Candidate 7

SECTION 1 — 60 marks

Attempt ALL questions

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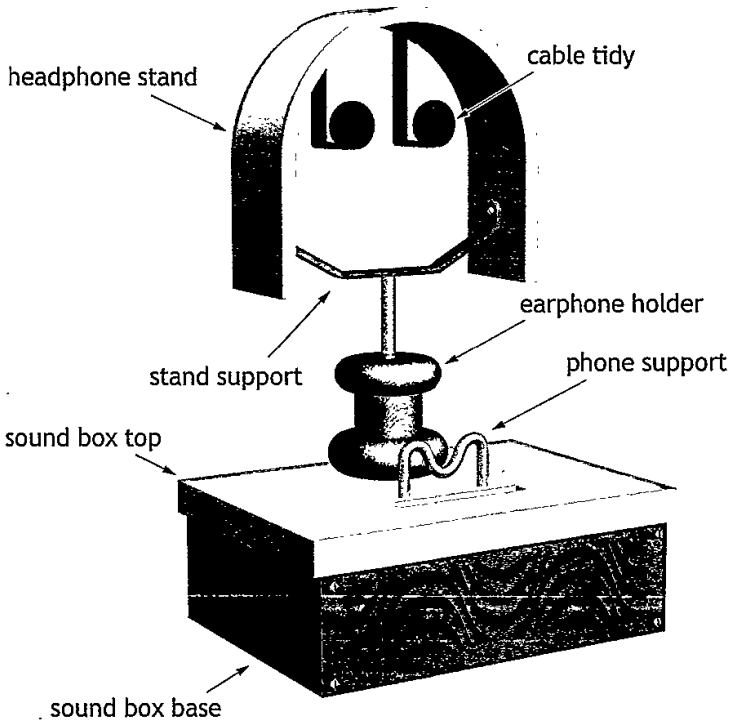
1. A design proposal for a sound box with a phone and accessory holder is shown below.



(a) The sound box top was made from softwood.

(i) Name a suitable softwood for the sound box top. 1

Pine

The sound box base was made from MDF.

(ii) State a benefit of using MDF rather than softwood. 1

MDF is cheaper than Softwoods

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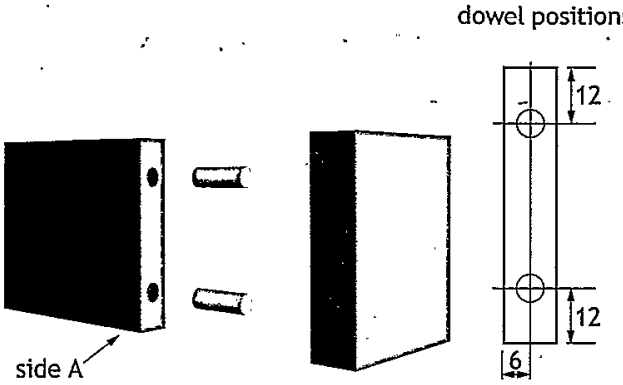
1. (continued)

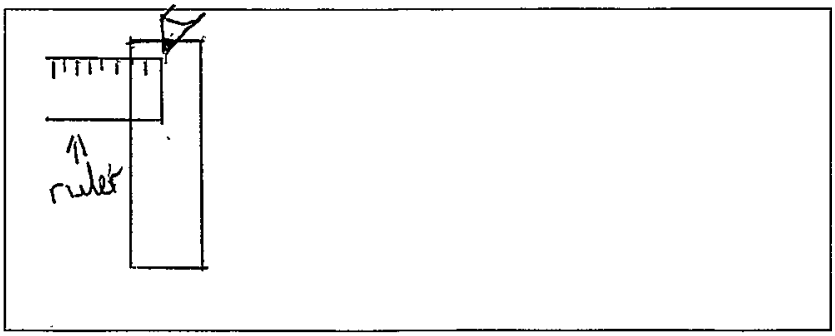
(b) Dowel joints were used to join the sides of the sound box together.



