

# Candidate 5 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

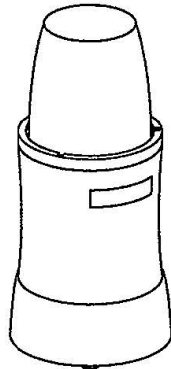
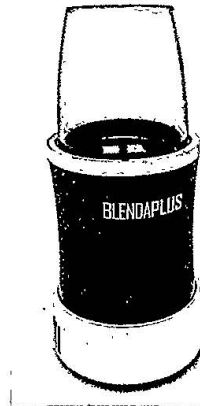


Figure 2

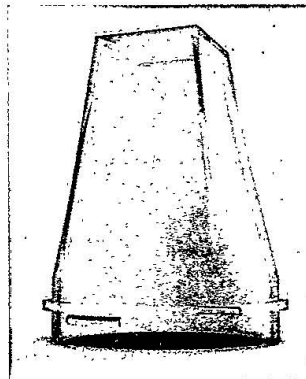


- (a) Describe two illustration/3D rendering techniques applied to produce the realistic looking graphic shown in Figure 2.

2

Realistic lighting styles have been used so that there are accurate looking shadows. In accurate representation of materials have also been used so that it looks realistic.

- (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

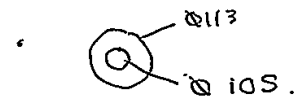
You may use sketches to support your answer.

- Create 2D sketch



- extrude Ø113 circle 4 mm.

- Create 2D sketch on circle surface.



- Extrude Ø105 circle 10 mm.

- Create work plane and offset from bottom of Ø105 circle 120 mm.

- Create 2D sketch of a □ 50.

- Use loft command to bring two cross sections together.

- Shell the model selecting the circle end with wall thickness 4.

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## 1. (b) (continued)

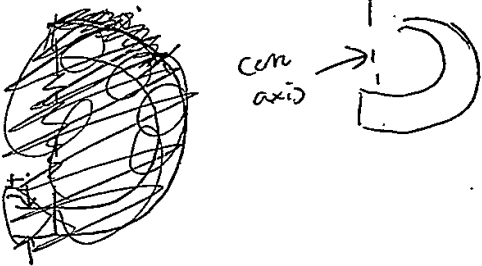
- (ii) You must use the additional information provided on the supplementary sheet for use with question 1 (b) (i) to answer this question.

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

- Create work plane and offset to distance.
- ~~create 2D sketch~~
- ~~draw circles~~
- ~~extrude 4 mm~~
- create 2D sketch

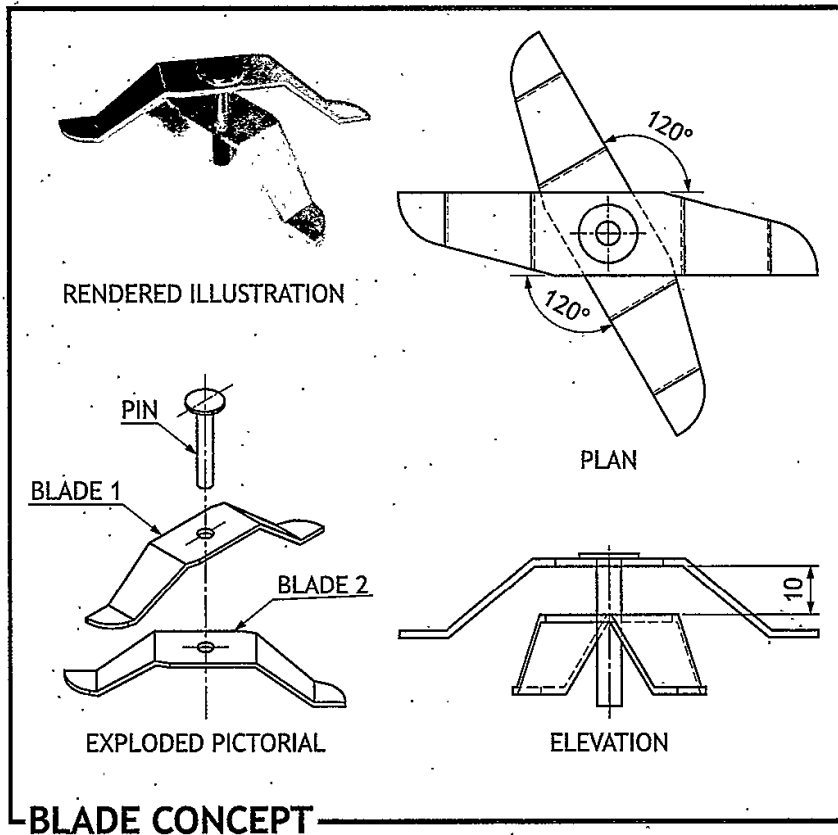


- select revolve command, selecting center axis

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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

