



2016 specification
first exams in 2018

Topic Tests for GCSE Edexcel Design & Technology: Timber-Based Materials

7.1–7.8 – Specialist Technical and
Designing and Making Principles

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Teacher's Introduction

This resource consists of eight topic tests covering Component 1 Unit 7 of the GCSE (9–1) Edexcel (1DT0) Design and Technology specification. All aspects of the specification are covered throughout these topic tests. The tests mostly follow the specification order, with a few exceptions, as shown in the table below:

Test	Specification points	Marks
1	7.1 – Design contexts.	29
2	7.2 – The sources, origins, and physical and working properties of each natural and manufactured timber and their social and ecological footprint.	43
3	7.3.1–7.3.4 – The way in which the selection of each natural and manufactured timber is influenced.	45
4	7.3.5–7.3.6 – The way in which the selection of each natural and manufactured timber is influenced.	48
5	7.4 – The impact of forces and stresses on each natural and manufactured timber and how timbers can be reinforced and stiffened.	40
6	<ul style="list-style-type: none">7.5 – Typical stock forms, types and sizes used in order to calculate and determine the required quantity of each natural and manufactured timber.7.8 – Appropriate surface treatments and finishes that can be applied to each natural and manufactured timber for functional and aesthetic purposes.	41
7	7.6 – Alternative processes that can be used to manufacture typical products of each natural and manufactured timber to different scales of production.	49
8	7.7 – Specialist techniques, tools, equipment and processes that can be used on each natural and manufactured timber to shape, fabricate, construct and assemble a high-quality prototype.	47

These topic tests are designed to test the students' knowledge and enable the teacher to diagnose the students' strengths and weaknesses in certain areas. Each test covers a range of question types on one specification point, and there is a wide variety of stimulus material. These tests are not intended to mimic exam papers.

Mark schemes for each topic test can be found at the end of this resource. For 'closed' questions, where only one answer is acceptable, a model answer has been provided. For 'open' and extended questions, level marking criteria, indicative content and example answers have been included.

Each test is worth approximately **40–50 marks** and takes about **40–50 minutes**. Test 1 is a shorter test and is worth **29 marks**.

When to Use This Resource

This resource can be used at the end of the unit when the students have revised or as a homework task to encourage confidence in a particular topic area. The students can also use the tests for revision later on, directly before the exam.

How to Use This Resource

The tests can be completed individually in class or even as a small group. However, they can also be completed as homework tasks. The tests can be quickly marked by the student or the teacher, at home or in the classroom, as answers are provided. Or, students can mark their own or each other's work using the answers provided. The teacher can make a note of their scores which enables a monitoring of progress.

Benefits to Students

Students can be confident they have been tested on every aspect of the specification. After completing a test, the student will know which areas they are strong in, and which require further work.

Students can use the tests when they have revised – this assesses their initial level of knowledge. As they progress through the tests they can see how they have improved. The tests aim to include interesting and relevant examples which will help students to engage, and encourage effective revision.

June 2021

DESIGN CONTEXTS

1. Name **three** different household products that are made of wood.

- a)
- b)
- c)

2. John wants to build this wooden bookcase for his bedroom. He has some spare tools. Which of these tools would he need?



- ☐ Hacksaw
- ☐ Screwdriver
- ☐ Tenon saw
- ☐ Screws
- ☐ Wood glue
- ☐ Pencil
- ☐ Chisel

3. Fill in the gaps.

In the UK, the most commonly used natural timber for furniture is

This is because it grows here _____, making it more _____

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4. Mahogany is used for expensive furniture all around the world; for example timber is naturally sourced from rainforests, such as the Amazon in South America.



- i. Can you think of **two** reasons why this is not good for the environment?

.....

.....

.....

.....

- ii. Give an example of a softwood and a method that can be used to achieve a hardwood, such as mahogany.

.....

.....

.....

.....

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5. Below are **two** briefs.

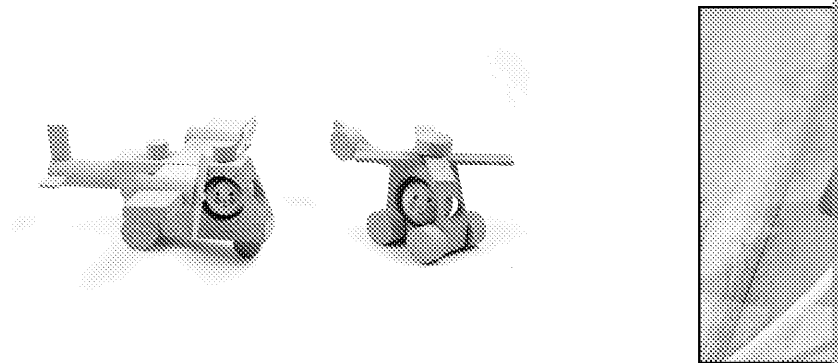
- i. Choose **either** Brief A **or** Brief B. Design and annotate a product using your design skills.

