

Candidate 2 evidence

Total marks — 90
Attempt ALL questions

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

Figure 1

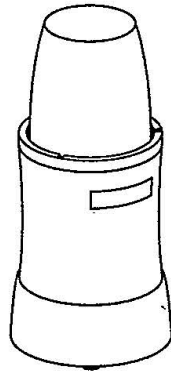


Figure 2

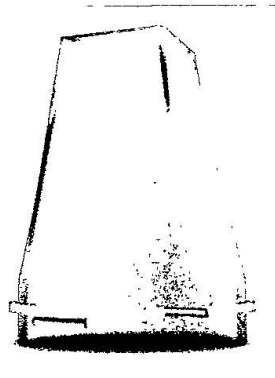


(a) Describe two illustration/3D rendering techniques applied to produce the realistic looking graphic shown in Figure 2.

2

Ground shadow.
label for logo.

(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)

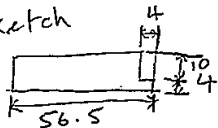
- (i) You must use the additional information provided on the supplementary sheet for use with question 1 (b) (i) to answer this question.

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 this sketch



② Revolve this sketch

③ Create offset plane 10mm away from top face of profile

④ Sketch a square 50mm by 50mm.

⑤ Use loft tool to loft top face of profile and square sketch.

⑥ Shell the whole profile ^{by 4}mm and remove the bottom face.

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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.

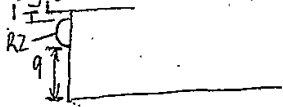
The CAD technician adds additional features to allow the lid to lock into position, shown in red in Stage 2.

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

5

① Extrude bottom face by 14mm.

② create this sketch



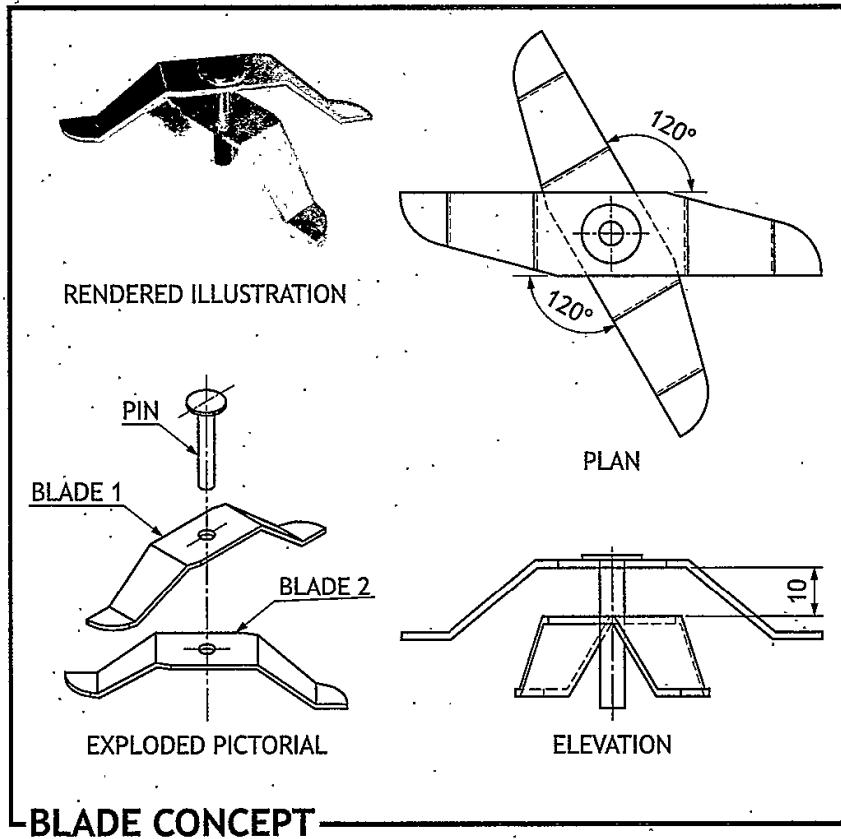
③ Use revolve tool and revolve R2 semi-circle 30° around centre axis of profile

④ Repeat steps to create second semi-circle.