(i) Describe how to **mark out** the positions of the dowel holes on side A, with reference to workshop tools. 2

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

use a Steel rule and pencil a mark out a cross 12mm down and 6mm across middle of the cross is the centre of the dowel. then the use a drill bit same size as the dowel and drill holes in centre of cross use Steel pointed dowels to mark the other piece of wood



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1. (b) (continued)

The dowel holes in side A were drilled to a depth of 15mm.

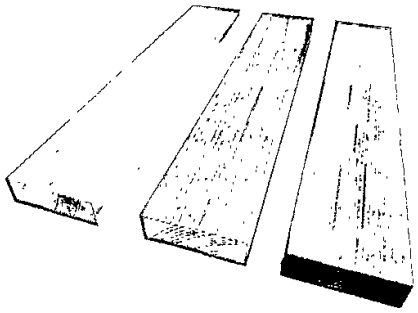
(ii) Outline how to ensure the holes were drilled to this depth. 1

use a ruler and put a piece of tape on the drill bit with 15mm sticking out the end.

(iii) Name an alternative joint that could be used to join the sides of the sound box. 1

dovetail joint

(c) Pieces of softwood were joined together to make the sound box top.



(i) Name a suitable adhesive to join the pieces of softwood together. 1

PVA

(ii) Outline a suitable method of holding the pieces of softwood together until the adhesive sets. 1

clamp with vice or quick clamp

MARKS | DO NOT WRITE IN THIS MARGIN

1. (c) (continued)

Varnish was brushed on to the sound box top.

(iii) Describe how to achieve a high quality brushed finish. 2

Sand box top before varnishing. make sure no dents, scratches or pencil marks are visible and brush in straight lines making sure a even coat is applied.

MARKS | DO NOT WRITE IN THIS MARGIN

1. (continued)

(d) The cable tidies were made from acrylic.

(i) Name an appropriate saw that could be used to cut out the cable tidies. 1

Coping Saw

(ii) Describe the stages used to obtain a good finish on the edges of the acrylic after sawing, with reference to workshop tools/equipment. 3

use a file with edge of tidie facing up in vice and use file side ways and in straight motion push back and fourth until big gowges are out. use a hight grit sand paper to remove tool marks then wet sand working up grits eg 1000, 1200 grit.

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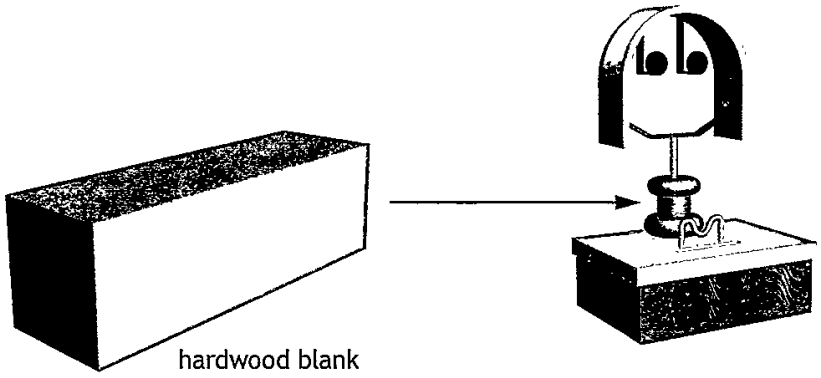
1. (continued)

(e) The earphone holder was turned from a hardwood blank.



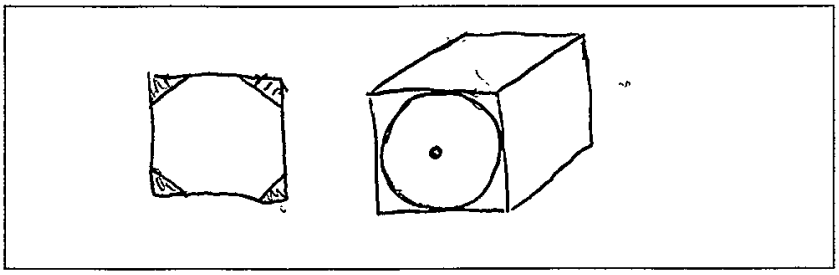
(i) Name a suitable hardwood for the earphone holder. 1