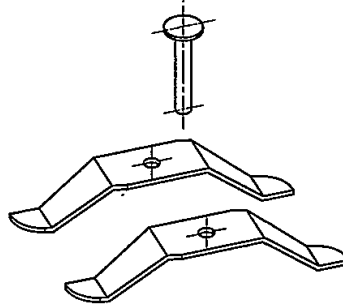


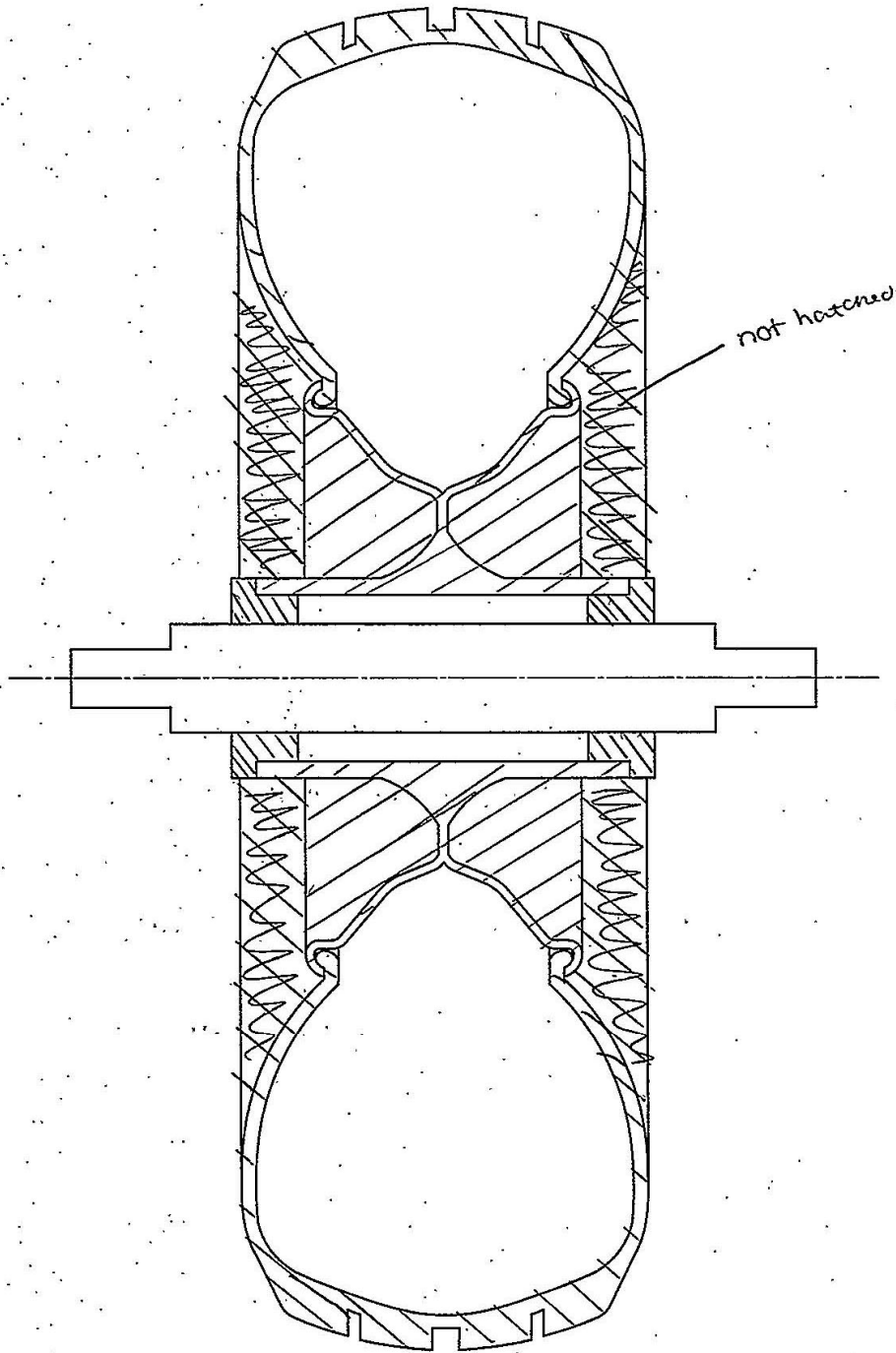
Figure 1

- offset
- ~~align~~ the two flat faces <sup>to 10mm</sup> so that circle holes are in line and then dimension 120° between flat blades.
  - Centre align the pin with the holes ~~using the top of the pin as a~~
  -

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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.

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 do not become pixelated  
when they are enlarged.  
The white part in the logo can be  
made transparent, and it can be easily  
made another colour.

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

1

svg

- (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

It will improve profit margins as  
there will not be a much paper used so it  
It makes editing and sharing documents  
easier as it can be done on a computer.  
won't need to be bought

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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 separate the two text boxes. It is white so creates unity with other elements. Line has also been used to separate different parts of text which helps in measurement.

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

The centre alignment of the main title and the bottom 'security zone' text creates a balance. The right alignment of the black text contrasts with other text and stands out.

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

Balance has been used in the graphic by using centre justified text in the text box. Balance is also created as the elements are all lined up together. Balance is also created as the text boxes appear symmetrical on the page.

## 3. (b) (continued)

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

2

The is contrast by using reverse text with green/dark background and white text.  
Contrast has also been created by using different fonts and font sizes in the graphic.

