Candidate 1

SECTION 1 — 60 marks

Attempt ALL questions

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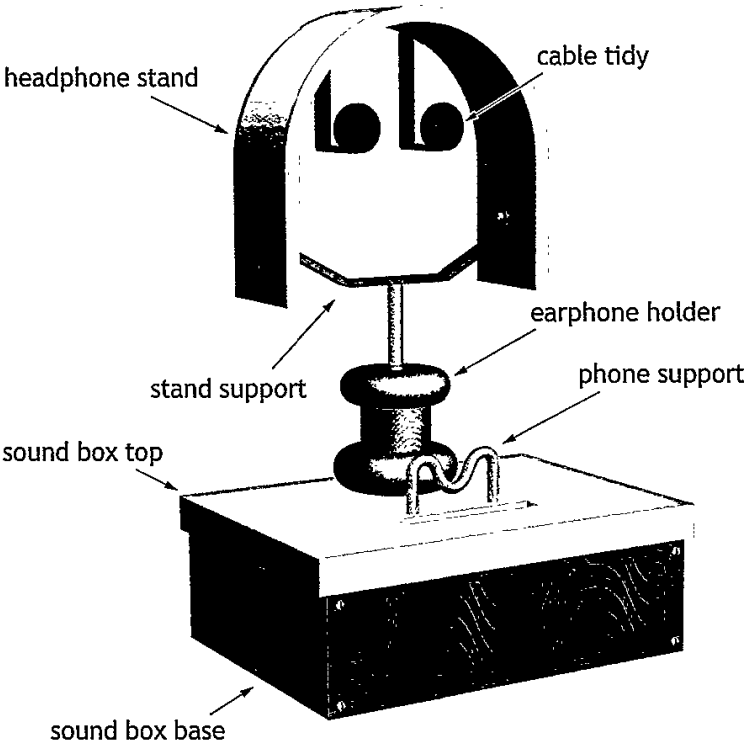
1. A design proposal for a sound box with a phone and accessory holder is shown below.



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

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

Oak

The sound box base was made from MDF.

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

Very durable

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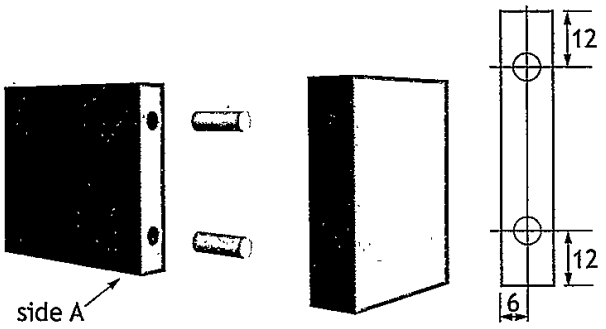
1. (continued)

(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.

- first using a steel rule and tri-square you must measure and mark out where the hole will be.
- Then using a pillar drill you must drill a hole where it's marked out.

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1. (b) (continued)

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

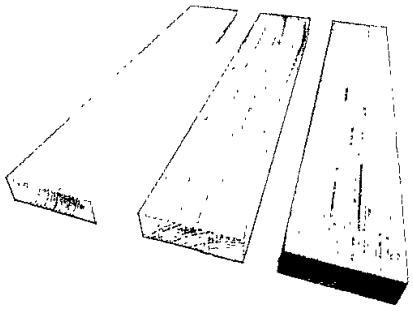
(ii) Outline how to ensure the holes were drilled to this depth. 1

mark out a line on the side of the wood.

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

housing 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

glue

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

tighten it in the vice

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

- coat twice
- ~~Allow to~~ fde before coating

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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

junior hacksaw

(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

- first you must draw file and cross file the faces and ~~end~~ edges of the acrylic.
- Then you must go over it again using sandpaper ~~wet~~ # dry then wet.
- finally using steel wool you must go over all surfaces again.

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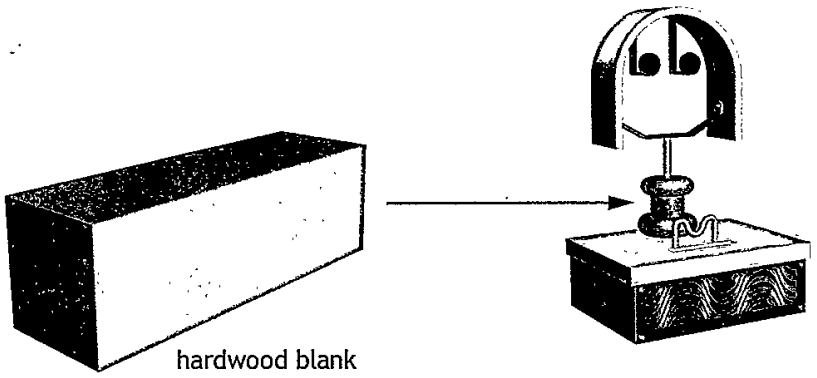
1. (continued)

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



hardwood blank

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

MDF

(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.