Oak

(ii) Describe **four** stages in preparing the hardwood blank **before** fitting it on the woodturning lathe, with reference to workshop tools. 4

Sketches may be used to illustrate your answer in the box below.

mark out centres on either ends
mark out circles on either ends to
size ~~of desired~~ of earphone holder.
use wood plane on edges to remove
mabteral and weight before puting on
lather
mark out length of earphone holder
all around blank



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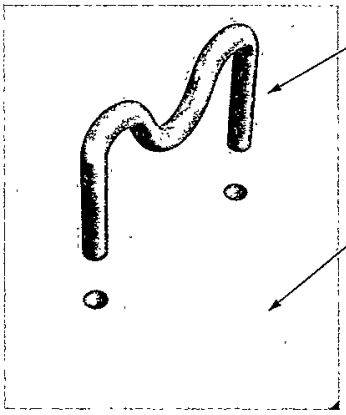
1. (e) (continued)

(iii) Outline **two** ways of ensuring a high quality finish on the earphone holder when using the wood lathe. 2

use a Sharp chisle Slowley with even action & not to take out gowges when finnish with chisle - Sand object on lathe

(f) The phone support was made from copper and joined to the sound box top using epoxy resin.



Outline **two** reasons why epoxy resin is a suitable adhesive. 2

epoxy resin join well to metals and woods
epoxy resin is very strong when set

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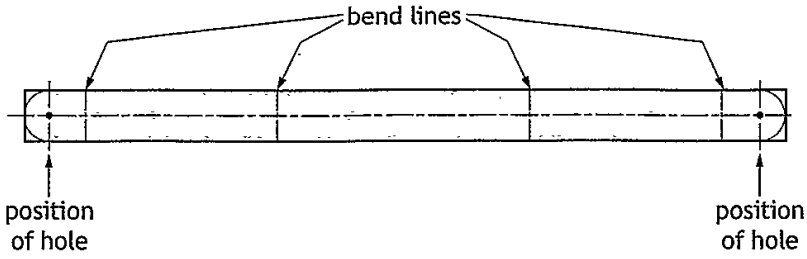
1. **(continued)**

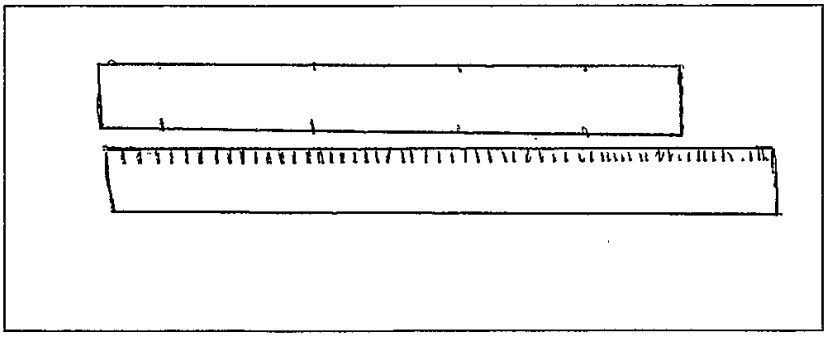
(g) The stand support was made from mild steel and marked out as shown below.



(i) Describe how to measure and mark out the stand support, with reference to workshop tools. 3

Sketches may be used to illustrate your answer in the box below.

use Steel rule and pencil or engineers chalk or Scriber and mark out from top edge working down the length of mark length of bend lines. use Steel rule to mark a cross on ~~bottom~~ both ends for drilling holes
use a ruler of trisqaure to mark across two points.



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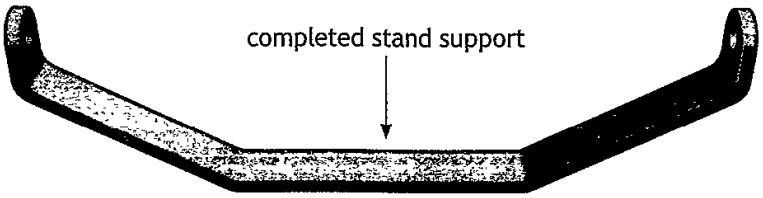
1. (g) (continued)

The stand support was bent to shape and finished as shown below.