Brief A

The owners of Bertha's Toy Shop specialise in classic toys with a modern twist. They want to design a new range of pull-along toys to appeal to both boys and girls. The toys must have a classic look and feel but must also have a modern twist and incorporate modern technology.

Design a pull-along toy for the new collection. Annotate your design.

Examples of wooden toys:



Brief B

Richard Davis the furniture maker has built a reputation based on his timeless style. The range has always been made from solid natural timber. However, he has identified that their current products do not appeal to the young market. Richard Davis are looking to expand their range to include modern designs that are easy to assemble and moved more easily once assembled. The design should maintain the timeless style of the brand while being lightweight, functional and flat-pack.

Design a flat-pack bookcase for the new collection. Annotate your design.

Examples of furniture with a classic style:



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Brief chosen:

☐

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ii. Name **two** properties that a timber-based material used to make this design.

1.
2.

iii. Suggest a timber-based material that could be used for this design.

.....

iv. Explain why your material choice is appropriate for your design.

.....

6. Tick the correct statements (there are more than one).

☐

Timber is less widely used because of new material developments.

☐

Timber is less widely used because it has become expensive.

☐

Timber is as widely used as it has ever been.

☐

Timber is used in all areas of design no matter where it has to be sourced.

☐

Timber is not always sourced sustainably.

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Preview of Questions Ends Here

This is a limited inspection copy. Sample of questions ends here to avoid students previewing questions before they are set. See contents page for details of the rest of the resource.

Test 2: 7.2

1. 1 mark per correctly identified property.

Natural Timber

- a) Can be made from waste material.
- b) Many different types, colours, grains and properties to choose from.
- c) Cheap.
- d) Available in large sheets.
- e) Natural grain throughout.
- f) Smooth finish that means it can be finished easily, with little preparation.
- g) Available in many shapes and sizes as well as standardised planks.

<input type="checkbox"/>
<input checked="" type="checkbox"/>
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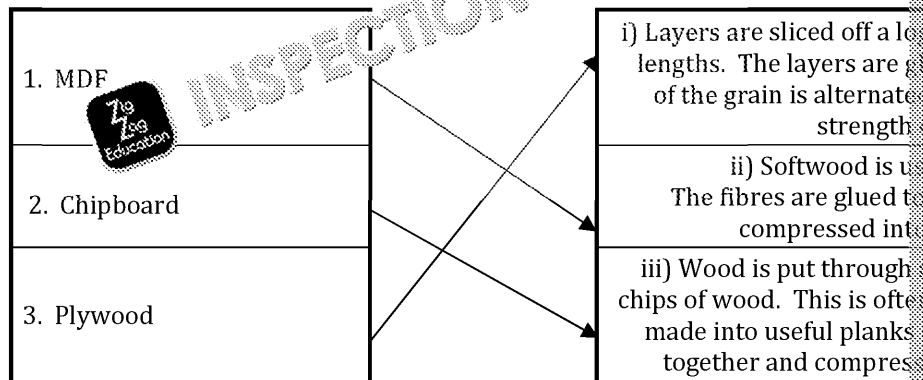
2. 1 mark for valid point/definition and 1 mark for valid explanation/example.

Answer could include:

- Pinewood might have been used for the fence because it is cheap, readily available and easy to work with. [1] This makes it suitable for products that require quantity and a smooth finish. [1]

Allow any other valid point(s).

3. 1 mark per correctly drawn arrow.



4. 1 mark for valid point/definition and 1 mark for valid explanation/example.

Answer could include:

- Manufactured board is a better material choice because it is strong, durable and available in large sheet sizes. [1] The ability to have large sheet sizes means that smaller planks can be joined together, potentially creating weaknesses in a structure. [1]

Allow any other valid point(s).

5. 1 mark for valid point/definition and 1 mark for valid explanation / example / comparison.

