



Tuesday 10 June 2014 – Morning

GCSE DESIGN AND TECHNOLOGY Resistant Materials

A565/01 Sustainability and Technical Aspects of Designing and Making

Candidates answer on the Question Paper.

OCR supplied materials:

None

Other materials required:

None

Duration: 1 hour 30 minutes



Candidate
forename

Candidate
surname

Centre number

Candidate number

INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions in Section A **and** B.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **80**.
- Your Quality of Written Communication is assessed in questions marked with an asterisk (*).
- This document consists of **20** pages. Any blank pages are indicated.
- Dimensions are in millimetres unless stated otherwise.

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SECTION AAnswer **all** questions.

You are advised to spend 40 minutes on this section.

On Questions 1–5 circle your answer.

- 1** Which of the following is not a source of sustainable raw materials?
- (a) Coal mine
 - (b) Flock of sheep
 - (c) Cotton plantation
 - (d) Pine forest
- [1]**
- 2** Which of the 6Rs means to re-design a product to make it more efficient?
- (a) Recycle
 - (b) Rethink
 - (c) Refuse
 - (d) Repair
- [1]**
- 3** Aesthetics relates to a product's:
- (a) Cost
 - (b) Use of non-ferrous metals
 - (c) Looks
 - (d) Carbon footprint
- [1]**
- 4** Planned obsolescence is when a product:
- (a) Becomes an antique
 - (b) Takes several years to design
 - (c) Is made using the best components available
 - (d) Lasts for a fixed period of time
- [1]**

3

5 Flat-packed products are those that:

- (a) Have to be assembled at home
- (b) Only fit into a carrier bag
- (c) Contain toxic chemicals
- (d) Are always made overseas

[1]

6 State the meaning of the symbol shown.



..... [1]

7 Self-cleaning glass is an example of what form of technology?

..... [1]

8 The Forest Stewardship Council promotes responsible m
of the world's forests. [1]

9 Ethical companies ensure that their employees have basic human r [1]

10 What **one** word describes a country's traditions, skills, religions or beliefs?

..... [1]

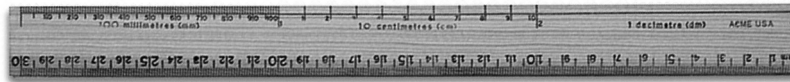
4

Decide whether the statements below are **True** or **False**.

Tick (✓) the box to show your answer.

	True	False	
11 A sweatshop makes sure its working environment is comfortable for its employees.	☐	☐	[1]
12 CFC stands for Committee for Carbon.	☐	☐	[1]
13 Plywood can be made from sustainable raw materials.	☐	☐	[1]
14 Thermoplastics can only be recycled by giving to charity shops.	☐	☐	[1]
15 Ergonomics is the study of people's sizes.	☐	☐	[1]

16 Fig. 1 shows three rulers.



Wooden ruler A



Opaque plastic ruler B



Clear plastic ruler C

Fig. 1

(a) Name **one** plastic from which ruler B could be made.

..... [1]

(b) Give the meaning of the term 'shatter resistant', that can be found on plastic rulers.

.....
 [1]

(c) Describe **one** advantage to the user of ruler C compared with the other two.

.....

 [2]

6

- (d) Wooden ruler A is to be manufactured locally.

Explain the benefits of manufacturing locally.

.....

.....

.....

.....

.....

.....

.....

..... [3]

- (e) Rulers can be manufactured in developing countries where the Ethical Trading Initiative (ETI) aims to improve conditions for workers.

Give **four** working conditions that are promoted by ETI.

1

.....

2

.....

3

.....

4

.....

[4]

7

- (f) Rulers can be difficult for visually impaired people to use.

Use sketches and notes to show **three** modifications to make a ruler suitable for use by visually impaired people.

[3]

(g)* Plastic products have become very popular in society.

Discuss the advantages and disadvantages for the environment of making products from plastic.