- first you must mark out where all the cuts will be. (with steel rule)
- Then file down surface (using file)
- Cut down to ~~Reg~~ smaller version

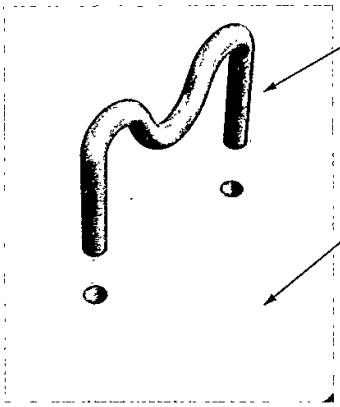
MARKS | DO NOT WRITE IN THIS MARGIN

1. (e) (continued)

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

make sure everythings smooth
- correct measurements
- no knots in wood

(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

- very tough
- also clusable

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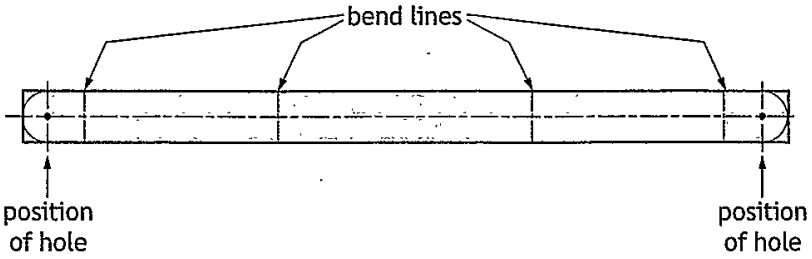
1. **(continued)**

(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.

- using steel rule measure to where the marks will be and mark with pencil
- Then put a slight cut where you've marked incase the pencil comes off
- using tri square draw a straight line where you've marked

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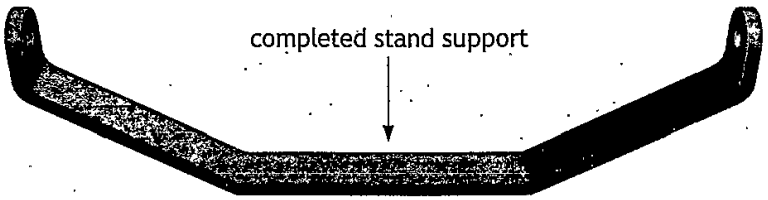
1. (g) (continued)

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

- must make a former
- Then heat up the metal so it can be placed on to the former as it is slightly more flexible

4

The mild steel stand support was dip coated in plastic.

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

- because it is more eye catching
- Secures the bends more

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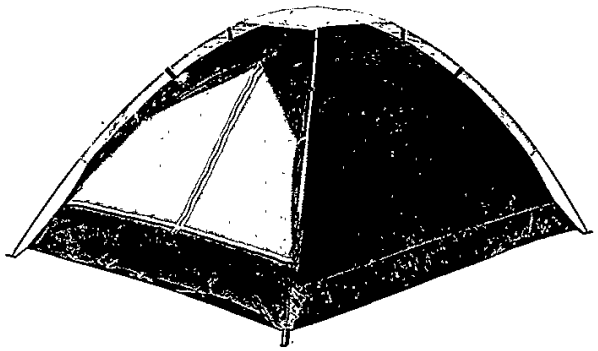
2. A camping tent is shown below.



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

- Any faults, such as water dripping through or the zip won't close.
- Positives, such as it isn't affected a lot by wind.

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

- make sure all questions are relevant
- ask multiple people so you can get feedback
- work on what you need to

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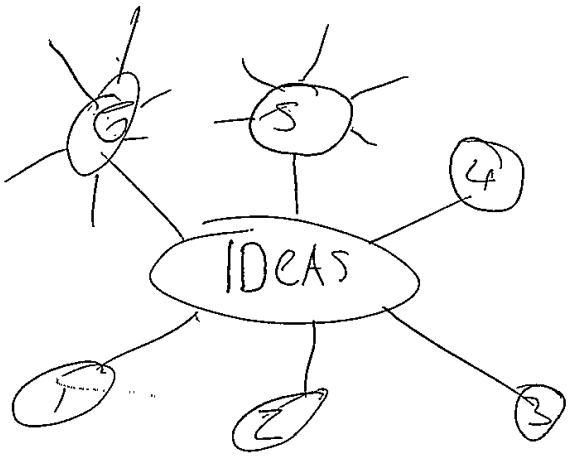
3. A designer often uses idea generation techniques.

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.

- think of multiple different options for colour, surface, size etc
- then select one from each thing.