- (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

~~It will attract their eye and be obvious to a certain target market.~~

It shows a realistic view of how it will look with lighting and materials. The client can decide if changes can be made.

- (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

The adverts can be changed quickly, easily and cheaply. Moving images can be used to attract attention. It is ~~also~~ environmentally friendly and saves money of printing many copies. ~~It is also easy to~~

## 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

Text-ure has been used to contrast with the other elements. Texture has been added in the background by using a metal looking substance.

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

2

Depth has been created by placing elements on top of each other.

Drop shadows has also been used behind the text boxes which <sup>makes them appear like they are coming off the page</sup> creating depth.

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

2

Emphasis has been ~~used~~ placed on the coloured ~~at~~ text boxes and they create visual interest and are larger than other elements. Emphasis is also created by the image as it attracts attention and convey subject of publication.

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

2

Unity has been created by repeating colours within the publication which brings elements together. The repetition of shape within the publication also creates unity as it suggests that the parts of the publication are related.

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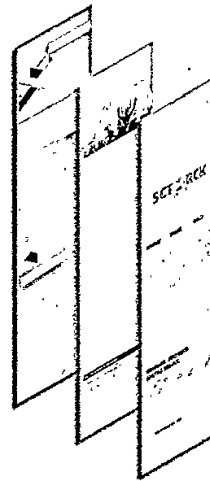
## 3. (d) (continued)

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

2

Grid structure has been used to place the text into so that it is clear and easy to read. Grid structure also gives the publication an order and it appears organised.

