Candidate 7

SECTION 1 — 60 marks

Attempt ALL questions

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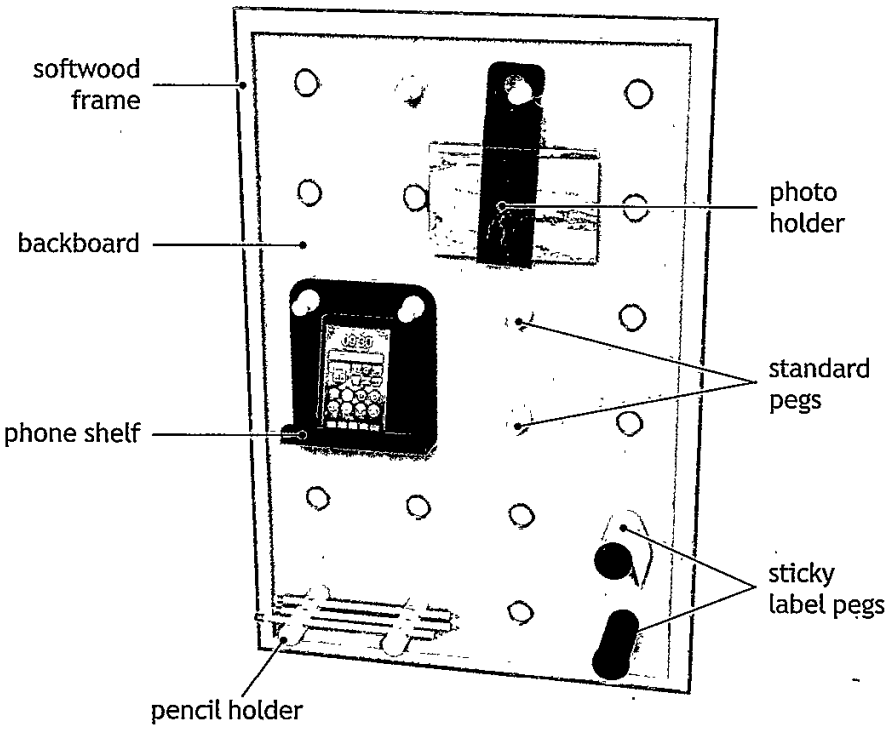
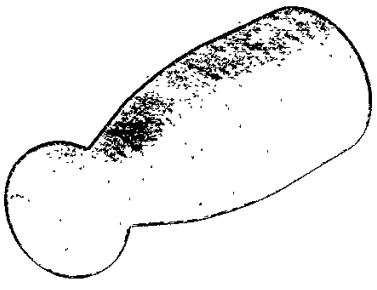
1. A design proposal for a peg board and accessories is shown below.



(a) The standard pegs were made from hardwood.



(i) Name a suitable light coloured hardwood for the standard peg. 1

Birch

1. (a) (continued)

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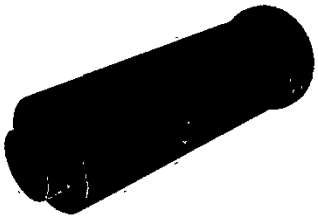
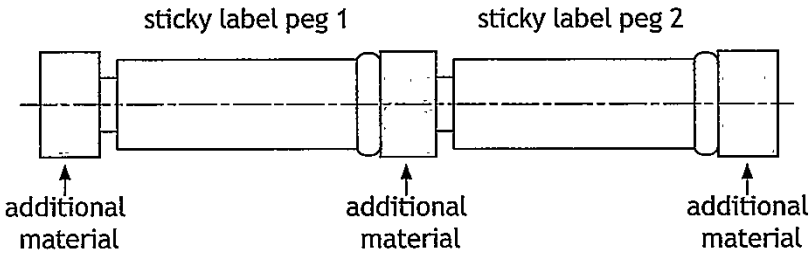
Two sticky label pegs were turned on the wood lathe from a single length of wood.

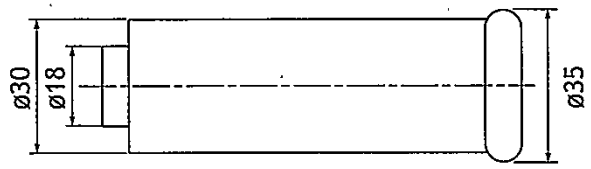




(ii) Outline **two** reasons why additional material is included on the length of wood. **2**

To work as support for the pegs. Also to make sure the wood doesnt snap.