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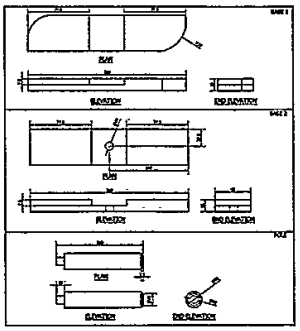
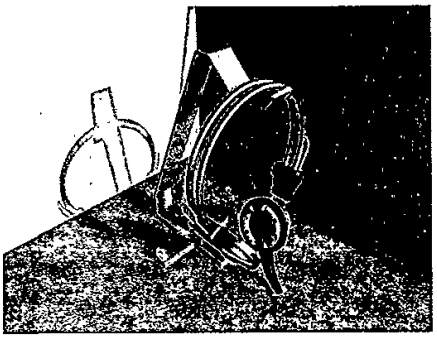
4. The **two** graphic techniques shown below were used during the design of a headphone stand.



working drawing



computer-generated graphic

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

(a) working drawing - you know exactly what sizes - helps with the building process (plan) 2

(b) computer-generated graphic - You know what it looks like (roughly) - See if it works. 2

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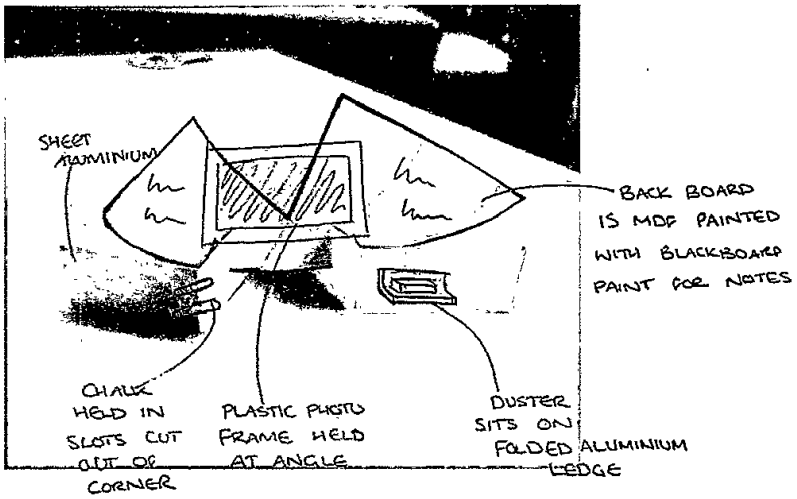
5. Designers often use sketch models as shown below.



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

- So they know sizes

- So they know if it will look like they thought

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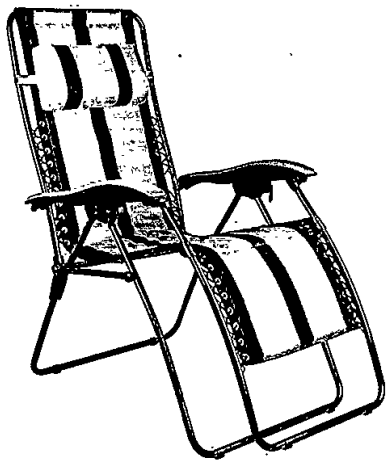
6. A sun lounger is shown below.



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

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

- Pattern makes it catch peoples eye
- material looks very flexible
- durable
- Tough

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6. (continued)

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

- shows extended bit for relaxing
- Comfortable

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

- Stronger material
- more of the material

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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

Technology will become more and more advanced

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

the price of stuff might be slightly cheaper.

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

-Adverts
- leaflets.

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

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

- bright
- Smooth
- Stripy
- Metalic

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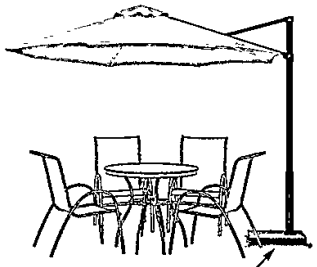
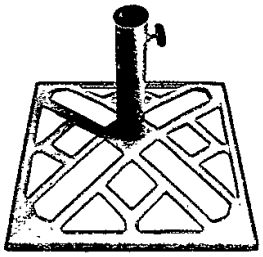
SECTION 2 — 20 marks
Attempt ALL questions

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 flexible for shaping 1

(ii) Plastic base urea formaldehyde 1

Suitable because water resistant. 1

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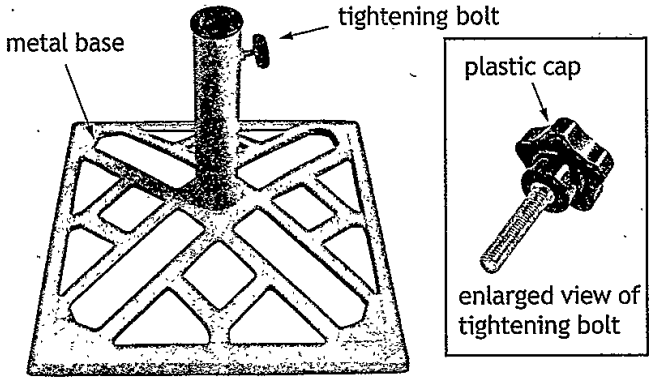
9. (continued)

Rotational moulding was used to manufacture the plastic base.

