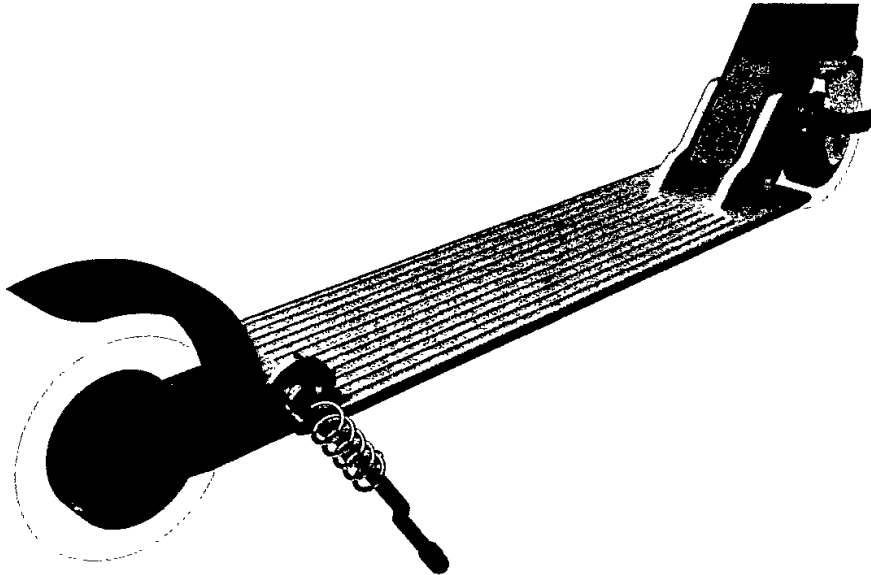


- Create indent that is 1mm a cross and subtract by 1mm
- Subtract downwards by 10mm
- Circular array 12 times

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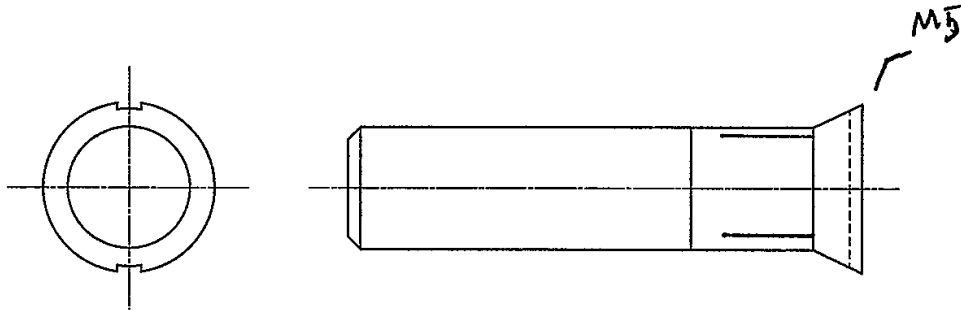
4. (continued)

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



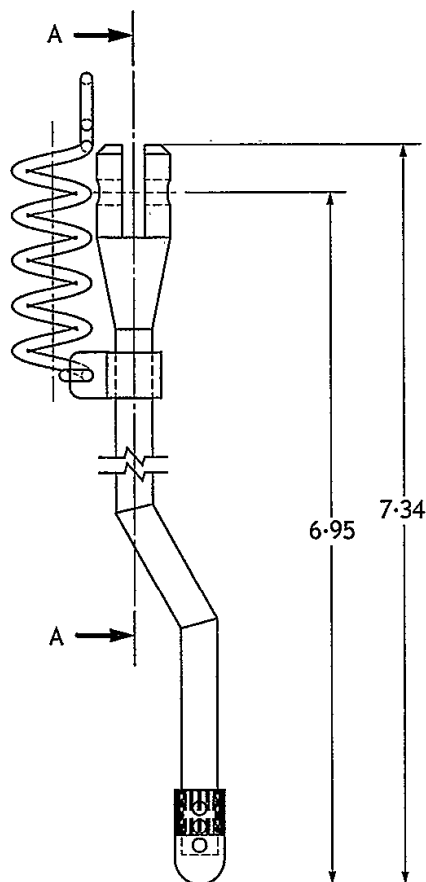
4. (continued)

- (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

- dimension not in right place
- No Sectional View provided
- 3rd angle Projection Symbol Wrong
- Dimensions are in inches instead of mm
- No center line needed for Helix.