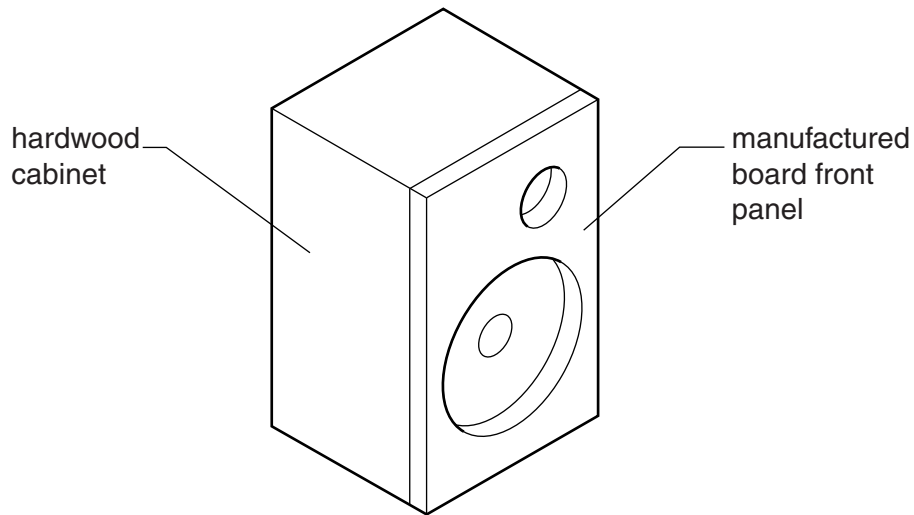
[6]

Section Total [35]

9

SECTION BAnswer **all** questions.

You are advised to spend 50 minutes on this section.

17 Fig. 2 shows a speaker cabinet.**Fig. 2****(a) (i)** State **one** suitable hardwood for the speaker cabinet.

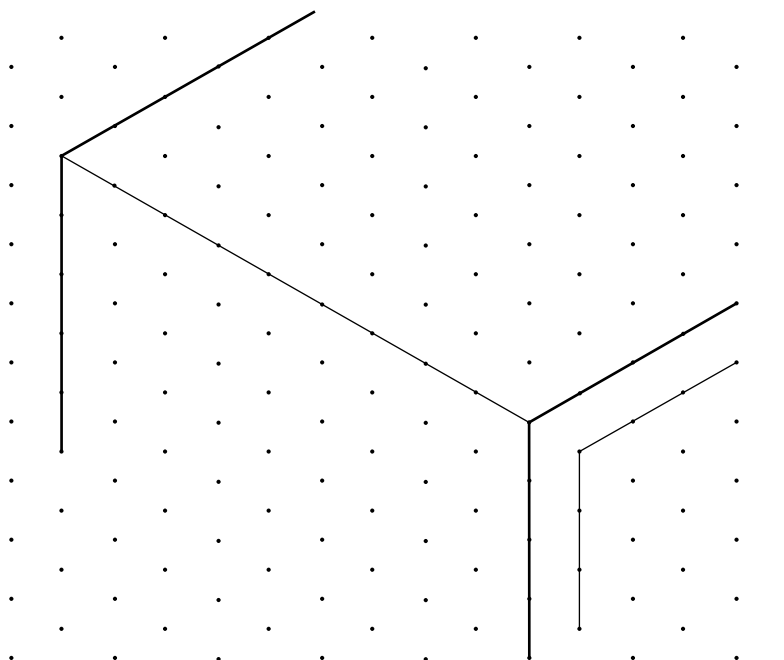
..... [1]

(ii) Give **one** characteristic of your chosen hardwood that makes it suitable for the speaker cabinet.

..... [1]

10

- (b) The speaker cabinet is constructed using finger/comb joints. Complete the sketch below to show a finger/comb joint.



[3]

- (c) Fig. 3 shows the front panel of the speaker cabinet.

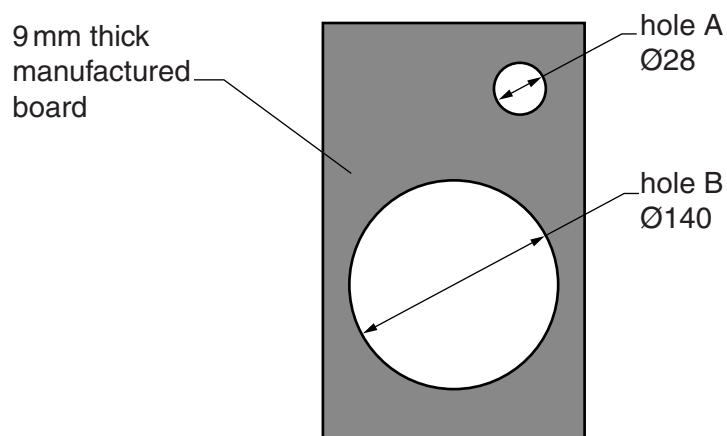


Fig. 3

- (i) State **one** suitable drill bit you would use in a pillar drill to make hole A.