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

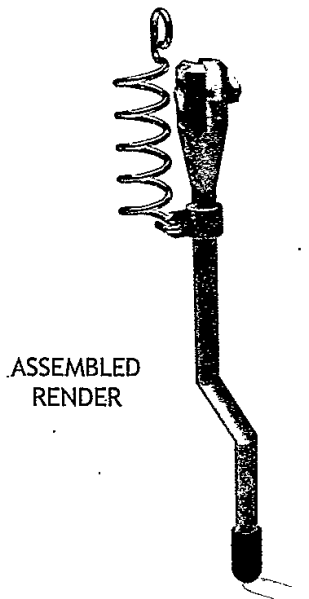
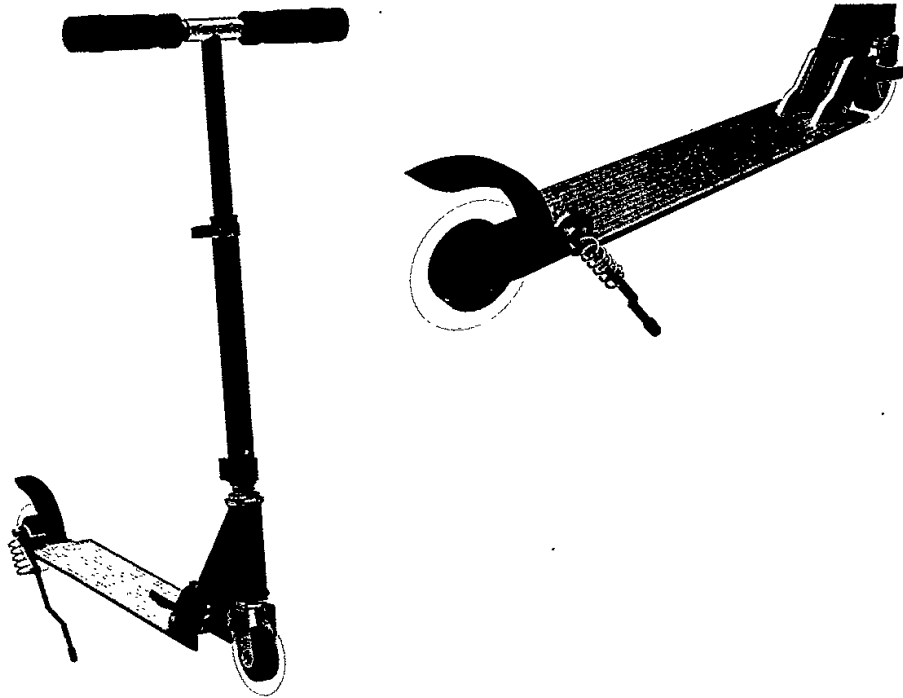
Layers ~~add~~ have different elements on each layer this allows them to be switched on and off so they can be viewed together or separately. The layers can also be moved forward and backward so that the best effect can be chosen and seen.

\* this makes editing easier and quicker.

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

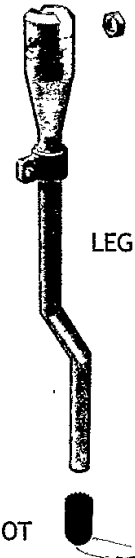
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SPRING



LEG



EXPLODED  
RENDER

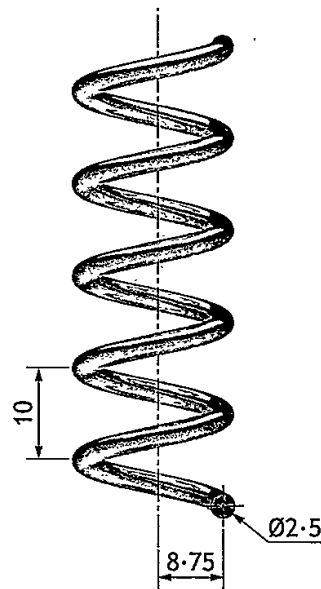
FOOT

## 4. (continued)

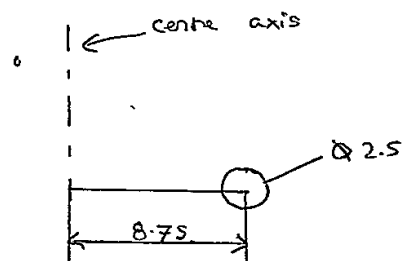
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- (a) The spring was modelled as a separate component using 3D CAD.  
Describe the 3D CAD modelling technique used to model the spring.  
You must make reference to the dimensions given.  
You may use sketches to illustrate your answer.

3



• Create 2D sketch



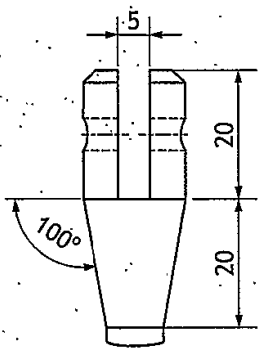
• Select helix command and choose a  
pitch of 10 and 5 ~~revolutions~~  
revolutions

4. (continued)

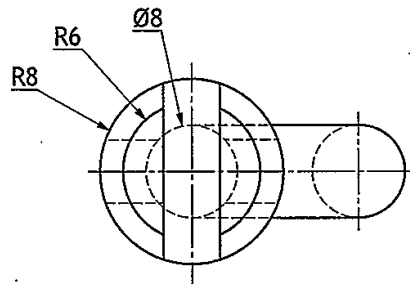
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- (b) The leg was 3D CAD modelled as a single component.  
Describe the modelling techniques used to generate the component.  
You may use sketches to illustrate your answer.