The sticky label pegs were turned to the sizes shown below.



(iii) Name the lathe process carried out to reduce the diameter from 35 to 30mm. **1**

Parralel turning.

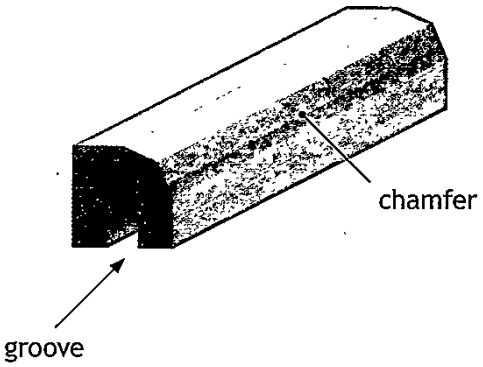
(iv) Name the hand tool that should be used to check that the diameters are the correct size. **1**

Steel rule.

MARKS | DO NOT WRITE IN THIS MARGIN

1. (continued)

(b) The four sides of the frame were cut from one length of wood and shaped as shown below.



Complete the sequence of operations shown below by filling in the appropriate process and tools.

(i)

Step	Process	Tools
1	Mark lengths	Try-square, rule, pencil
2	Mark chamfer	Steel rule, pencil
3		Plough plane
4	Cut chamfer	Plane
5	Cut lengths	Tenon saw

4

(ii) Explain why Step 4 was carried out before Step 5 in the table above. 1

because if you cut then length first, you would have no marker to cut ~~on~~ the chamfer on the wood anymore.

MARKS | DO NOT WRITE IN THIS MARGIN

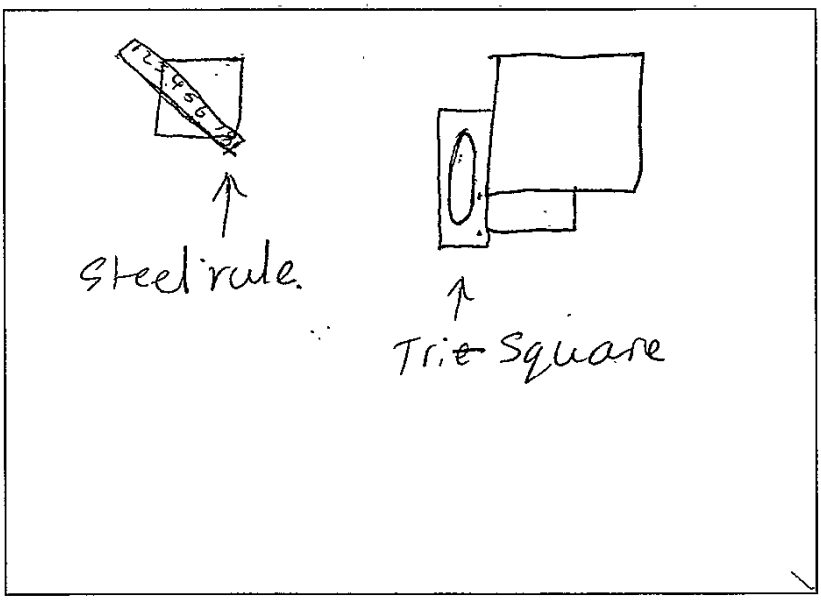
1. (b) (continued)

The frame was checked for squareness during assembly.

(iii) Describe **two** methods of checking the frame is square.

You may use sketches to illustrate your answer in the box below. 2

use A tri-Square to see if all four angles are 90°, measure diangonally from corner to corner.



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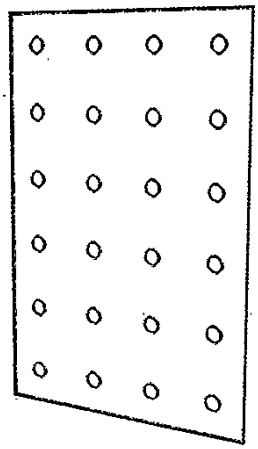
1. (continued)

(c) MDF was used to make the backboard.



