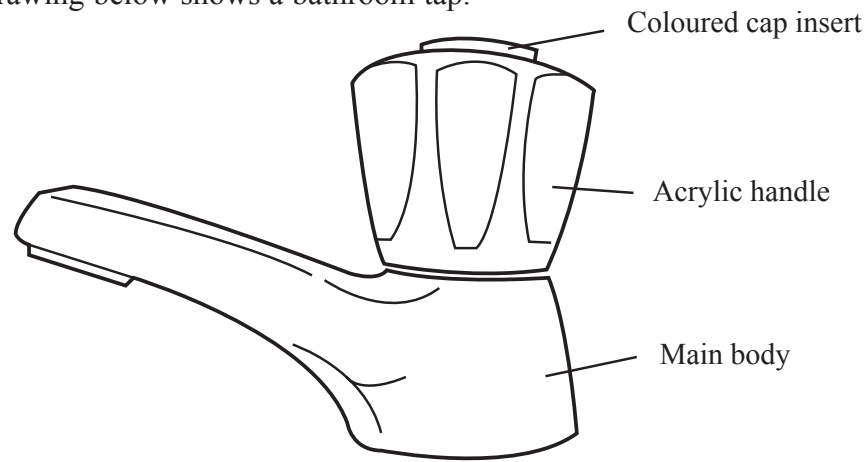


Answer ALL the questions. Write your answers in the spaces provided.

1. The drawing below shows a bathroom tap.



(a) Two specification points for the bathroom tap are that it must

- be easy to grip with wet hands
- show if the tap will be used for hot or cold water.

Under each of the following headings, give **one** more point that should be included in the specification for the bathroom tap.

For each point, give **one** reason why it should be included.

(i) **Market**

Point

Reason

(2)

(ii) **Environment**

Point

Reason

(2)

(iii) **Quality**

Point

Reason

(2)



(b) The main body of the bathroom tap is made from brass which is then plated.

One reason why the main body of the bathroom tap is made from brass is that brass can be finished by being plated.

(i) Give **two** other reasons why brass is a suitable material from which to make the main body of the bathroom tap.

1

2

(2)

(ii) Give **two** reasons why plating is a suitable finish for the main body of the bathroom tap.

1

2

(2)

(c) The handle of the bathroom tap is made from acrylic.

Give **two** properties of acrylic that make it suitable for the handle of the bathroom tap.

For each property give **one** reason why acrylic is suitable.

Property

Reason

Property

Reason

(4)

(d) Quality control checks are carried out on the coloured cap insert at important stages during the manufacture.

Name **two** important quality control checks that should be made during the manufacture of the coloured cap insert.

1

2

(2)



Leave blank

(e) The acrylic handle is suitable for high volume production using the injection moulding process.

Describe **one** way in which the shape of the handle makes it suitable for high volume production by the injection moulding process.

.....
.....
(2)

(f) Two purposes of the bathroom tap are that it must

- be easy to grip with wet hands
- show if the tap will be used for hot or cold water.

Explain, under the following headings, how the bathroom tap achieves these purposes.

(i) Be easy to grip with wet hands

.....
.....
.....
.....
(2)

(ii) Show if the tap will be used for hot or cold water.

.....
.....
.....
.....
(2)

(Total 22 marks)