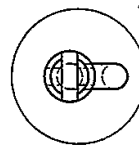
6



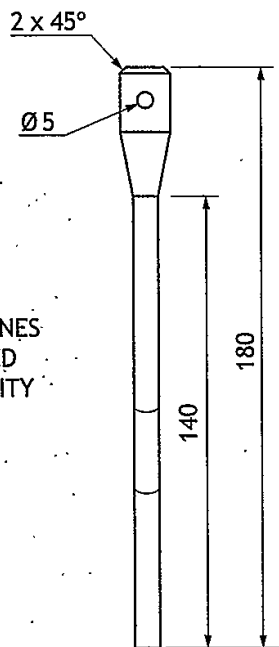
DETAIL VIEW B  
(1:1)



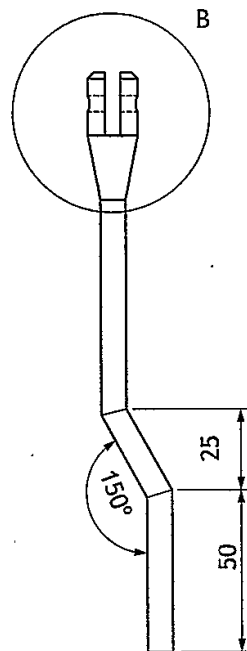
DETAIL VIEW A  
(2:1)



PLAN



END ELEVATION



ELEVATION

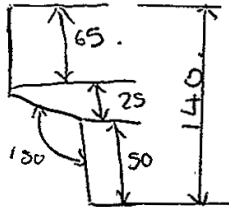
SCALE 1:2

CENTRE LINES  
REMOVED  
FOR CLARITY

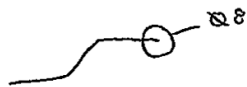
4. (b) (continued)

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• Create 2D sketch



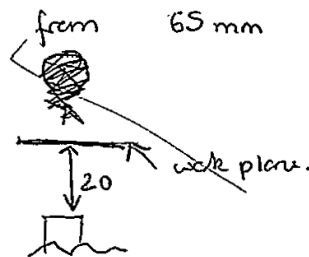
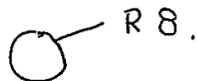
• Create work plane. offset to end of sketched line. Create 2D sketch. c



• Select Sweep along a path command selecting Ø8 profile and path.

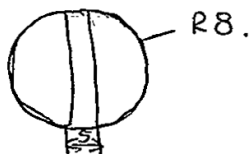
• create work plane 20 mm from 65 mm straight.

• create 2D sketch



• Select lof command and connect R8 circle and Ø8 circle at 100°.

• create 2D sketch on R8 circle



• Extrude two half circles 20mm.

• Fillet outside edges ~~with~~ 2

• hole the outside edge Ø5.



4. (continued)

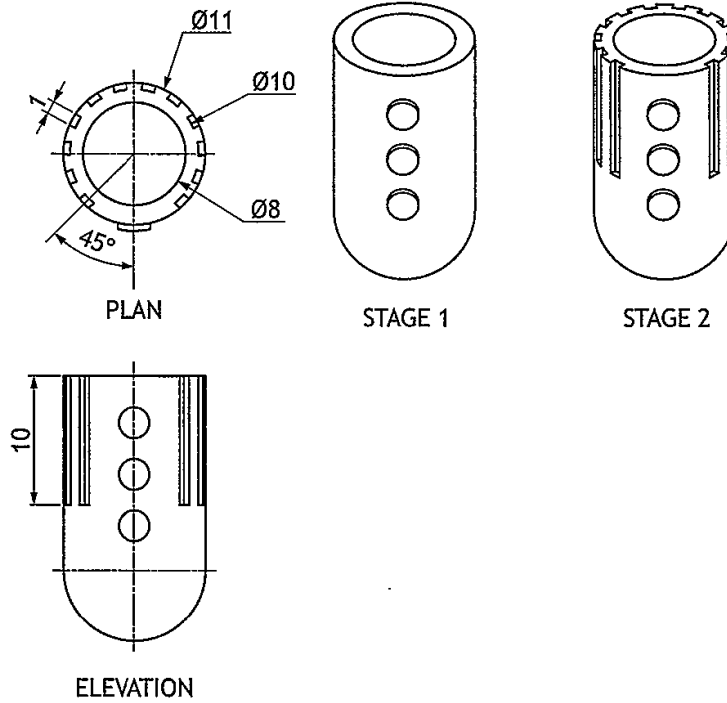
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(c) The foot was 3D CAD modelled using the revolve command.