(i) State **two** reasons why MDF is a suitable choice of material for the backboard. **2**

Comes in big sheet. ~~Mad~~ enviromentally friendly. easy to cut. it's also cheaper than soft or hard woods.

A pillar drill was used to create the holes.

(ii) State **two** safety checks that must be carried out on the pillar drill before use. **2**

make sure the drill bit is secured. ~~wear protection such like goggles.~~ make sure wood is securely placed.

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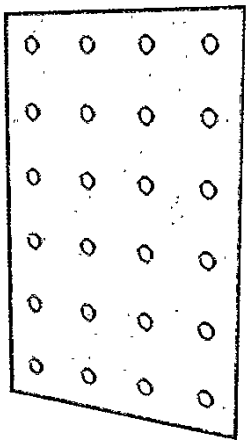
1. (c) (continued)

Grey paint was applied to the surface of the backboard.



(iii) Describe **three** ways to ensure a high quality paint finish. 3

you could apply varnish to give it a better finish or you could give the paint two or more coats to ensure it that no natural wood can be seen. You could also sand and use wet and dry paper before applying the paint to give it more of a smooth finish.

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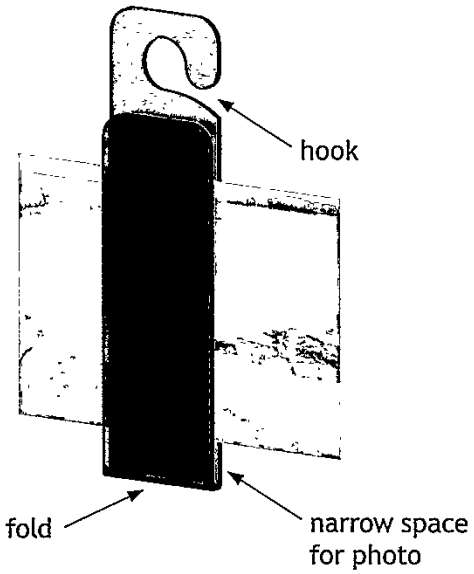
MARKS | DO NOT WRITE IN THIS MARGIN

1. **(continued)**

(d) A photo holder was made from thermoplastic sheet.



The thermoplastic sheet was marked out and folded to securely hold a photo.

Describe how the photo holder would have been folded into shape, with reference to workshop tools and equipment. **2**

You could use a steel rule to measure and mark out where to bend and then use a strip heater to to bend the plastic.

MARKS | DO NOT WRITE IN THIS MARGIN

1. **(continued)**

(e) The phone shelf was made from copper sheet.

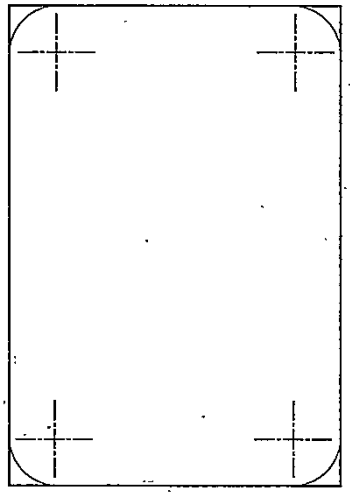
(i) State **two** reasons why copper is a suitable choice of material for the phone shelf. **2**

it doesnt rust. strong and durable.

[Turn over

1. (e) (continued) MARKS | DO NOT WRITE IN THIS MARGIN

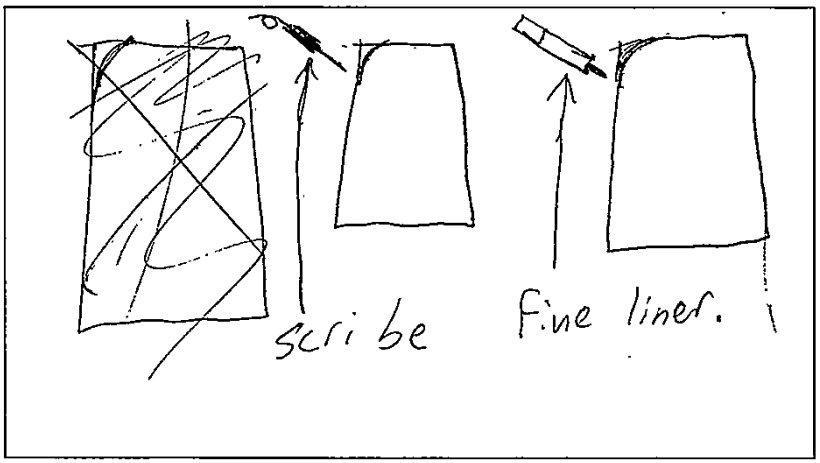
The phone shelf corners were marked out on a sheet of copper as shown below.