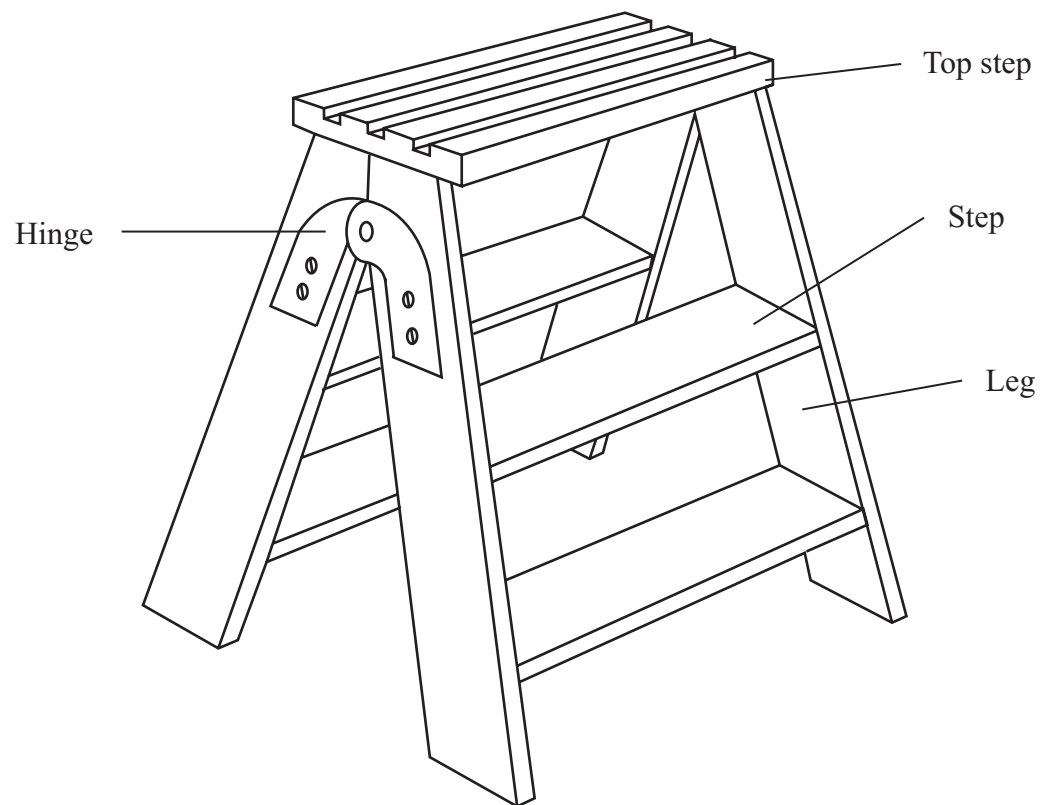
Q1

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Leave blank

2. The drawing below shows a pair of wooden steps.



(a) The hinge is made from brass, which is an alloy.

State the **two** main metals required to make brass.

1

2

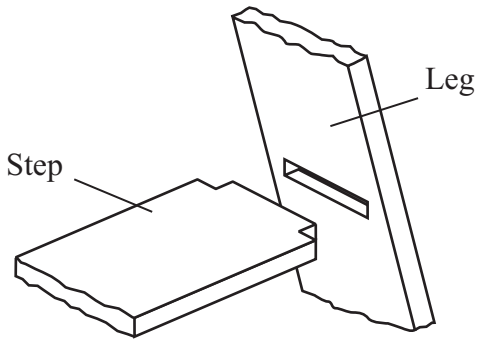
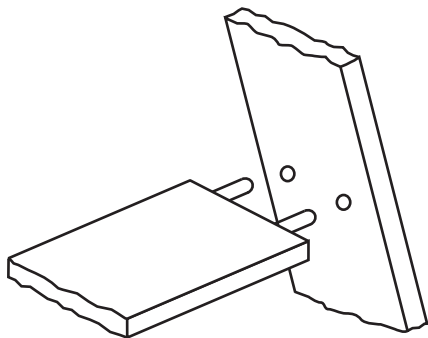
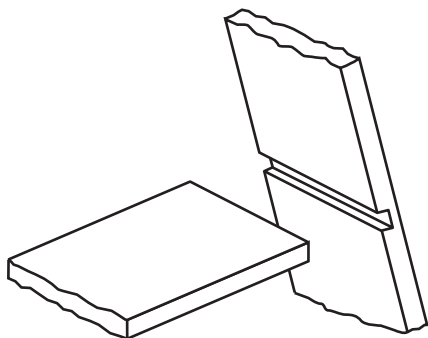
(2)



(b) The step is joined to the leg using a woodworking joint.