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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

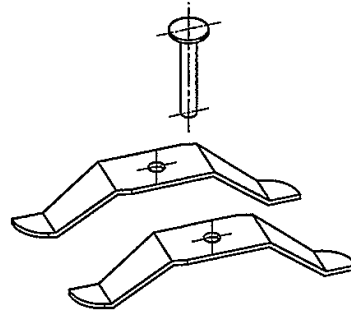


Figure 1

① Use constraint tool and use mate to constrain the centre axis of the pin ~~to~~ to the holes in the two blades

② Mate top of one blade to the bottom of the top of the pin

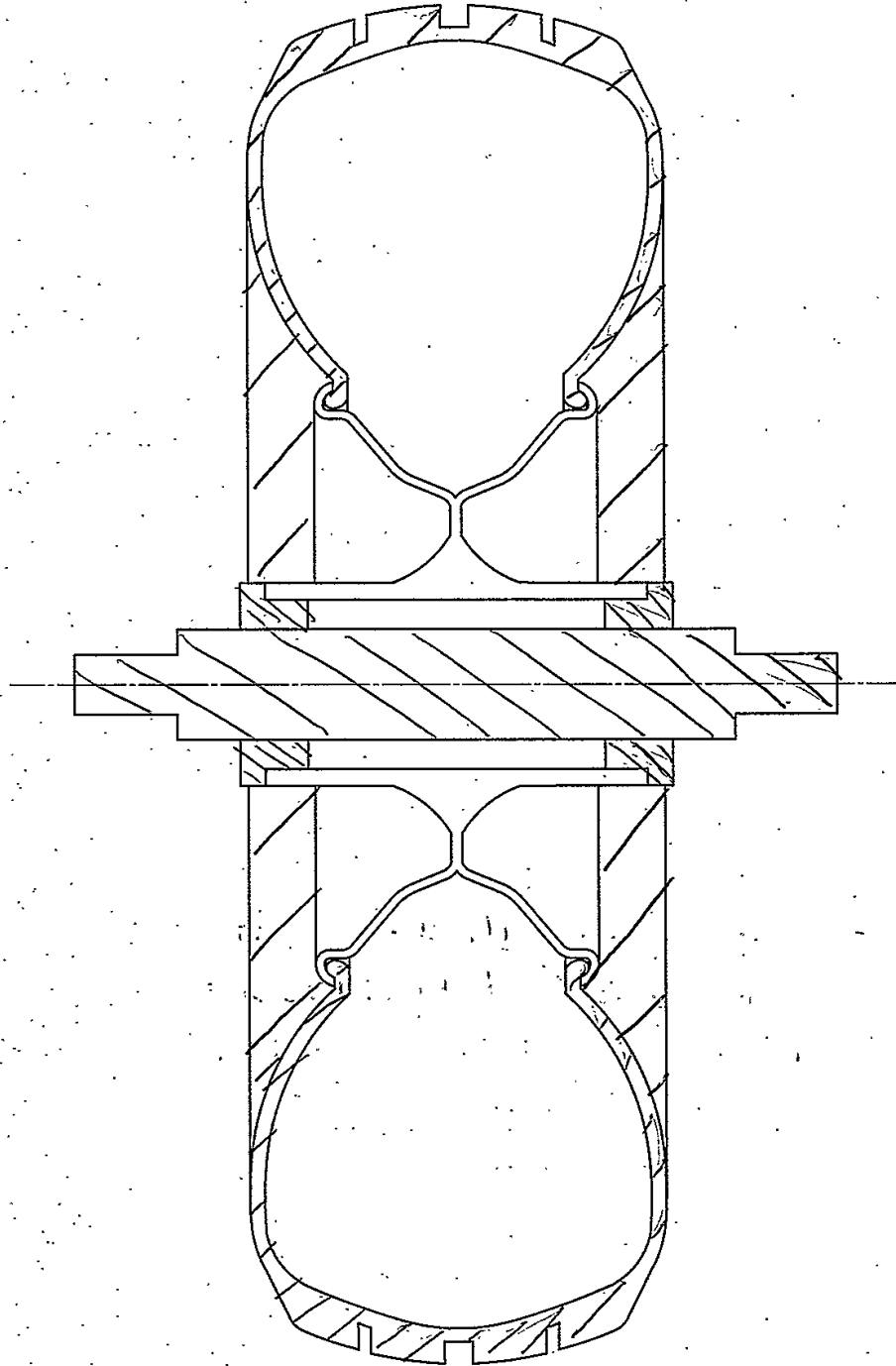
③ Redo this for 2nd blade then offset it down by 10mm.