(ii) Describe how to mark out the corners, with reference to workshop tools. 3

You may use sketches to illustrate your answer in the box below.

you could use a scribe to marke out the corners or a fine liner to draw. ~~cards~~



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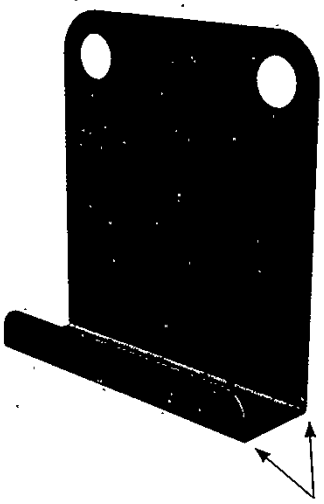
1. (e) (continued)

(iii) Describe how to cut **and** shape the corners, with reference to workshop tools. 2

you could use tin snips to cut round the corner and then use steel wool to give it a shiny smooth finish.



(iv) Describe how to form the 90° bends, with reference to workshop tools. 2

you could put it on the edge of an anvil and hit it until it sort of wraps around the corner of the anvil, giving you a 90° angle.

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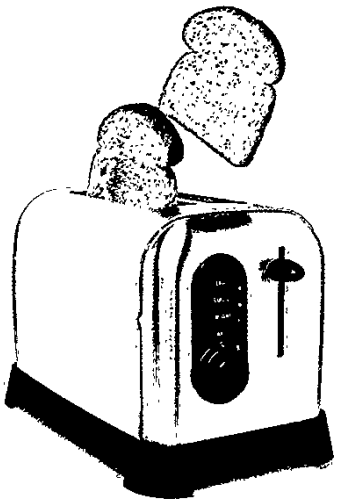
MARKS | DO NOT WRITE IN THIS MARGIN

2. A company that manufactures kitchen appliances wishes to add a toaster to their range.



(a) The designer used a questionnaire to research existing toasters.

(i) Describe the key stages of a questionnaire. 3

Ask what colour to make it more appealing, how big the toaster could be, how much to finding out what they like and how designs can be improved.

(ii) Name an alternative research technique which the designer may have used. 1

mood board, ~~brainstorming~~.

MARKS | DO NOT WRITE IN THIS MARGIN

2. (continued)

The designer produced a product specification after completing the research.

(b) Explain why a specification is used during the design process. 1

So you know what the design must have.

The designer used brainstorming as an idea generation technique.

(c) Describe the key stages of brainstorming. 3

you should write down the product in the middle of the paper and then write different ideas around the product ~~to make the~~ and then circle the best ideas to narrow the ideas down.

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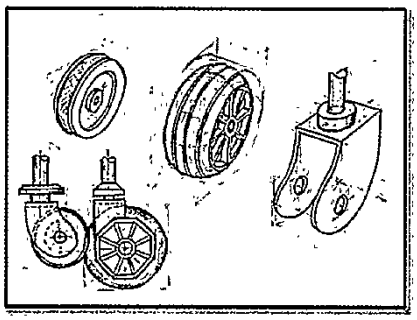
MARKS | DO NOT WRITE IN THIS MARGIN

3. A range of graphic techniques were used throughout the design of the trolley wheel shown below.



(a) Sketches were used at the initial ideas stage.

State **two** reasons why this graphic technique is appropriate. 2

To see what it would look like, could help with possible materials, it can also help you think of other shapes to uses.

(b) During the planning for manufacture stage, the designer would produce working drawings.

State **two** reasons why working drawings are required. 2

To see how parts fit together and to see if it would actually work. Also to look for improvements.