Answer could include:

- Manufactured board is a good choice for the Billy bookcase because it is cheap and can be veneered to give the aesthetic of wood without the cost or weight of solid wood. [1] IKEA who strive to provide affordable design. [1]

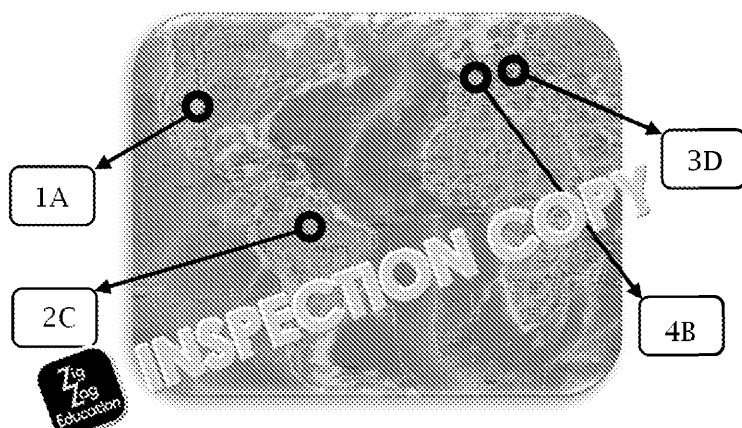
Allow any other valid point(s).

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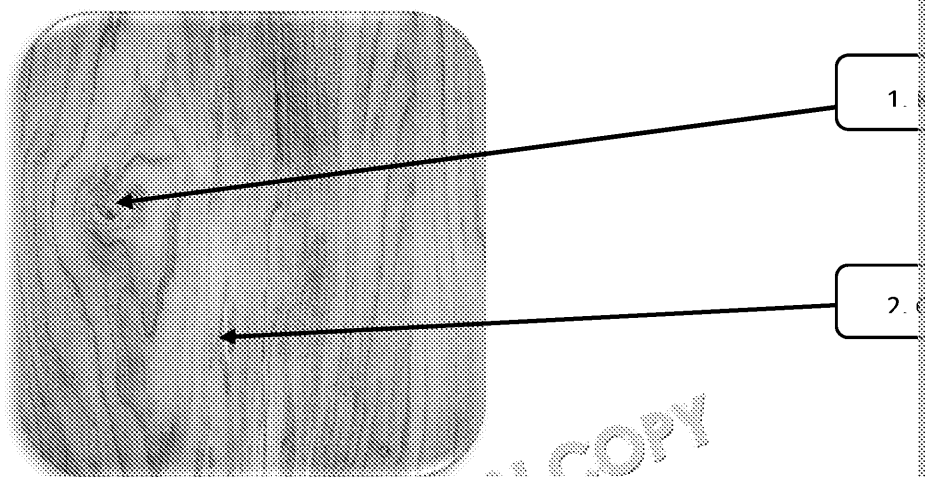
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6. Allow 1 mark for each correct letter.



7. Allow 1 mark for each correct property.



8. Allow 1 mark for each correct answer.

- Hardwoods have a darker colour
- Hardwoods have a higher density
- Softwoods have a lighter colour
- Softwoods have a lower density

9. Allow 1 mark for each correct common use.

Timber	Working Property	Common Use
1. Oak	Durable	Low cost furniture Furniture Doors Cupboards Flooring
2. Mahogany	Cuts easily	Expensive cabinets Other expensive furniture
3. Beech	Smooth	Veneer Lumber Flooring Boats
4. Basswood	Soft	Modelling
5. Jelutong	Easily worked	Vacuum Forming Modelling

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10. Allow 1 mark for each correct or similar explanation.
- Manufactured board is easier to work with in many ways because it's very
 - Manufactured boards do not have any knots or resin pockets which are found harder to work around.
11. Allow 1 mark for each correct statement.
- Oak has a low hardness. (False)
 - Mahogany has a low tensile strength. (True)
 - Balsa has a high compressive strength. (False)
 - Ash is a tough timber. (False)
 - Pine is durable. (True)
12. i. Allow 1 mark for each correct or similar explanation.
- Wood is not very elastic, but can still be bent without deforming.
 - Stretchiness of the material.
- ii. Allow 1 mark for each correct timber.
- Yew
 - Pine
 - Ash
- iii. Allow 1 mark for each correct timber.
- Balsa
 - Jelutong
 - Most other hardwoods
13. i. Allow 1 mark for each correct property.
- Moderate durability
 - Hard to treat
 - Fine texture
 - Tough
- ii. Allow 1 mark for each correct explanation.
- Yacht hulls
 - Small boats
 - Dingy cladding
 - Interior building panelling
- iii. Allow 1 mark for suitable explanation.

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Preview of Answers Ends Here

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