④ Rotate blades so they are 120° from ~~each~~ each other.

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

SCTORCK
SCOTLAND ROCKS

Version 2

SCTORCK
SCOTLAND ROCKS

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

vector image files can be scaled
up and wont lose quality.

Colour can be changed easily with a
~~raster~~ vector file using most packages

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

~~png~~ PNG

- (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.

Makes collaboration within a company easier
with everything being online.

People can easily work at home.

~~Reduces~~ any cost for printing
Eliminates

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2

1

2

[Turn over

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 white line has been used offset from the middle which separates "PRESS" from the text to its right. Several lines have been used to separate the words on the right of the graphic

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

2

The text on the right of the graphics has been centrally aligned.
Text at the top and bottom of the graphics have been centrally aligned

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

2

There is equal text on both sides left and right sides of graphic which helps create balance. There is an equal amount of white and black or white and green on each layout which creates balance.

3. (b) (continued)

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

2

The designer has used both serif and sans-serif fonts which creates contrast.

Both the black layout and green layout creates contrast with the white background.

- (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 shows the design in its proposed location.

Environment can have lighting effects which make it look ~~more~~ more realistic.

- (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

Cancellations/mistakes can be updated easily.

Saves having to print them out and stick them on.

3. (continued)

MARKS

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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

A metal texture has been used which creates contrast from the flat colours

Black text on white background creates contrast and makes it easy to read.

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

2

Flash bars used in layout help create depth and make the layout look more 3D.

Drop shadows on flash bars create more depth within layout.

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

2

Emphasis has been created with title "SCTORIK" as it is the largest text on the page.

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

2

Using same 2 types of blue colour throughout layout creates unity and links all elements of page together. All text on layout is sans serif which creates unity and links all texts.

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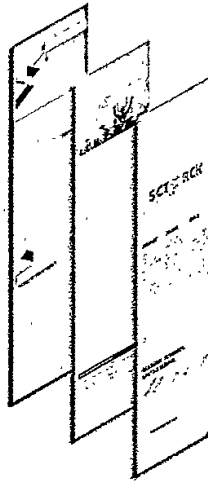
3. (d) (continued)

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

2

Grid structure is used describing the different packages which helps it look neat and easy to follow. Grid used for bus timetable creates order and makes it easy to read

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.

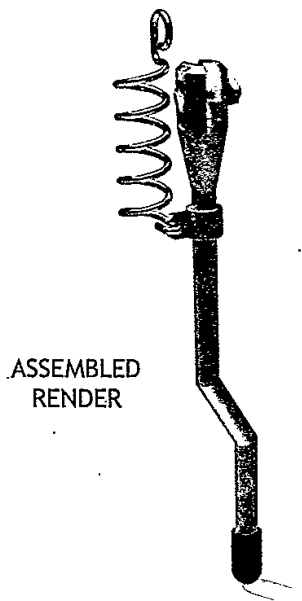
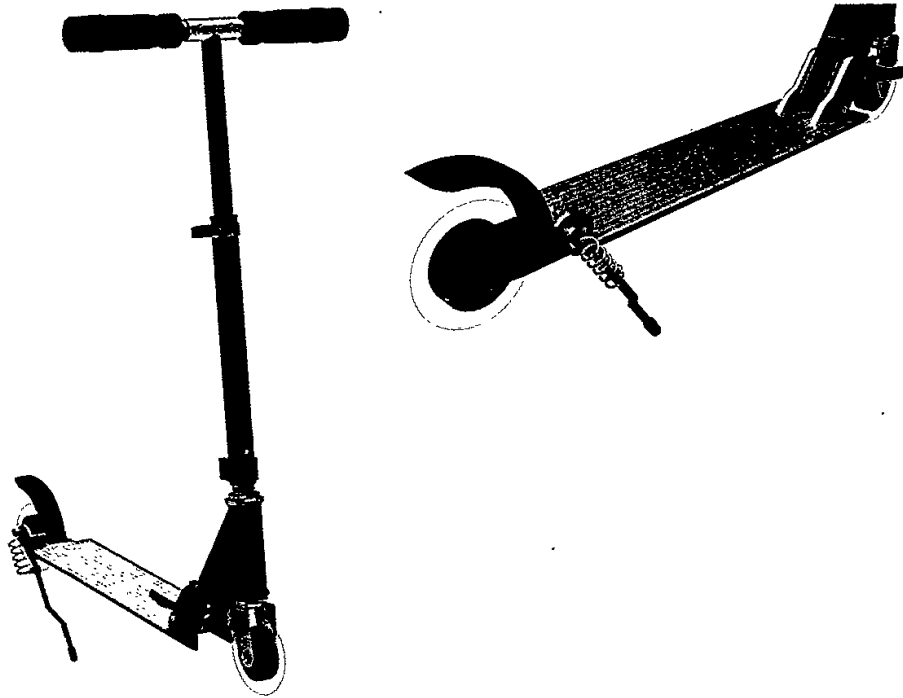
2