The table below shows three different joints which could be used to join the step to the leg.

Complete the table by giving the full name of each joint.

Joint	Name
	<p>..... and</p>
	<p>.....</p>
	<p>.....</p>

(4)

(c) The wooden steps are finished with a coat of varnish.

(i) Give **three** risks associated with using varnish in the school workshop.

1

2

3

(3)



Leave
blank

(ii) Explain **one** reason why the wooden steps are finished with clear varnish.

.....
.....

(2)

(d) The top step is produced in high volume using CAM.

Give **three** reasons why CAM is used for the high volume production of the top step.

1
2
3

(3)

(e) The manufacturer carries out quality control checks on the top step during its manufacture.

Explain **two** reasons why quality control checks are carried out on the top step during its manufacture.

1
.....
2
.....

(4)

(f) A new design for the steps has been sent electronically by the designer to the manufacturer.

Explain **two** advantages for the designer of sending the new design electronically to the manufacturer.

1
.....
2
.....

(4)

(Total 22 marks)

Q2

--	--



Leave
blank

3. A DIY (Do-It-Yourself) store has asked a company to design a screw tidy for holding screws.

The specification for the screw tidy is that it must

- be easy to hold in the hand and carry
- provide easy access to eight different sizes of screws
- keep the different sizes of screws separate and stop them from falling out when being carried
- be made from materials and processes that allow the screw tidy to be produced in batches of 5000.

- (a) In the spaces opposite, use sketches and, where necessary, brief notes to show **two different** design ideas for the screw tidy that meet this specification.

Do **not** evaluate your designs in part (a).

Candidates are reminded that if pencil is used for diagrams/sketches, it must be dark (HB or B). Coloured pens, pencils and highlighter pens must **not** be used.

PLEASE DO NOT WRITE OR DRAW IN THIS SPACE.

PLEASE USE THE SPACES OPPOSITE FOR YOUR DESIGNS.





Design Idea 1

Leave blank

(8)

Design Idea 2

(8)



Leave blank

(b) Three of the original specification points are repeated below.

Evaluate how **one** of your design ideas succeeds or fails to meet each of these specification points.

Write the number of your chosen design idea (1 or 2) here:

(i) The screw tidy must be easy to hold in the hand and carry.

.....
.....
.....
.....

(2)

(ii) The screw tidy must provide easy access to eight different sizes of screws.

.....
.....
.....
.....

(2)

(iii) The screw tidy must keep the different sizes of screws separate and stop them from falling out when being carried.

.....
.....
.....
.....

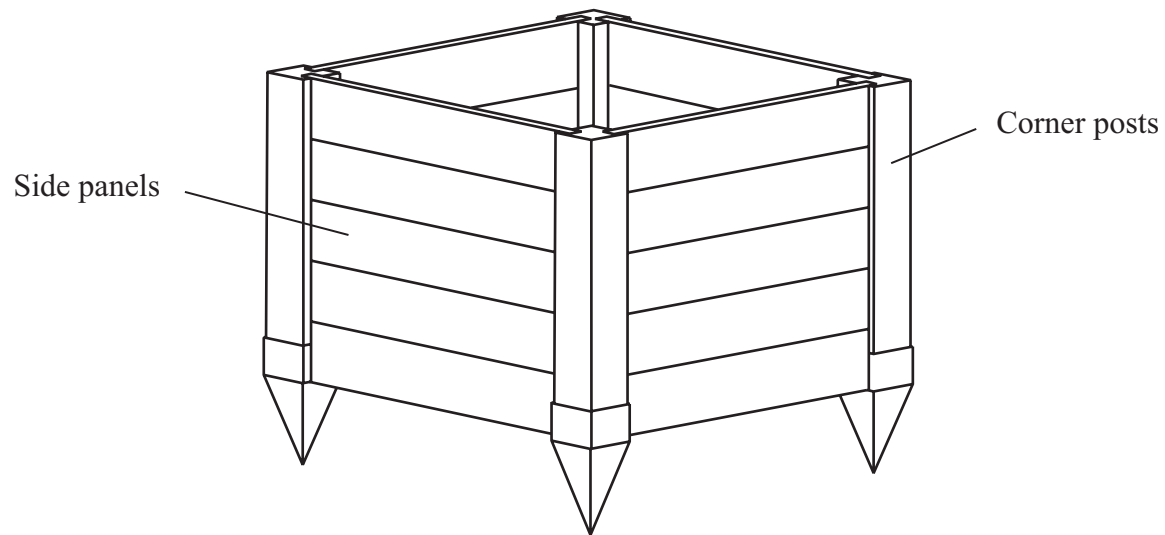
(2)