MARKS | DO NOT WRITE IN THIS MARGIN

4. Models are often used during the design process.

Explain why models may be used during the design process. 3

To see if the design can be made and to look for things that could be changed. also it helps you think of different materials and sizes you could use.

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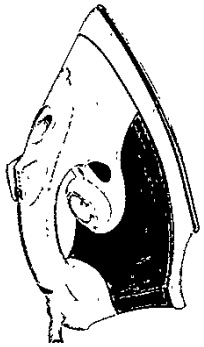
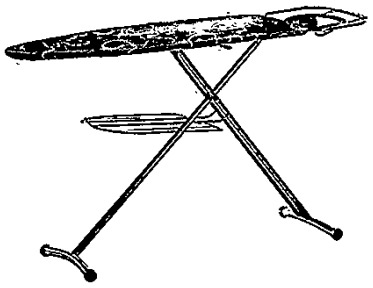
MARKS | DO NOT WRITE IN THIS MARGIN

5. An iron and ironing board are shown below.





You must give different examples in (a), (b) and (c).

(a) Describe how ergonomics may have influenced the design of the iron and/or the ironing board. 4

Ergonomics could influence the products & by thinking about how long the legs for the ironing board is, to see if it fits for the average person of their target market, it would also be influenced by the length of the handle and how comfortable it is. They must also think about where the buttons are placed and are they accessible when using the product.
(E.Ross)

MARKS | DO NOT WRITE IN THIS MARGIN

5. (continued)

(b) Describe how function may have influenced the design of the iron and/or the ironing board. **2**

~~the~~ the small iron holder on the side of the ironing board is to hold the IRON, ~~making it~~ showing that the function has influenced to design of the product.

(c) Describe how safety may have influenced the design of the iron and/or the ironing board. **2**

Safety has influenced the product by having a thermo setting plastic as the handle for the iron meaning the iron wont melt due to the heat of the metal plate under neath, also the water se squirter could be used to put a fire out - if the ironing board caught fire, it also has a stand which means you dont have to put it flat-down, which prevents burning of the ironing board.

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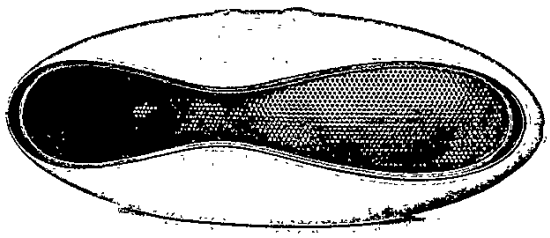
6. A portable speaker is shown below.



(a) Describe **three** aesthetic aspects of the speaker. 3

The colours are bright and harmonising making it appealing, the shape is also unusual making it stand out. The mesh pattern on the front also contrasts with the red,

The company developing the speaker has a strong brand image.

(b) Explain **two** benefits of a strong brand image. 2

more people would be enclined to buy it, the brand also makes a lot of money ofe the product,

Marketing techniques can be used to influence sales.

(c) Name **two** marketing techniques that the company could use to promote the speaker. 2

Posters, celebrity endorsments.

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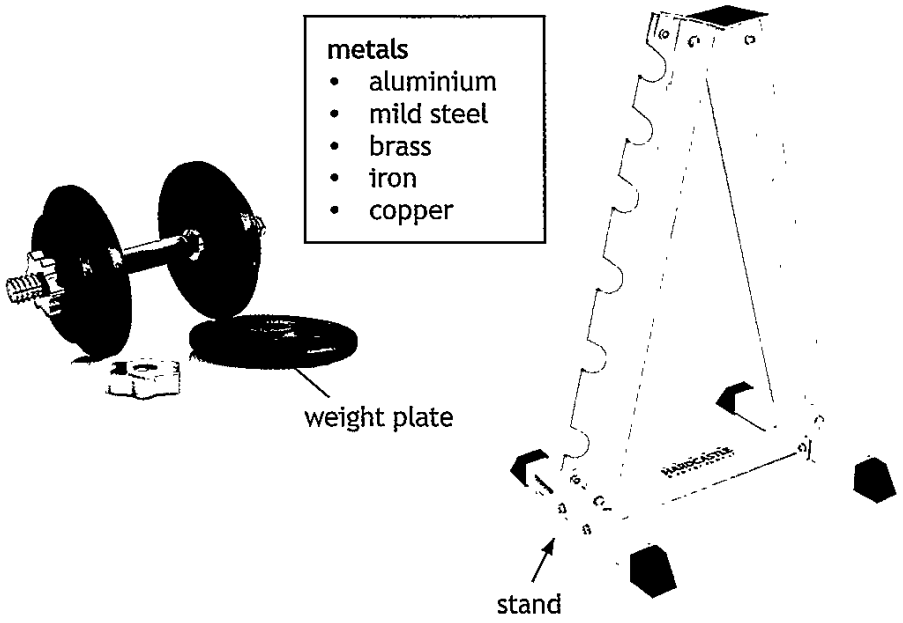
SECTION 2 — 20 marks

