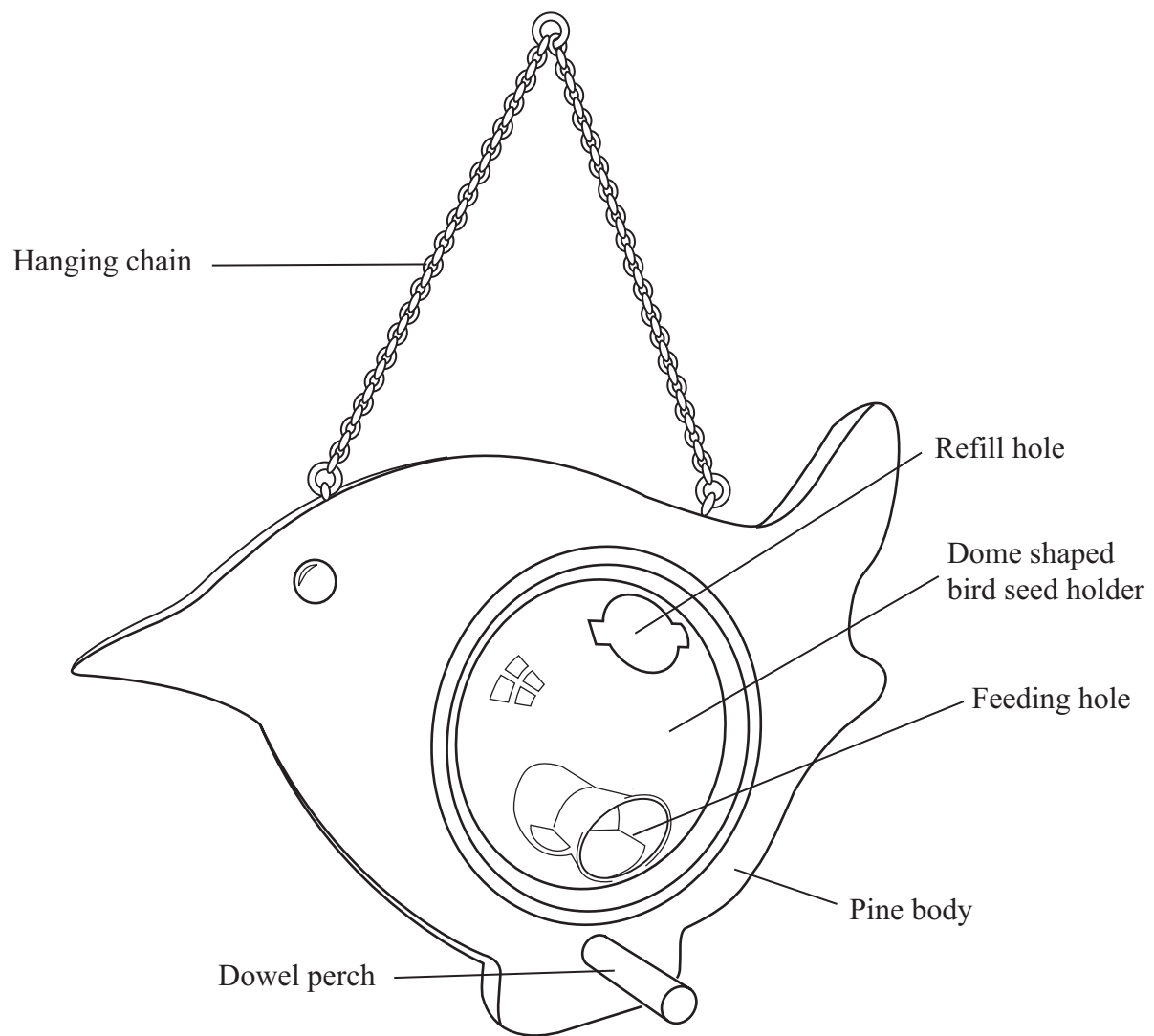


Answer ALL the questions. Write your answers in the spaces provided.

1. The drawing below shows a bird feeder which holds bird seed.

It is sold in pet shops and garden centres.



Leave
blank

(a) Two specification points for the bird feeder are that it must:

- keep the bird seed dry
- prevent cats from getting at the feeding birds.

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

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

(i) The needs of the user.

Point

Reason

.....

.....

(2)

(ii) Environmental considerations.

Point

Reason

.....

.....

(2)

(iii) Quality.

Point

Reason

.....

.....

(2)



(b) The main body of the bird feeder is made from pine.
One reason for making the main body out of pine is that it can be treated with a preservative.

Give **two** other reasons why pine is a suitable material from which to make the main body.

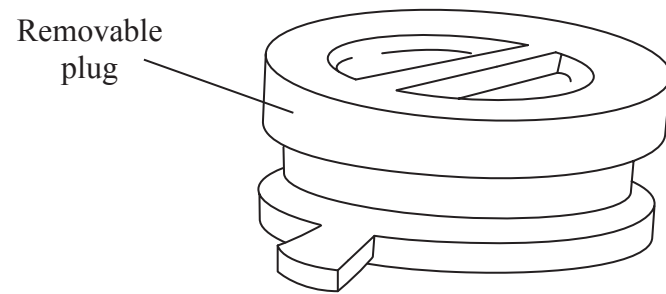
1

2

(2)

(c) The bird seed holder has a removable plug in the refill hole.

The removable plug is made by the injection moulding process.



Give **two** reasons why injection moulding is a suitable process to manufacture the removable plug.