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 work plane on top face.
- Create 2D sketch.

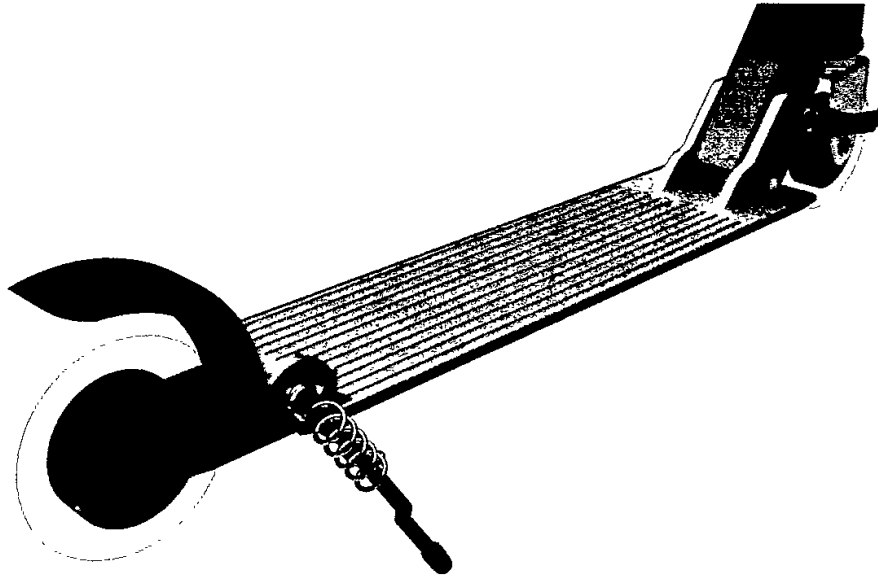
The sketch shows two concentric circles with diameters  $\varnothing 11$  and  $\varnothing 10$ . A square is drawn between them. A second, hatched square is shown being subtracted from the outer circle. The final sketch shows the square between the circles.

- Sketch  $\square$  1m between  $\varnothing 10 + \varnothing 11$  circles
- Extrude Subtract each square 10mm.

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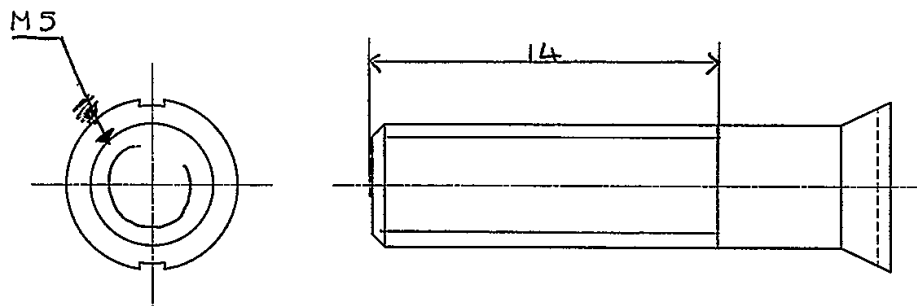
**4. (continued)**

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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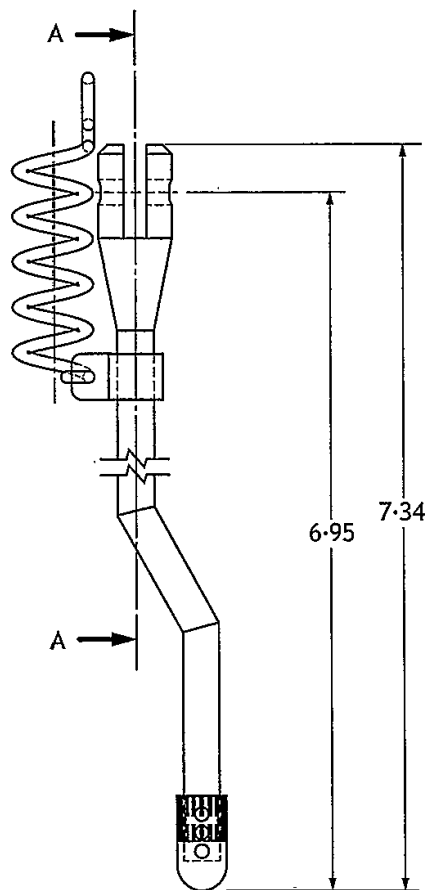
4. (continued)

