

Year 11 – GCSE Design and Technology – Exam Preparation – The Exam Paper set up

SECTION A – Core Technical Principles (20 marks)

A mixture of multiple choice and short answer questions assessing a breadth of technical knowledge and understanding.

- new and emerging technologies
- energy generation and storage
- developments in new materials
- systems approach to designing
- mechanical devices
- materials and their working properties.

SECTION B – Specialist Technical Principles (30 marks)

Several short answer questions (2–5 marks) and one extended response to assess a more in depth knowledge of technical principles.

- selection of materials or components
- forces and stresses
- ecological and social footprint
- sources and origins
- using and working with materials
- stock forms, types and sizes
- scales of production
- specialist techniques and processes
- surface treatments and finishes.

SECTION C – Designing and Making Principles (50 marks)

A mixture of short answer and extended response questions.

- investigation, primary and secondary data
- environmental, social and economic challenge
- the work of others
- design strategies
- communication of design ideas
- prototype development
- selection of materials and components
- tolerances
- material management
- specialist tools and equipment
- specialist techniques and processes

Useful websites

Technology student

BBC Bite size

Examples of questions within each section

Section A

A malleable material is one that

- A can be pressed into a shape or form. ☐
- B is able to withstand scratches and indents ☐
- C is hard to break or snap. ☐
- D rusts with exposure to air and moisture. ☐

Section B

Table 1 identifies specific processes used to remove different materials and make sure materials are cut to a tolerance.

Choose one process from **Table 1** and, using notes and/or sketches, describe the process in detail.

Table 1

Turning	Die cutting	Laser cutting	Cutting by shearing
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Section C

Explain the importance of evaluation when developing prototypes.

Give specific examples in your answer.

Examples of Mathematic questions

12

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A number of calendars are being made.

Given the sizes provided in Figure 5 and Figure 6, how many calendar pages can be made from one sheet?

[2 marks]

Figure 5

1187 mm

Material sheet

841 mm

Figure 6

280 mm

Calendar page

210 mm

Not drawn to scale

163

What percentage of material is waste after cutting the pages calculated in Question 16.2?

Show your working and give your answer to two decimal places.

[3 marks]

Answer



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Do not write outside the box

18

22

The step ladder in Figure 4 has 12 steps. Each step is 275 mm long, 100 mm wide and 25 mm thick.

Figure 4

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Each step should be 275 mm long.

The manufacturing tolerance is $\pm 0.5\%$.

Calculate the maximum and minimum length of each step to two decimal places.

[2 marks]

Answer



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21

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Study the diagram of the box in Figure 5.

Figure 5

The overall base dimensions are 300 mm × 300 mm.

The thickness of the material used for the sides of the box is 15 mm.

Use the dimensions provided to calculate the internal base area of the box.

Give your answer with units.

Show your working.

[4 marks]

Answer



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Turn over ►