(ii) Describe how to form the bends on the stand support, with reference to workshop tools. 2

use a Steel working vice proferable with Soft Jaws and use a big hammer to bend into shape if difficult to bend use a gas torch or forge to heat up Stand Support until cherry red and then quickly clamp in vice a hit to Shape

The mild steel stand support was dip coated in plastic.

(iii) Explain why the stand support was dip coated. 2

to protect the mild Steel from rusting and to give it a nice feel to touch and to make it more ~~plastic~~ aesteticaly pleasing.

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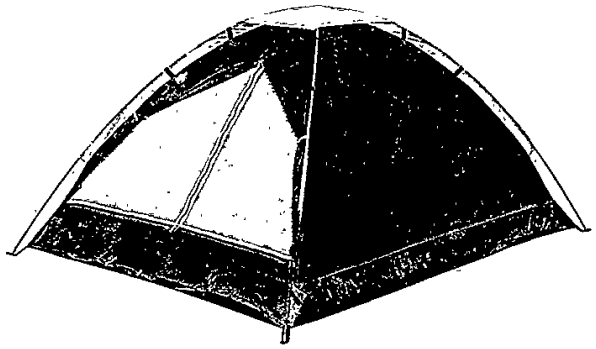
2. A camping tent is shown below.



Designers use research techniques such as user trips and questionnaires to gather information.

(a) Outline two pieces of information that could be gathered from a user trip on the camping tent. 2

how heavy it is to carry
how breethable it is
how durable itis

(b) Describe the key stages of carrying out a questionnaire. 3

Create a questionare based on what people like in a tent
get a wide range of people to answer it
gather information from questionare and use it to improve design.

MARKS | DO NOT WRITE IN THIS MARGIN

3. A designer often uses idea generation techniques.

Describe the key stages of an idea generation technique with which you are familiar. 3

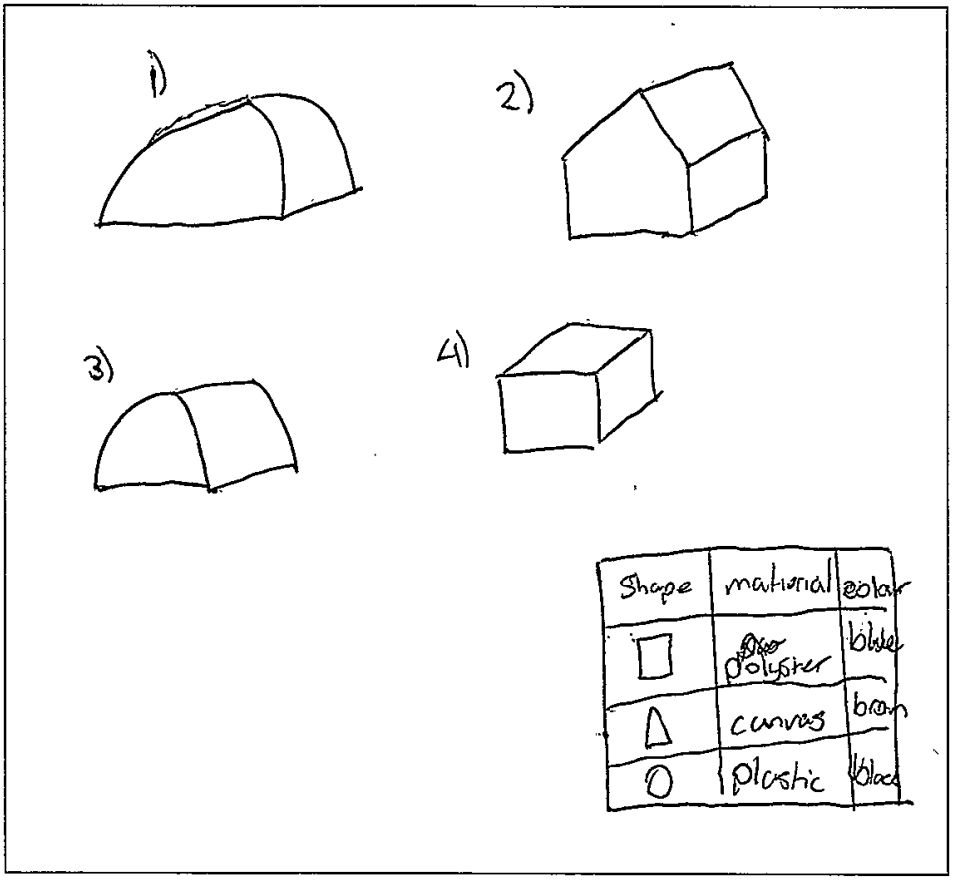
You may use sketches to illustrate your answer in the box below.