layers can be turned on or off to make changes easier.

[Turn over

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

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ASSEMBLED
RENDER

SPRING



LEG

FOOT

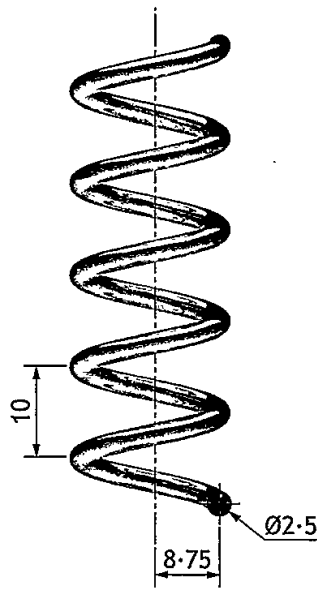
EXPLODED
RENDER

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



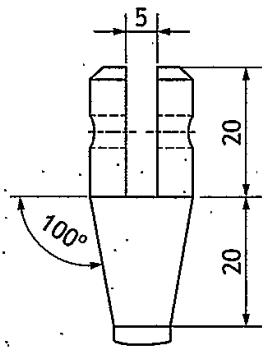
- ① sketch circle
 $\text{Ø}2.5$
- ② use helix
tool.

4. (continued)

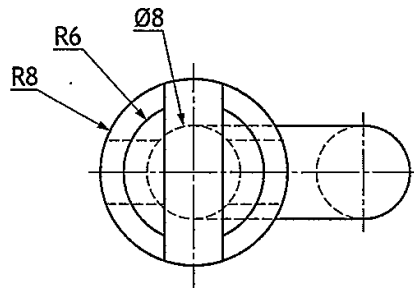
- (b) The leg was 3D CAD modelled as a single component.
 Describe the modelling techniques used to generate the component.
 You may use sketches to illustrate your answer.

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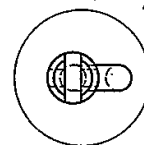
6



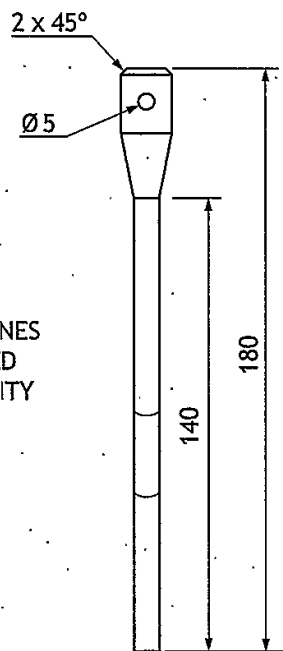
DETAIL VIEW B
 (1:1)



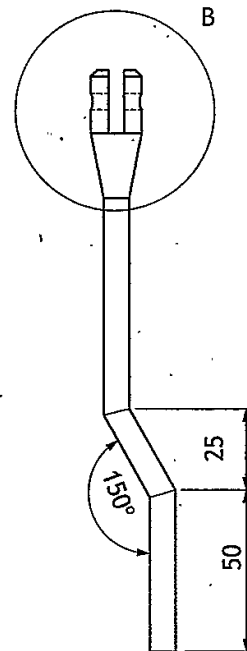
DETAIL VIEW A
 (2:1)



PLAN



END ELEVATION



ELEVATION

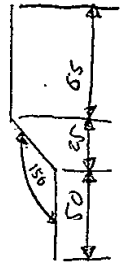
CENTRE LINES
 REMOVED
 FOR CLARITY

SCALE 1:2

4. (b) (continued)

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① Create this sketch



② Create work plane on one end of sketch and sketch circle $\phi 8$

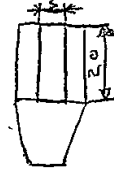
③ Use sweep tool and sweep circle using sketched line as guide rail.