ELEVATION

DESIGNED BY M. AUTHOR	SCALE 1:2	DATE MAY 2019
KICKSTAND ORTHOGRAPHIC		
ALL DIMENSIONS ARE IN INCHES		

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

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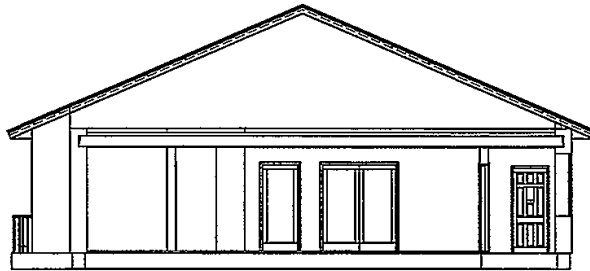


Figure 1

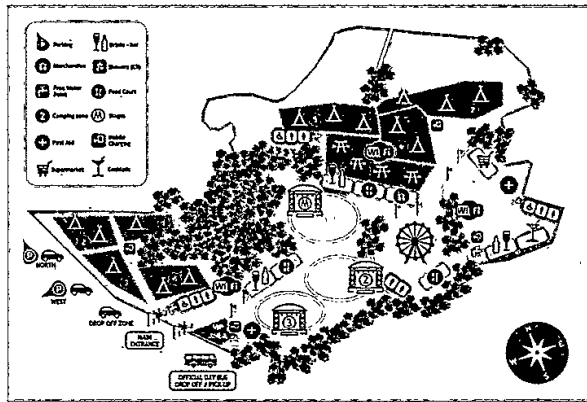


Figure 2

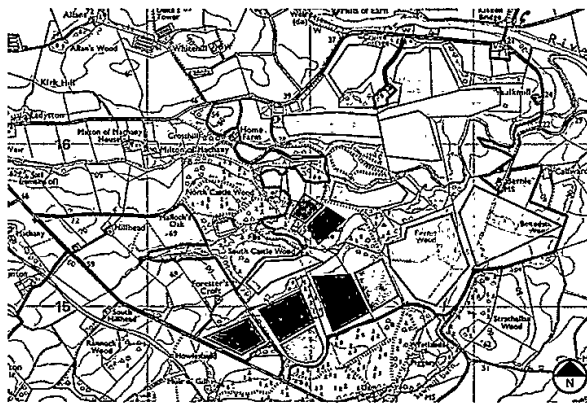


Figure 3

5. (continued)

- (a) Explain, with reference to preliminary, production and promotional graphics, the purpose of Figures 1, 2 and 3.

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Figure 1

Production - to show how to create/assemble a product or design, for example the food court

Figure 2

Promotion - Show clients what a product looks like or ~~what~~ advertises things, for example the layout of the music festival

Figure 3

Preliminary - Starter sketches for a product or company, for example rough idea of the outline of festival boundaries.

- (b) State three features which should be shown on a British Standards location plan.

3

- North
- 3rd angle Projection
- Roads

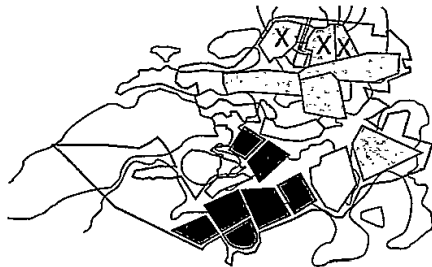
5. (continued)

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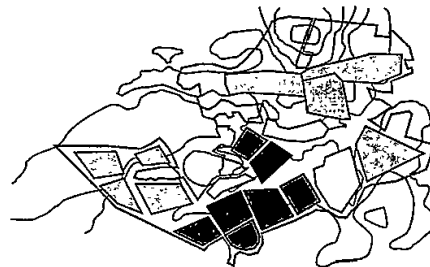
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(c) Changes, shown in the Proposed Plan and Final Plan, were made during the planning stage. With reference to the graphics below, identify two reasons the camping areas marked with an X have been relocated.