get inspiration from other designers concepts

draw many different sketches of ideas and concepts

choose one sketch that is best and refine it.

make models of concepts to get idea of what it will be like



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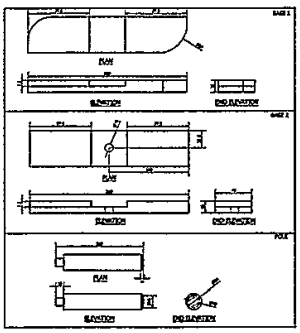
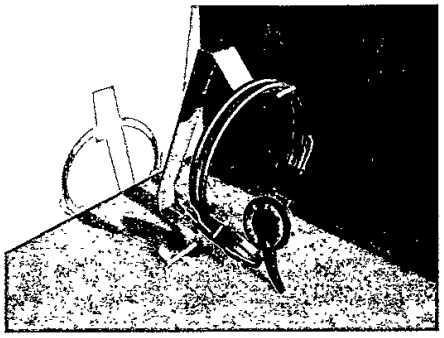
4. The two graphic techniques shown below were used during the design of a headphone stand.



working drawing



computer-generated graphic

Outline the reasons for using the following graphic techniques in the design process:

(a) working drawing is good to Start the design in 2d and to use idea generation easily ~~and easie~~ and quicker than a computor generated graphic as you can explore many different ideas quickly 2

(b) computer-generated graphic can you more in-depth with 3d model of design with the ability to make the model in 3d with the materials it is made from and colours, useing an computar the design can easily plany with ~~out~~ colour and matterial 2

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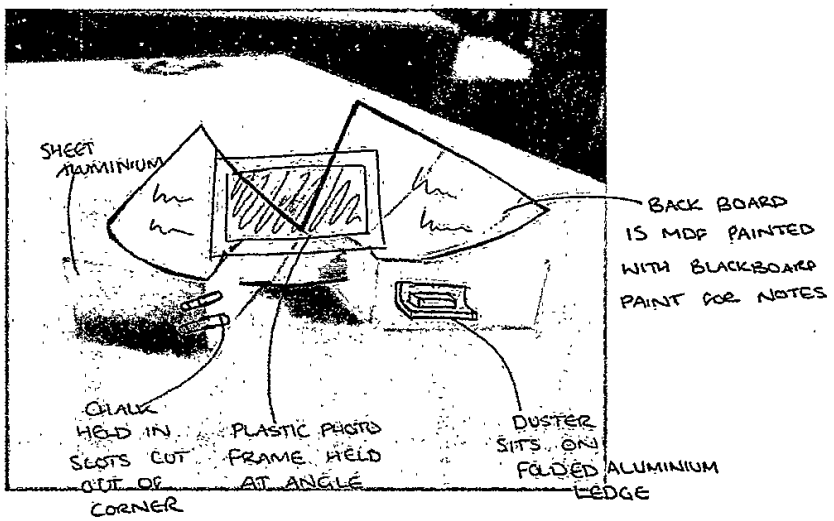
5. Designers often use sketch models as shown below.



Describe **two** benefits to designers of using sketch models. 2

the designer can actualy see and feel there design and see it's flaws in fromt them on whether or not it is big enough small enought.