④ Create offset plane 2mm away from top face and sketch circle $\phi 16$

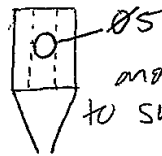
⑤ Loft top face of profile and circle sketch.

⑥ Use offset plane 2mm away from top face and sketch circle $\phi 16$

⑦ Create this rectangle sketch and extrude to subtract.



⑧ Create this sketch and extrude to subtract.



⑨ Chamfer top edges of profile by 2mm.

4. (continued)

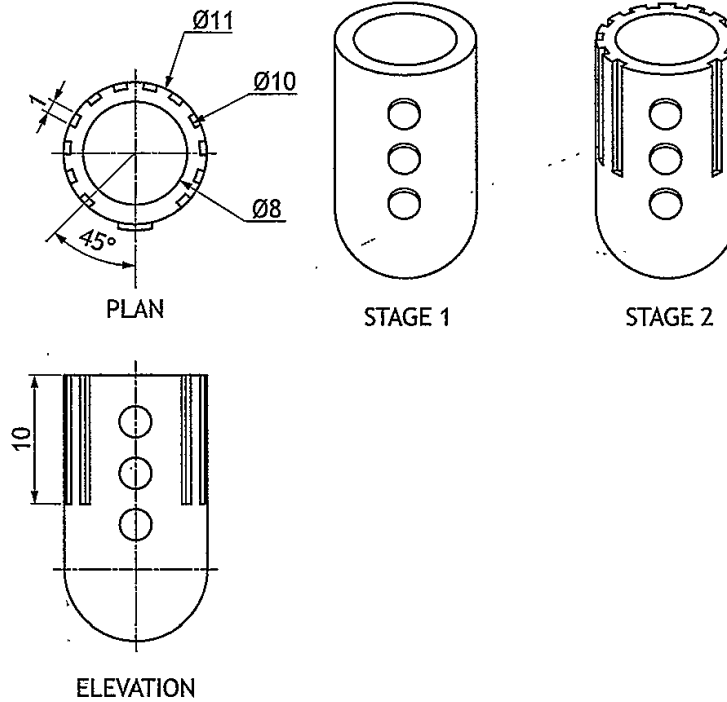
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(c) The foot was 3D CAD modelled using the revolve command.

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

You may use sketches to illustrate your answer.

3

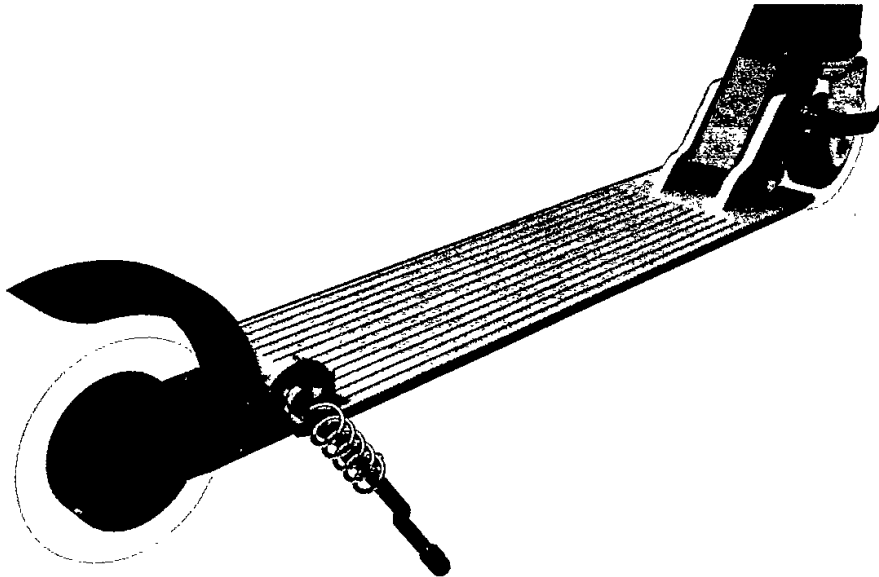


Use radial array tool
to repeat groove 12 times
only 270° around the
centre axis.