- (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

It is not drawn in third angle projection.  
 The dimensions are in inches.  
 The dimensioning has been done incorrectly  
 These are missing curve lines



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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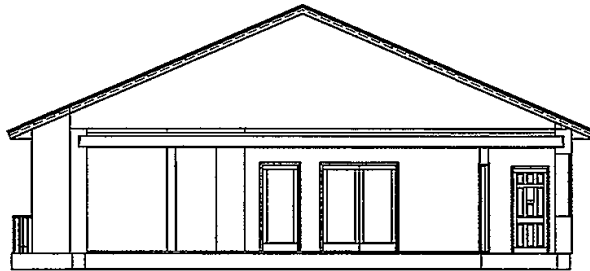


Figure 1

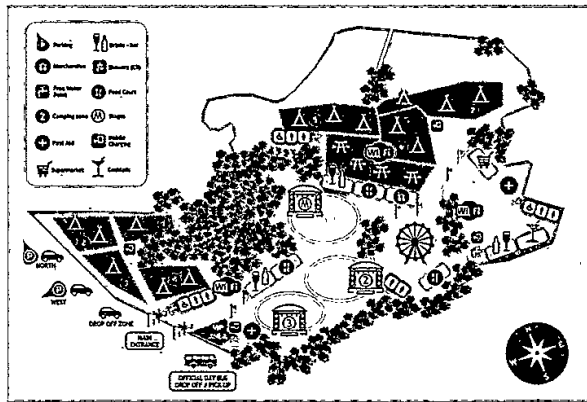


Figure 2

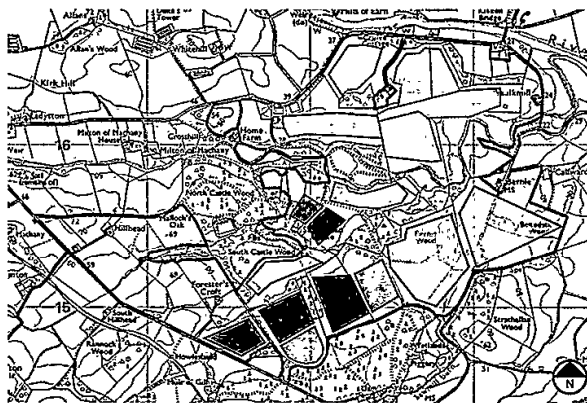


Figure 3

## 5. (continued)

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

3

## Figure 1

~~Figure 1~~ The production graphics, shows how the building is going to be assembled. It can be useful for construction of building.

## Figure 2

~~Figure 2~~ It is promotional, it shows clients where each area is and is an accurate representation of how it looks. It advertises the area in an eye catching way.

## Figure 3

Figure 3 is preliminary, it shows the original idea of what each area will contain ~~and~~ and can be easily edited.

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

3

The scale  
contour lines  
~~names of streets~~ north symbol.  
names of <sup>surrounding</sup> ~~city~~ streets.

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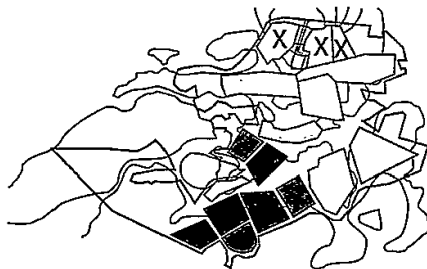
5. (continued)

MARKS

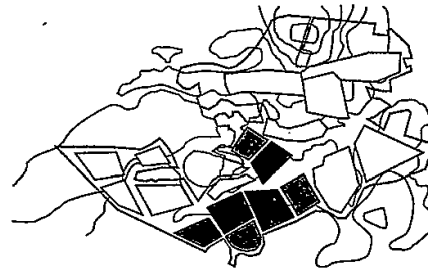
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(c) Changes, shown in the Proposed Plan and Final Plan, were made during the planning stage. With reference to the graphics below, identify two reasons the camping areas marked with an X have been relocated.