Attempt ALL questions

7. The dumbbell and stand shown below have been produced using a range of metals and processes.



(a) Select appropriate metals for the weight plate and stand from the list provided **and** explain why they would be suitable.

You must give a different metal and explanation for each item.

(i) Weight plate. 2

Metal Iron

Suitable because because its heavy and durable

(ii) Stand. 2

Metal aluminium

Suitable because it doesnt rust meaning it wont get weak over time meaning it can hold the weight plates.

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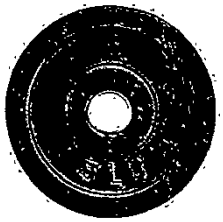
MARKS | DO NOT WRITE IN THIS MARGIN

7. (continued)

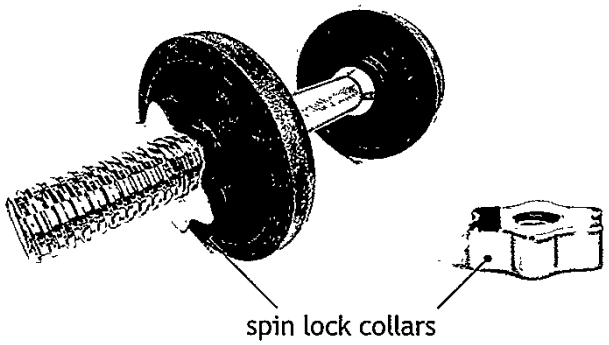
(b) The weight plates have been sand cast.



Describe **two** identifying features that would show the weight plates have been sand cast. 2

~~It has details on it such like the numbers that show that~~ the dorle rough colour shows that they've been sand casted. It also looks rough.

(c) The spin lock collars have been die cast.



Explain why die casting was used to manufacture the spin lock collars. 2

To give it a shiny mirror like finish.

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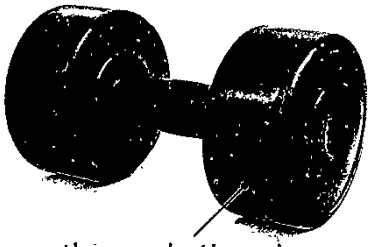
7. (continued)

(d) A concrete filled dumbbell is shown below.



Name a suitable process to manufacture the thermoplastic casing of the dumbbell **and** explain why it is suitable. **2**

Process Rotational moulding

Suitable because it is hollow meaning it could be filled with concrete.

[Turn over

MARKS | DO NOT WRITE IN THIS MARGIN

8. Many products are mass manufactured.

(a) Describe the impact of mass manufacturing on society. **3**

The impacts could be negative as it causes a lot of pot pollution and exposure to harmful gasses. It also makes people unwell.

Not all products are mass manufactured.

(b) Explain why some products are not suitable for mass manufacture. **1**

Some things may be to delicate to mass manufeacture.

9. Manufacturers often use standard components in the production of products.

Outline the possible benefits of using standard components. **2**

They are inexpensive and come in bulk.

MARKS | DO NOT WRITE IN THIS MARGIN

10. Manufacturers have a responsibility to reduce the damage they cause to the environment.

Outline the steps that a manufacturer could take to reduce their impact on the environment. 4

Stop using fossil fuels to burn stuff, use recyclable materials, do a thing that for every sell they plant a tree, find new ways to power machinery instead of fuel. may be even use solar panels to power the worle place.

[END OF QUESTION PAPER]