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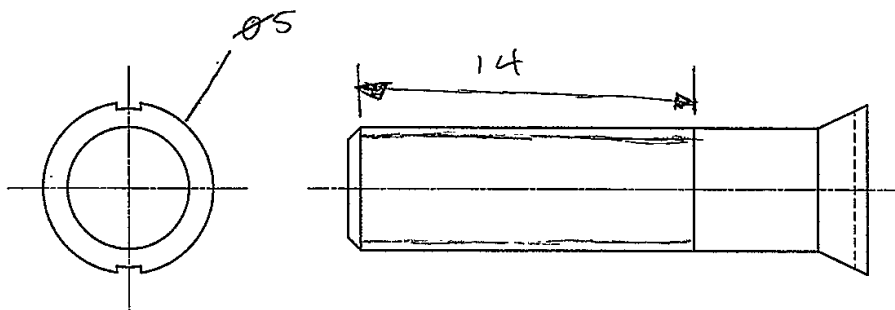
4. (continued)

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.

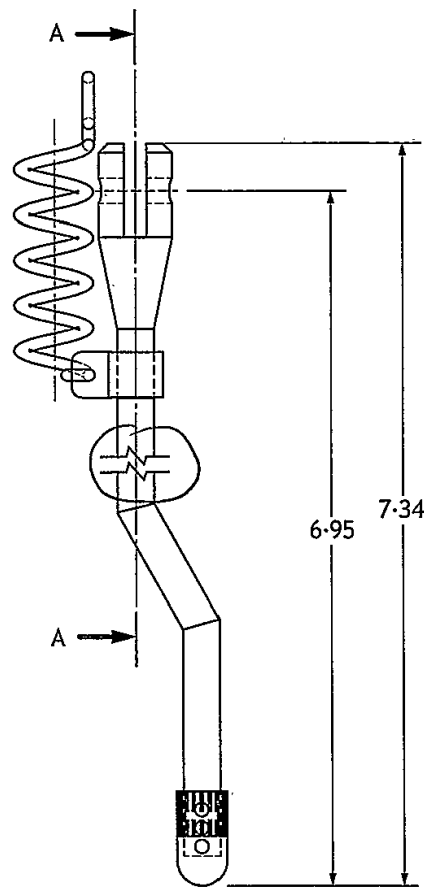
Identify from the drawing, five errors which are not correct to British Standard conventions.

5

Dimensions should be in mm, not inches.

Only one part should be shown.

Centre lines should be shown all along centre of leg.



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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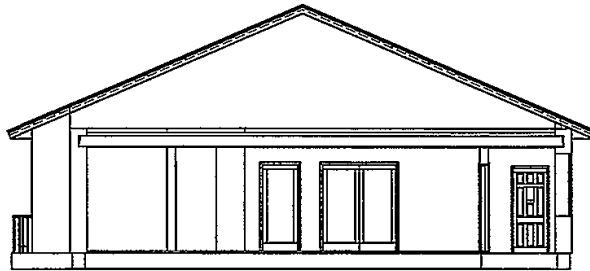