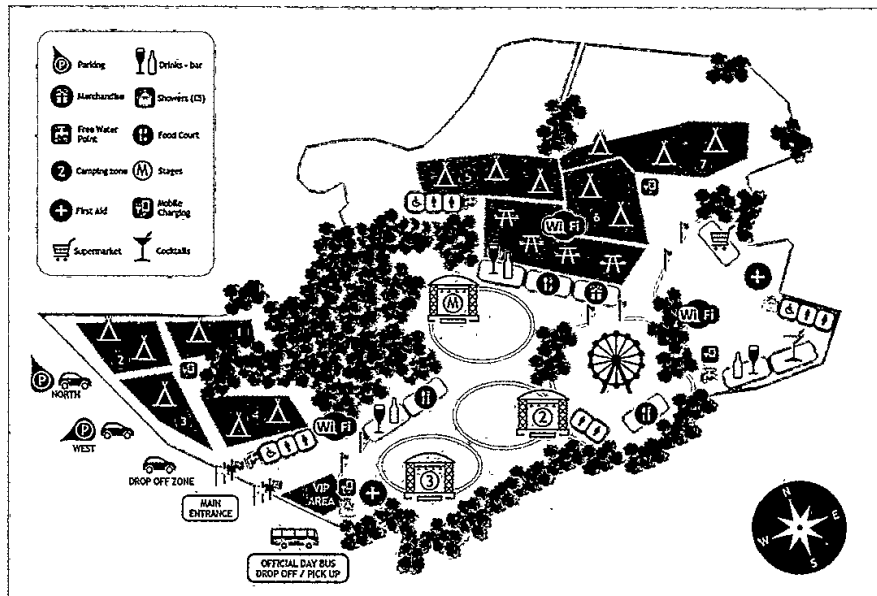
2



PROPOSED PLAN



FINAL PLAN



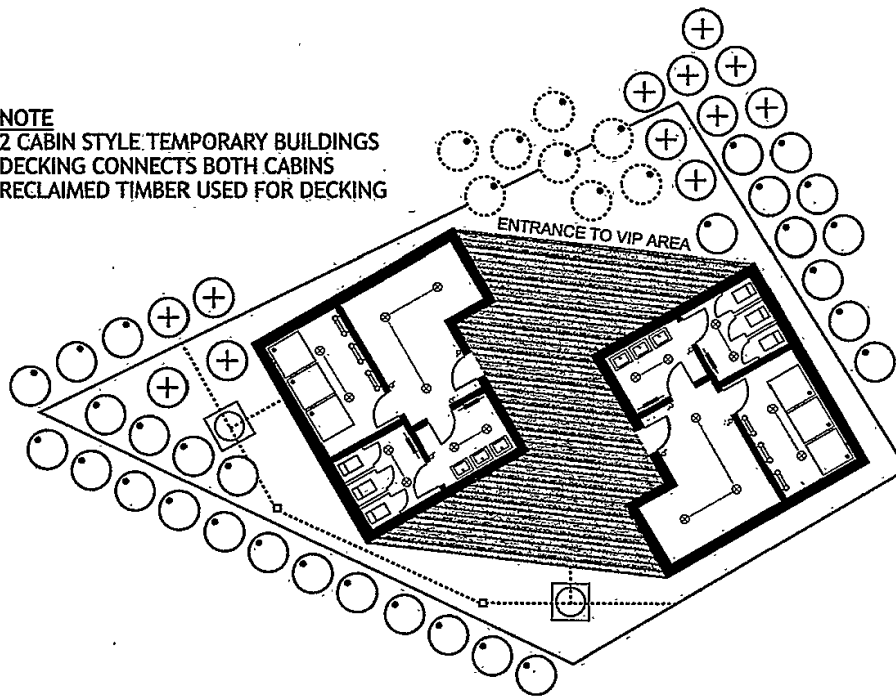
• So Camping Areas are evenly spread out

• So camping areas are closer to concert

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



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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

10

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

1

State a reason why this was necessary.

Because the trees are blocking the entrance to the VIP area.

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

2

Architect has used reclaimed timber as decking for cabins to keep the environment in mind.

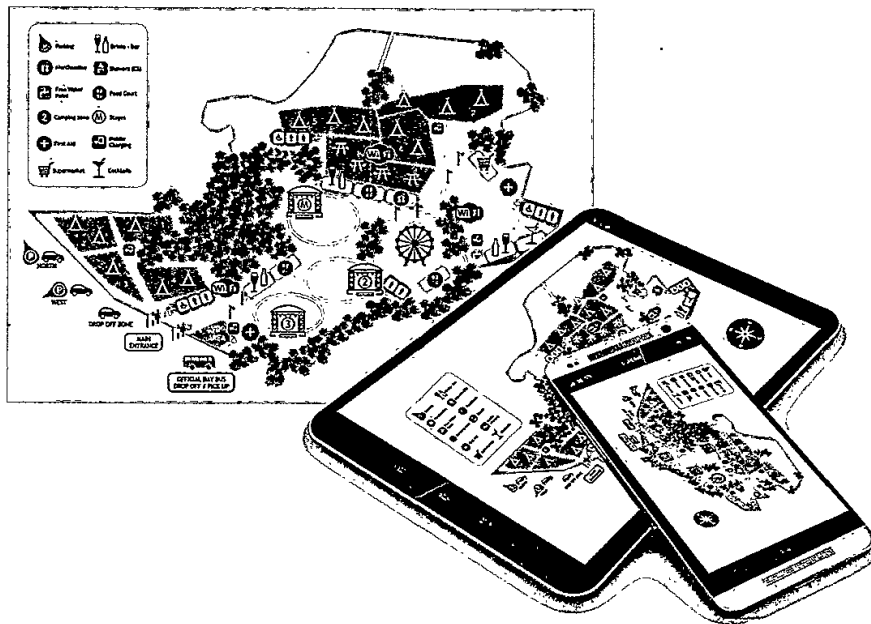
5. (continued)

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

2

- How big the house is
- Size of paper



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

2

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

- Can clearly be seen on small electronic devices
- Make the layout simple.

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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

Because festival goers may ~~click on~~ click on
one of the companies promoting the event. This is
basically free advertising for the company.

[END OF QUESTION PAPER]