..... [1]

- (ii) Use sketches and notes to show how hole B could be cut out of the front panel using workshop tools.

[4]

- (d) The speakers are to be sprayed with clear varnish. Spraying the varnish is easier and quicker than using a brush.

State **one** more advantage of spraying the varnish instead of applying with a brush.

..... [1]

- (e) The varnish is sprayed from an aerosol can. The symbol below is shown on the side of the can.



- (i) State the meaning of the symbol.

..... [1]

- (ii) State **one** safety precaution to be taken when spraying the varnish.

..... [1]

12

- (f) When in use on a hard surface, the speaker cabinet slides around.

Use sketches and notes to show a modification to the bottom of the speakers that will stop this.

[2]

13

18 Fig. 4 shows a laptop stand made from sheet plastic.

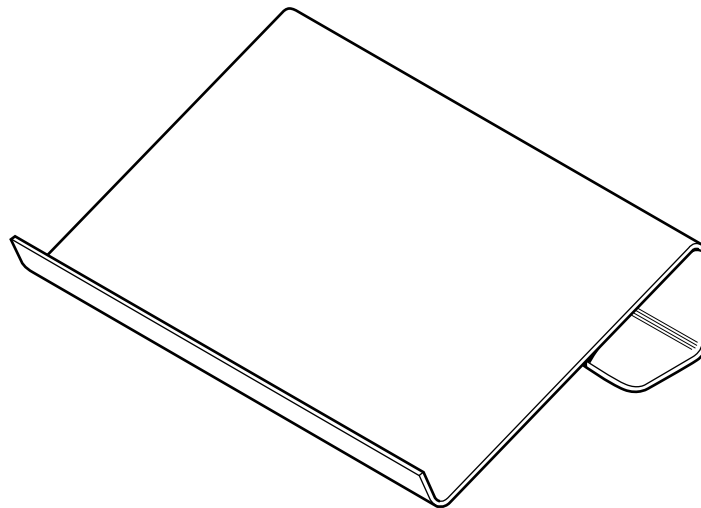


Fig. 4

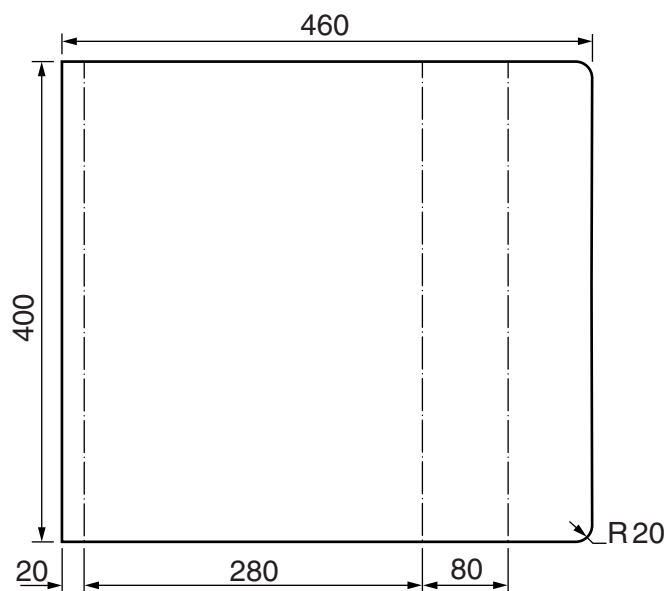
(a) (i) State **one** specific thermoplastic suitable for the laptop stand.

..... [1]

(ii) State a suitable thickness for the plastic sheet.

..... [1]

(b) The plastic sheet is cut to the sizes shown on the drawing below.



Laptop stand
Scale: 1:2
Tolerance: ± 1 mm
All dimensions in mm

The tolerance given on the drawing is ± 1 mm.
Explain what is meant by the term tolerance.

.....
..... [2]

(c) Complete the action plan below for two stages of making the laptop stand.