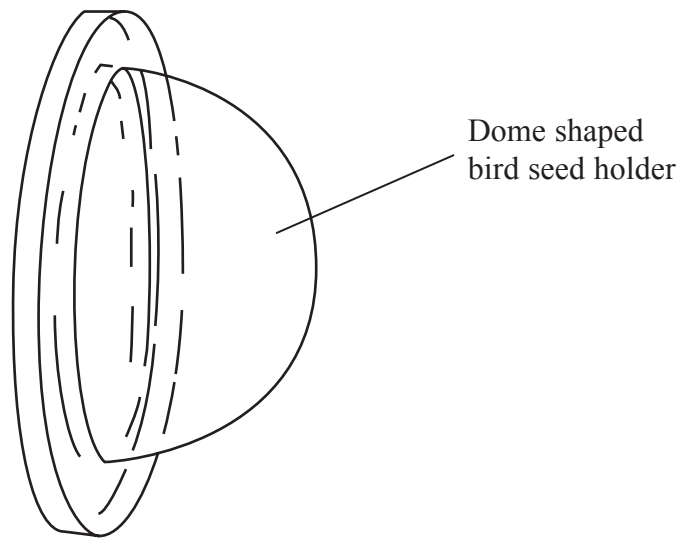
1

2

(2)



(d) The dome shaped bird seed holder is made from acrylic.



Give **two** properties of acrylic that make it suitable for the bird seed holder.

For each property give **one** reason why acrylic is suitable for the bird seed holder.

Property 1

Reason

.....

Property 2

Reason

.....

(4)

(e) Quality control checks are carried out at important stages during the manufacture of the bird seed holder.

Give **two** important quality control checks, other than safety, that should be made during the manufacture of the bird seed holder.

1

2

(2)



Leave blank

- (f) The pine body is made in high volume.
The shape of the pine body is suitable for manufacture using CAM.

Describe **one** way in which the shape of the pine body is suitable for manufacture in high volume using CAM.

.....

.....

(2)

- (g) Two purposes of the bird feeder are to:

- keep the bird seed dry
- prevent cats from getting at the feeding birds.

Explain, under the following headings, how the bird feeder achieves these purposes.

- (i) Keep the bird seed dry.

.....

.....

.....

.....

(2)

- (ii) Prevent cats from getting at the feeding birds.

.....

.....

.....

.....

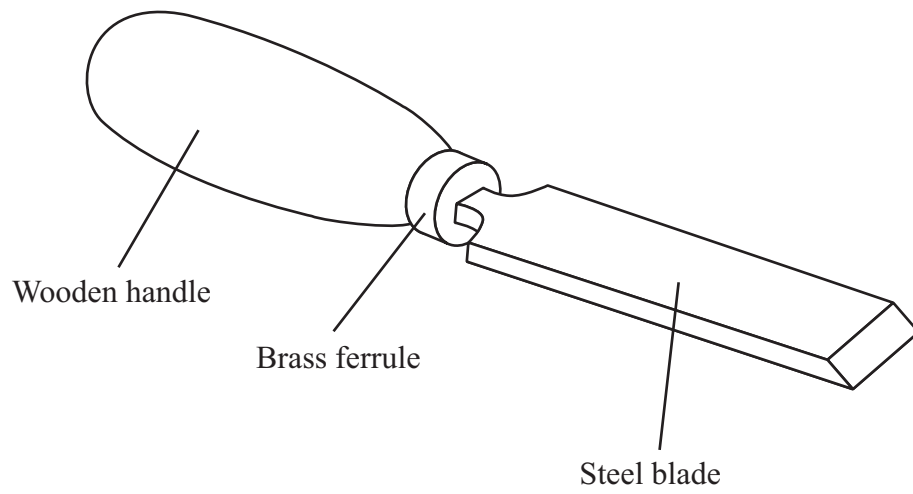
(2)

Q1

(Total 22 marks)



2. The drawing below shows a chisel.



(a) A chisel must always be used safely.

Give **three** health and safety related risks associated with using the chisel in a school workshop.

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

(b) The ferrule is made out of brass, an alloy.

Name the **two** metals used to make brass.

- 1
 - 2
- (2)**

(c) The steel blade is hardened in order to improve its ability to cut.

Describe **one** way to harden the steel blade.

-
 -
- (2)**



Leave
blank

(d) The handle for the chisel could also be made from plastic.
The plastic handle would be made by using the injection moulding process.

Explain **two** advantages of producing the handle using the injection moulding process.

1

.....

.....

2

.....

.....

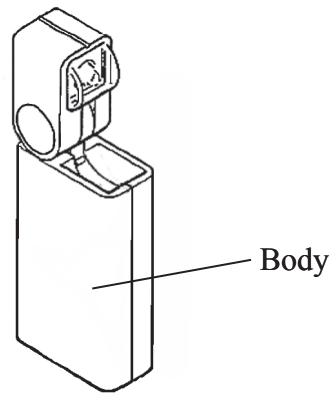
(4)

Q2

(Total 11 marks)



3. The drawing below shows a flip top torch.



(a) The body of the flip top torch is made from ABS.

Give **two** properties of ABS.

For each property give a reason that makes it suitable for the body.

Property 1

Reason

.....
.....

Property 2

Reason

.....
.....

(4)

(b) ABS is a thermoplastic.

Give **three** working characteristics of thermoplastics.

1

2

3

(3)



Leave
blank

(c) Acrylic was considered for the manufacture of the body of the flip top torch.

Explain **one** disadvantage of using acrylic for the body rather than ABS.

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

(2)

(d) Copper, a non-ferrous metal, is used to make the electrical contacts inside the flip top torch.

Explain **one** reason why copper is used, instead of a ferrous metal, for the electrical contacts inside the torch.

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

(2)

Q3

(Total 11 marks)

TOTAL FOR PAPER: 44 MARKS

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