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

- Shape
- indents

(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 metal turning 1

(ii) plastic cap ~~fg~~ rotational molding 1

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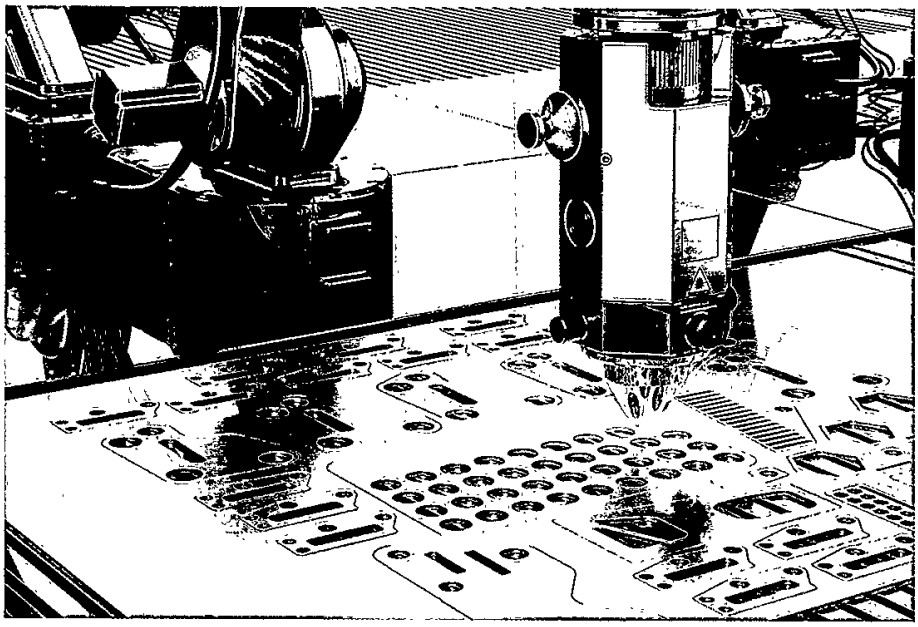
10. Laser cutters are widely used in the manufacture of products.



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

- Quicker
- looks better
- everything is a lot more advanced
- expectancy is higher

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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**

- It has made it easier to make things
- has made equipment cheaper

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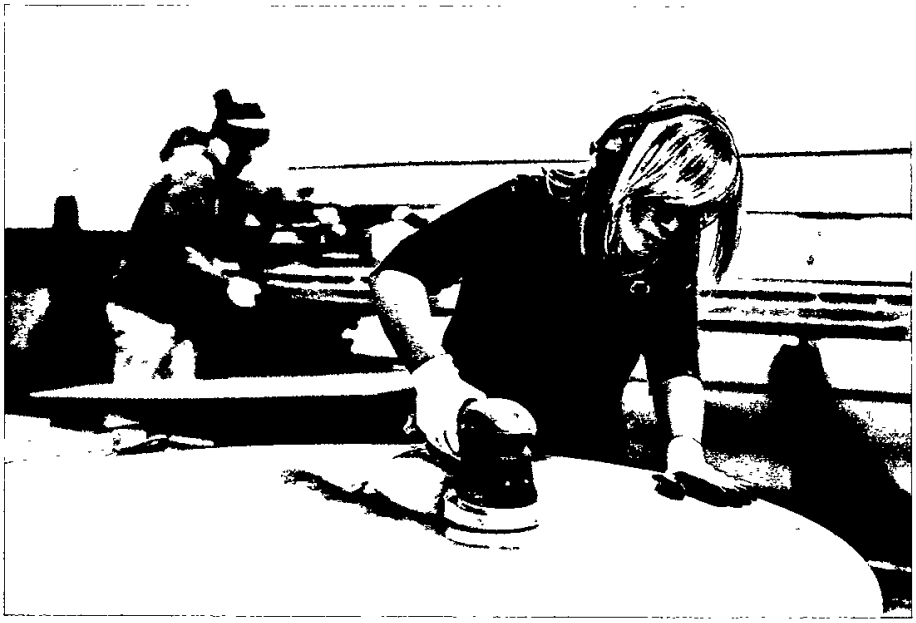
11. Furniture can be manufactured using one-off production methods.



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

- Differentiates
- keeps things fresh

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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 less plastics
- use ~~more~~ less machines
- be careful with the amount of material you use
- Don't let materials go to waste

[END OF QUESTION PAPER]