Process	Tool or item of equipment	Safety precaution
Polishing the edges of the plastic	Buffing machine	
Bending the plastic to shape		

[3]

(d) State **two** quality control checks that should be carried out during the making of the laptop stand.

1

2

[2]

15

- (e) An alternative design for a laptop stand is required.

Use sketches and notes to show **one** idea for a new laptop stand. Include details of materials and methods of construction used.

The laptop stand must:

- be made from softwood
- hold the laptop or tablet securely at an angle
- fold flat when not in use
- allow air flow to the base of the laptop
- be easy to carry with one hand

[6]

16

19 Fig. 5 shows a workshop shelving unit.

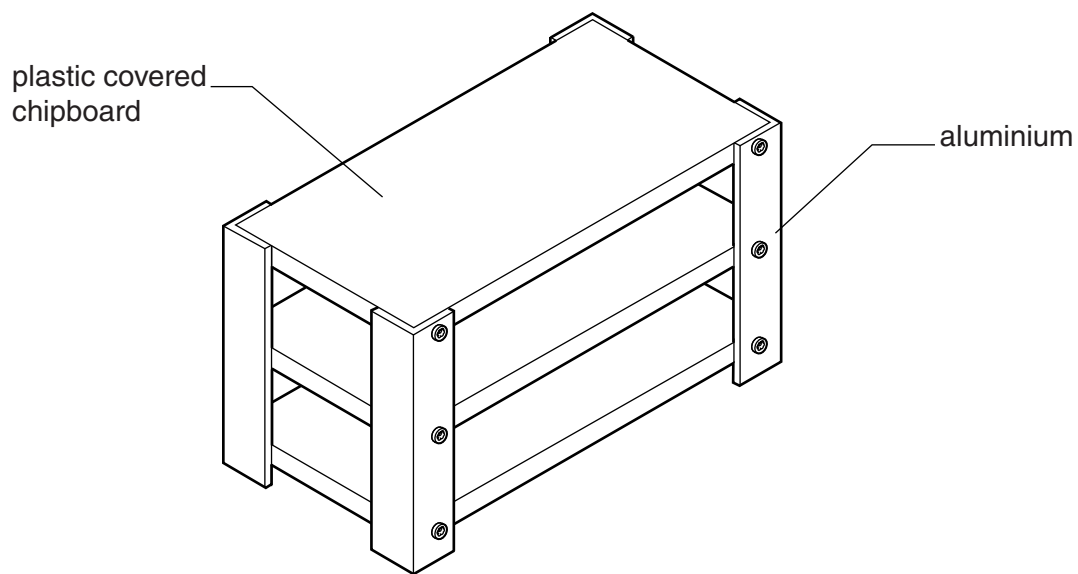


Fig. 5

(a) The legs of the stand are made from aluminium.

State **one** reason why aluminium is a suitable material for the legs.

..... [1]

(b) The shelves are made from plastic covered chipboard.

(i) State **two** other types of manufactured boards.

1

2 [2]

(ii) Give **one** reason why the chipboard has been covered in plastic.

..... [1]

17

- (c) Knock-down fittings have been used to join the stand together. Fig. 6 shows a type of knock-down fitting.

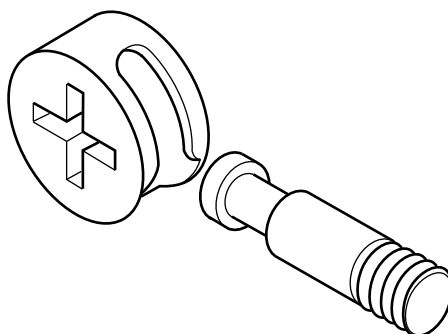


Fig. 6

- (i) State the name of this type of knock-down fitting.

..... [1]

- (ii) Name the type of tool needed to tighten the knock-down fitting.

..... [1]

- (d) State **two** reasons why knock-down fittings have been used for the shelving unit rather than wood screws.

1

2

[2]

- (e) The finished shelving unit is tested. The shelves are found to be too thin to support the weight of many workshop items.

Tick (✓) the reason for this problem:

Poor quality of the design	
Poor quality of the manufacture	
Poor quality of the materials	

[1]

(f)* Discuss the advantages and disadvantages of using manufactured boards to make products compared with natural solid woods.

..... [6]

Section Total [45]

END OF QUESTION PAPER

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