Figure 1

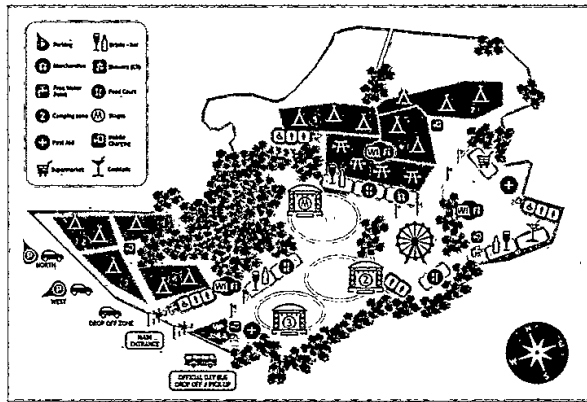


Figure 2

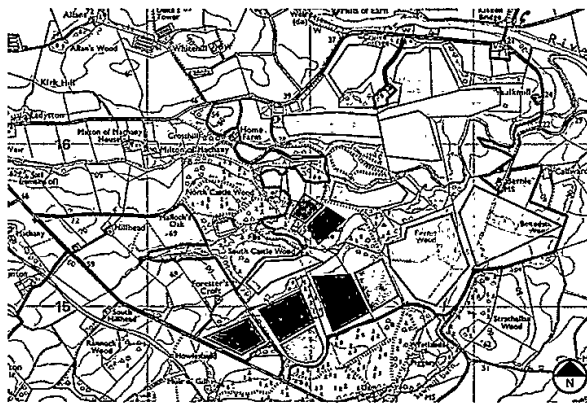


Figure 3

5. (continued)

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

3

Figure 1

Preliminary - shows rough idea of what
the design will look like.

Figure 2

Site plan - shows more detail of the
site than the location plan.

Figure 3

Location plan - shows where the site
is located.

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

3

North symbol.

Contour lines

Street names / Area names

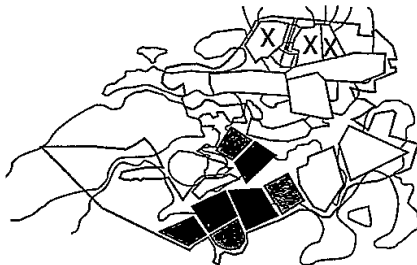
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5. (continued)

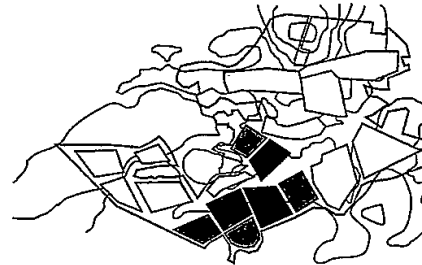
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(c) Changes, shown in the Proposed Plan and Final Plan, were made during the planning stage. With reference to the graphics below, identify two reasons the camping areas marked with an X have been relocated.

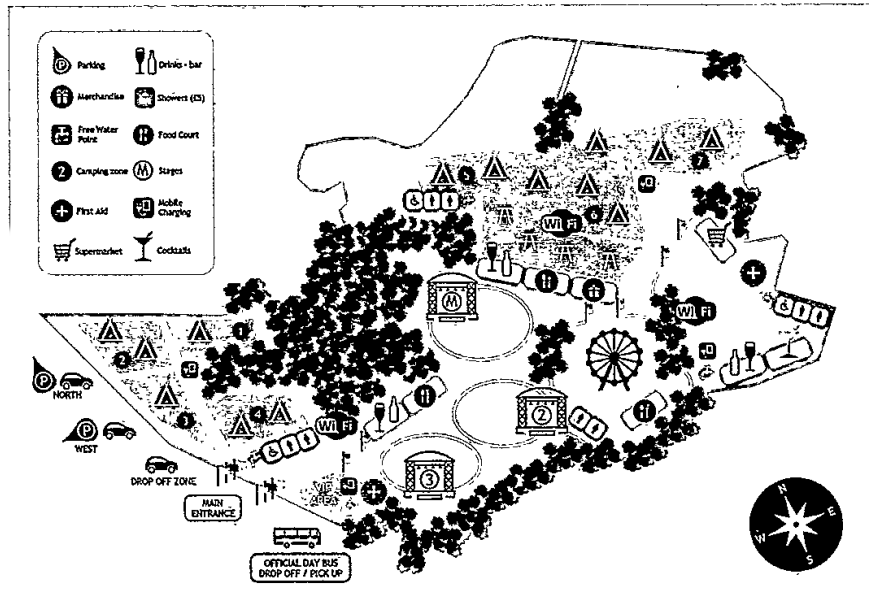
2



PROPOSED PLAN



FINAL PLAN



Contour lines show the camping areas have been moved to flatter ground.
 Moved closer to facilities (water, toilets)