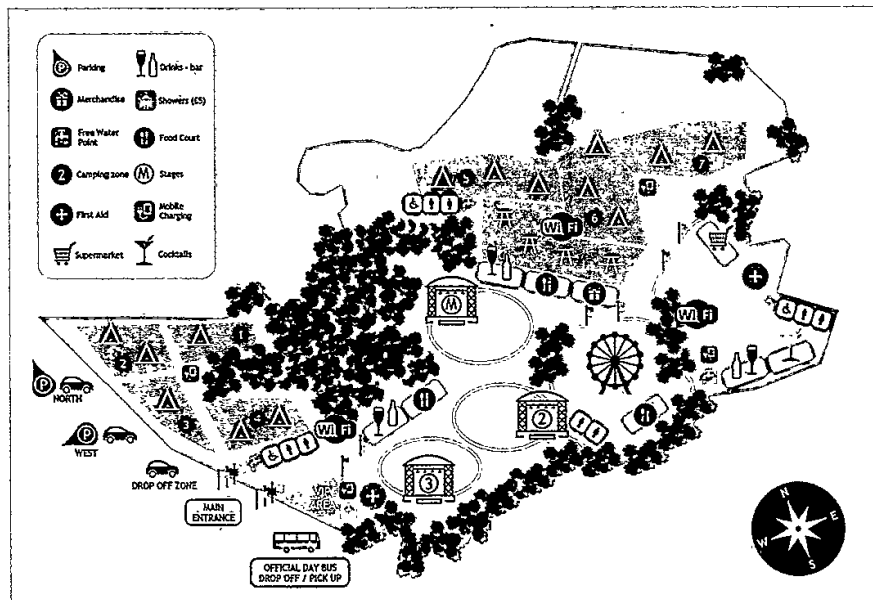
2



PROPOSED PLAN



FINAL PLAN



The contours were close together so  
~~it~~ it was not a flat area of land <sup>so tents could not be set up</sup>  
 They are put on flatter ground and it  
 gives more space to other campers/other  
~~have their own facilities~~ and have easier  
 access to facilities

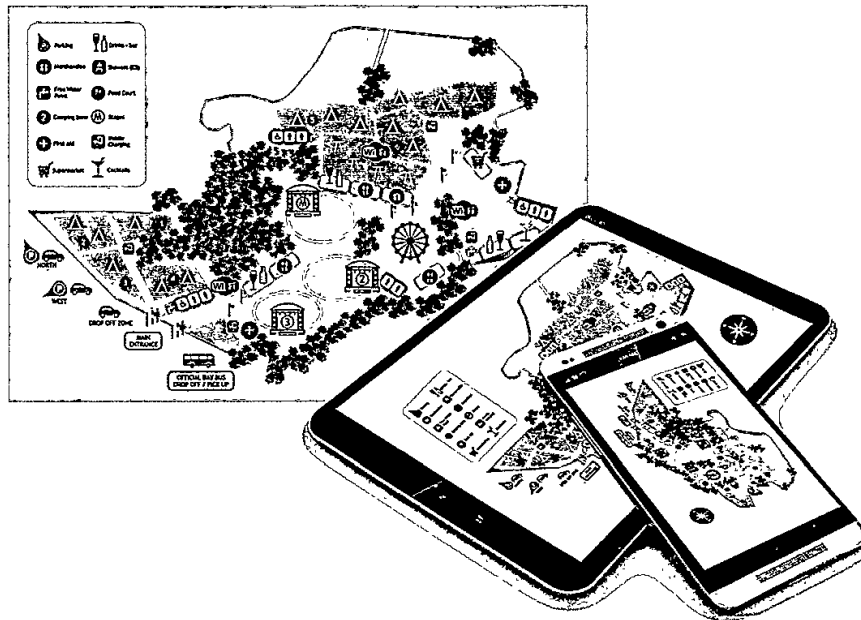


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5. (continued)

(g) State two factors that influence the choice of scale in a floorplan. 2

The size of the paper  
The amount of detail needed.



(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

~~That the site plan is suitable for all electronic devices.~~  
So electronic devices can be used.

What types of files each device is able to download. That it is clear to see on each size / type of device.

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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

It will attract attention to their event.  
Because people will be able to see what  
event is like they may decide to go in the  
future so it increases the amount of  
people interested so profits may increase

[END OF QUESTION PAPER]