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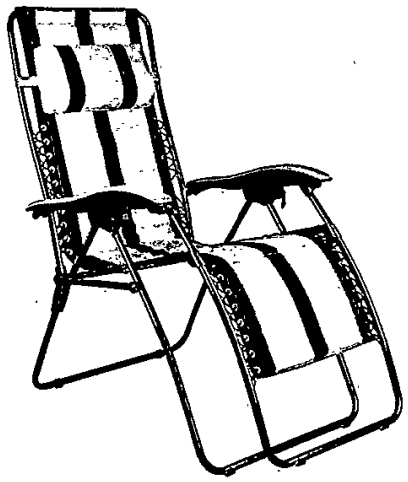
6. A sun lounger is shown below.



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

(a) Describe how ergonomics may have influenced the design of the sun lounger. 4

the chair will be used by most of the person body to relax so it must be confortable so the shape of the human body would have influenced the designer as the chair must mould to the shape and curviture of the spine and legs even the arm rests must have carves as arms are not straight.

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6. (continued)

(b) Describe how function may have influenced the design of the sun lounger. **2**

the Sun loungers will be packed away when not in use so it must fold away easily and fold away into a small package. It must be made light as it will most likely be moved around.

(c) Describe how the life expectancy of the sun lounger could be extended by the designer. **2**

use higher quality materials well beilding the chair or up the price so people would naturaly look after it.

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MARKS | DO NOT WRITE IN THIS MARGIN

7. The design of products may evolve as a result of technology push or market pull.

(a) Describe what is meant by technology push. 1

a technology push is where the performance of a product is increased because of a new and better piece of tech.

(b) Describe what is meant by market pull. 1

a market pull is where the market is demanding more of something in a product.

New products can be difficult to launch in a competitive market.

(c) Outline **two** marketing techniques that could be used to promote new products. 2

advertisement of tv, newspapers, posters, leaflets or shows, or social media.

use influential testers to promote your new product on its quality.

MARKS | DO NOT WRITE IN THIS MARGIN

8. A child's pedal car is shown below.

Describe the aesthetic aspects of the child's pedal car. 4

it is bright coloured and children love bright codors

it is apealing to boys as it has racing textures on it

it has chrome all of it making it more cool towards children

it is using a classic 50s style to the car which could be appealing to some parents.

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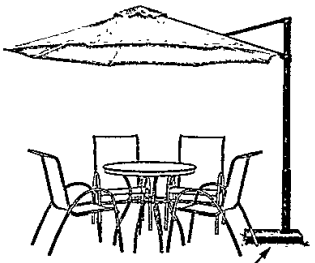
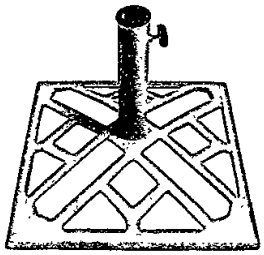
SECTION 2 — 20 marks

Attempt ALL questions

9. The parasol bases shown below have been produced using a range of materials and processes.



parasol base



metal base

Metals
- copper
- cast iron
- aluminium.

plastic base
(filled with water)

Plastics
- acrylic
- polypropylene
- urea formaldehyde.

(a) Select the most appropriate material for each base from the lists provided and state why they would be suitable.

A different property must be given for each item.

(i) Metal base Cast iron 1

Suitable because it is strong and quick to make and people like cast iron things in their gardens 1

(ii) Plastic base polypropylene 1

Suitable because it is stronger than acrylic and can easily be used in rotational moulding 1

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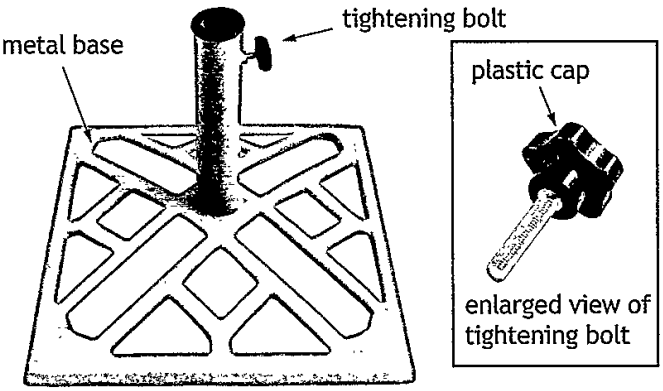
9. (continued)

Rotational moulding was used to manufacture the plastic base.