(Total 22 marks)

Q3



4. The drawing below shows a compost bin which is used for recycling garden waste.



(a) Oak was considered for the manufacture of the compost bin.

Give **three** properties of oak.

- 1
- 2
- 3 **(3)**

(b) Chipboard was considered as a material from which to make the side panels of the compost bin.

Explain **one** reason why chipboard is not a suitable material from which to make the side panels of the compost bin.

-
- **(2)**

(c) The four corner posts are driven 300mm into the ground to prevent the compost bin from moving.

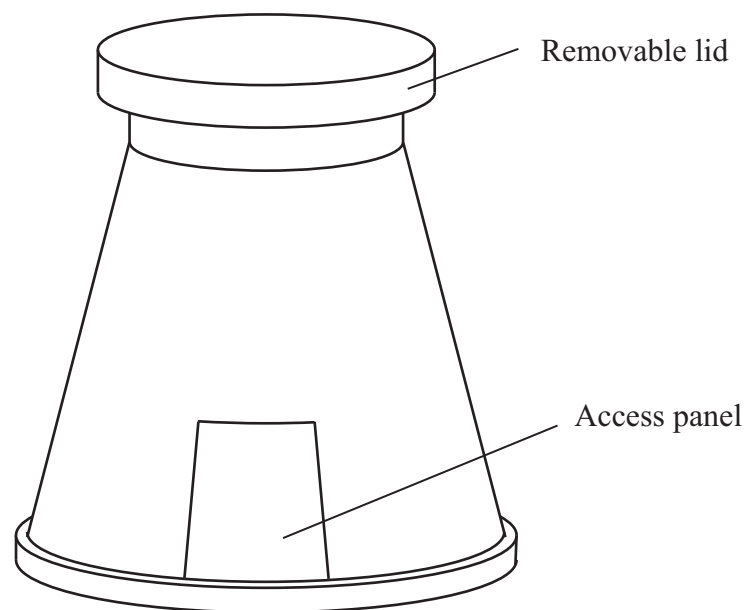
Mild steel was chosen instead of wood for making the corner posts.

Explain **one** reason why mild steel was chosen instead of wood for making the corner posts.

-
- **(2)**



(d) An alternative type of compost bin made from ABS is shown below.
The removable lid is manufactured by the injection moulding process.



Name **two** properties of ABS which make it suitable for the removable lid.

For each property give **one** reason why it makes ABS suitable.

Property

Reason

Property

Reason

(4)

(e) Recycling household waste is an environmental issue.

Explain **three** benefits to the environment of recycling household waste.

1

.....

2

.....

3

.....

(6)



Leave
blank

(f) Mobile phones are designed with planned product obsolescence.

Explain **one** disadvantage to the user of planned product obsolescence.

.....
.....

(2)

(g) Manufacturers change the style of a product for fashion reasons.

Give **three** moral reasons against changing the style of a product for fashion reasons.

1
2
3

(3)

Q4

(Total 22 marks)

TOTAL FOR PAPER: 88 MARKS

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