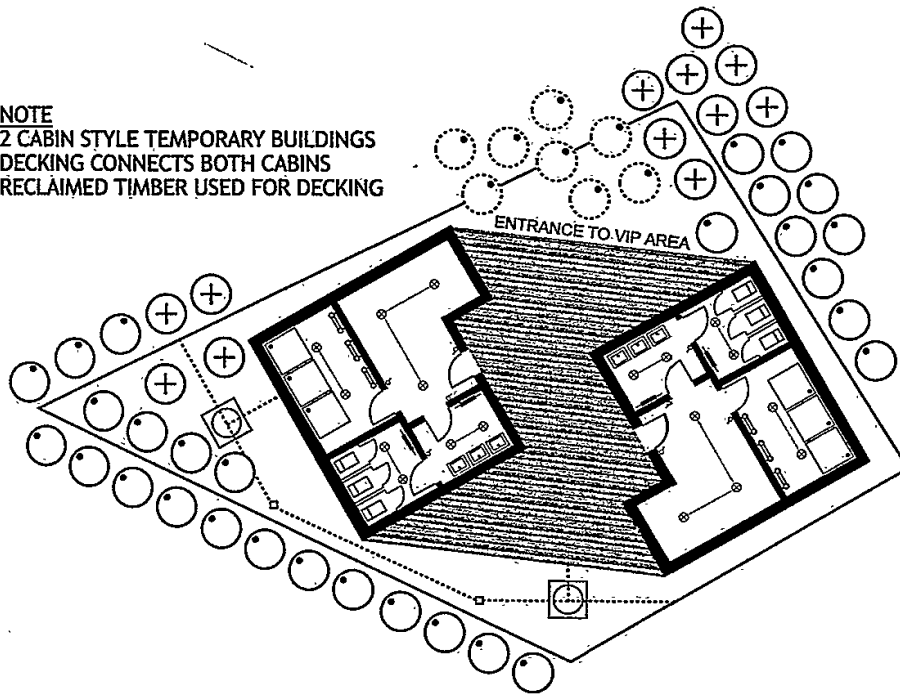
5. (continued)

The site plan for the VIP area is shown below.

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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

5

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

1

State a reason why this was necessary.

So they aren't above drainage. Reclaimed timber from removed trees is used to build decking.

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

2

Trees to be removed are used to build decking for the site.

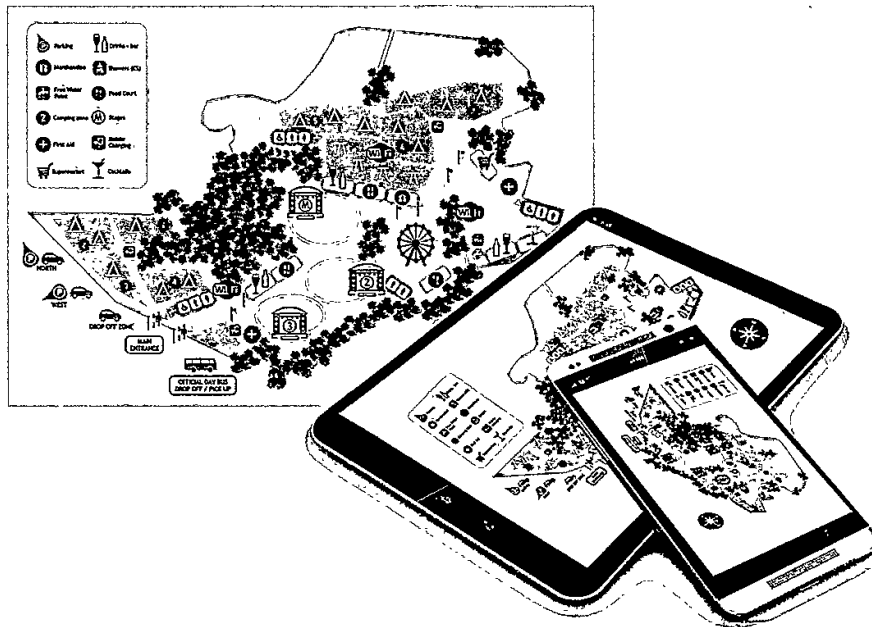
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5. (continued)

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

2

level of detail needed in plan.
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

Need to be easily read on large and small screens.
Ability to zoom in to plan to read easier.

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.

Advertisement can have a larger reach on social media.

MARKS

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2

[END OF QUESTION PAPER]