(b) State **two** identifying features of rotational moulding. **2**

rotational moulding is fast and fairly cheap.

(c) The metal base is shown below.



Name a process that could have been used to manufacture each of the following parts:

(i) metal base drop forge ~~pressure die~~ casting **1**

(ii) plastic cap injection moulding. **1**

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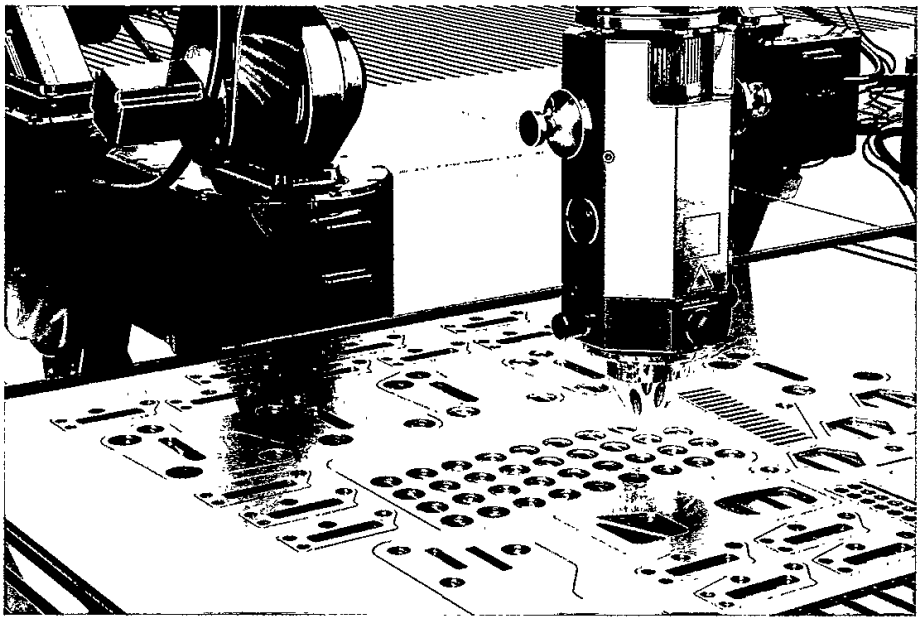
10. Laser cutters are widely used in the manufacture of products.



(a) Describe the impact that the use of technologies such as laser cutting have had on the manufacture of products. 4

Laser cutting can limit waste material
laser cutting is precise
laser cutting is fast and repeatible
laser cutter can cutt many ~~different~~
different shapes ~~from~~ from one piece of material.

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10. (continued)

Changes to society have occurred due to modern manufacturing technologies.

(b) Describe how manufacturing technologies have impacted society. 2

because manufacturing has become so quick and cheaper we have become a throw away society. manufacturing has because so automated there are less working industrial societys.

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MARKS | DO NOT WRITE IN THIS MARGIN

11. Furniture can be manufactured using one-off production methods.

(a) Explain **two** benefits of one-off production. **2**

there are large profit margins
one off production can be slow and
if be paid by the hour 'good money can
be made.
labour is readily available in the one off
industry.

MARKS | DO NOT WRITE IN THIS MARGIN

11. (continued)

Designers have a responsibility to ensure that the materials used in products have minimal negative impact on the environment.

(b) Describe how the environmental impact of the materials used in products could be minimised. 4

use natural materials not man made materials like plastic or steel as they use large amounts of energy to be created
use renewable energy like ~~wind~~ wind, solar or tidal electricity.
reuse waste material e.g. run off cuts of wood back through the mill to have minimum waste
dispose of waste from manufactoring process responsibly not dumping in ocean or any other natural areas
use electric not gas or oil to heat up materials.

[END OF QUESTION PAPER]