



GCSE

Design and Technology

8552/W Paper 1

Report on the Examination

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General

Centres are to be commended for the effective way students of all abilities have been prepared for the written exam in 2024.

Section A

This section required students to respond to a mixture of multiple-choice questions (MCQs) and short answer questions covering the specification core technical principles.

Section B

This section tested students on the specialist technical principles section of the specification. It allowed students to demonstrate their deeper knowledge and understanding of at least one material category.

Section C

This section tested students on the designing and making principles section of the specification

Questions A1 to A10

These questions followed the established multiple-choice format with a very broad coverage of the core technical principles content.

A10 proved to be the most accessible multiple-choice question while A8 proved the most challenging.

Question A11 – properties of natural timbers

The mark scheme identified an extensive range of acceptable properties that could have been given as one word or sentence responses. Words like strong, thick, and cheap MUST be qualified to gain credit. Popular correct answers were tough and durable. Hard was given a lot but not accepted unless qualified.

Question A12 – foil lined cardboard packaging

This question tested students on their ability to comment on the suitability of foil lined cardboard in the takeaway container NOT the foil tray. Many responses were detailed and clearly demonstrated knowledge and understanding of product use from real life experience. Some responses confused conduction with insulation (of the foil card composite) when discussing suitability of the lid to reflect heat and keep food warm.

Question A13 – system block diagram for a laptop computer

Where students had a good understanding of system diagrams and had a good understanding of input, process and output, good answers were provided. Recognisable symbols and images of correct components were credited as responses if correct. Some students were unfamiliar with system diagrams and what constitutes an input, process or to a lesser extent output. In some instances, random material names and detail of what a component did e.g. sound were given as answers and were not credited.

Question B14 – calculation of required paving stones

It was evident from the number of correct answers that students had a good level of mathematical knowledge to complete the required calculation. It was pleasing to note lots of good evidence of working out. This allowed method marks and part credit to be awarded even if the final answer was incorrect. Where rounding up to the nearest whole paving stone was not indicated, a mark was lost.

Question B15 – specific materials

15.1 Many students had been well prepared in at least one material area and were able to name one specific property of their identified chosen material. There were however some generic responses using strong or cheap as a property and these were not rewarded.

15.2 The most successful part of question 15. Most students were able to give one product using their identified chosen material. Popular responses were furniture for oak and drinks can for aluminium.

15.3 Some excellent examples were given, clearly linked to the chosen product. Several responses, however, were very superficial in their content and so failed to access all available marks. For example, stating a material was strong, cheap, or soft without further qualification did not score marks. Without further qualification, phrases like ‘looks nice’ and ‘easy to cut’ did not score marks.

Question B16 – stock forms

16.1 An extensive range of specific materials is provided in the published mark scheme. Some students just named a material e.g., MDF which was incorrect. Some students had read the question too quickly and gave a standard component rather than material stock form as an answer. Popular correct responses included plank or sheet.

16.2 Responses were mixed and largely dependent on how students understood Qu 16.1. A varied range of responses across the marking guidance blocks were noted. Students discussed with knowledge and understanding many correct reasons why stock forms are beneficial to designers and manufacturers.

Question B17 – calculation of 1000 electric motors with discount

A common misunderstanding with this question was rounding up. Several students did not round up to the nearest 1 penny, but the nearest 10 pence arriving incorrectly at an answer of £590.80. Once again, lots of good evidence of working out allowed method marks to be awarded even with an incorrect final answer.

Question B18 – surface treatment or applied finish

An opportunity for students to use sketches and notes to demonstrate their knowledge and understanding of how one of the given surface treatments of finishes is produced. Many answers used clear sketches to support a step-by-step description of how their chosen surface treatment was produced on a material surface. The best responses detailed surface preparation, reference to application using correct tools and equipment, Quality Control checks and time taken to complete each stage. Some students incorrectly gave details about why a finish was used rather than how.

Question B19 – ecological issues in sourcing and extracting raw materials.

The extended response question was focused on ecological issues which need to be considered in the sourcing and extraction of raw materials. Many detailed responses were produced with an excellent analysis of the major issues and high-level personal evaluation. Common themes discussed were deforestation, mining, drilling, farming, product mile and greenhouse gas emissions. Some students discussed fair trade and employment issues which are not ecological issues required by the question and hence incorrect. Students are now familiar with this type of question and able to construct effective responses drawing on their understanding of big issues.

Question C20 – bus stops

20.1 This part focused on user needs and wants. All attempted responses demonstrated understanding in analysis of at least one feature. Many responses discussed features of each bus stop. Good responses provided evaluative points showing the importance of features to the user. This was the best answered part of question 20.

20.2 Students who correctly discussed innovative features e.g., phone charging and interactive displays as required by the question scored well. Where responses just focused on listing existing features and improving the bus stops e.g., adding more seating or adding a door, marks were not awarded.

20.3 Students were able to link anthropometrics and ergonomics to the sizing of various bus stop features and improving comfort and usability. The best responses discussed percentile ranges and clearly understood the difference between anthropometrics (use of human body size) and ergonomics (interaction with human user). Specific examples were additionally given by some students to clarify their understanding e.g., readability of the signs.

Question C21 – nesting/tessellating

21.1 Many responses correctly referenced efficient material use and planning to reduce waste. More detailed responses considered interlocking pieces and the use of Computer Aided Manufacture to increase accuracy, eliminating human error and reduce waste.

21.2 A very well attempted question where evidence of 8 accurately draw interlocking parts with no gaps gained full marks.

Question C22 – safety precautions

Responses that provided a list of safety equipment were not credited unless their use was explained. The question was looking for evidence of understanding actions that had to be taken when using tools and equipment with heat. Well explained precautions discussing cutting were not rewarded as they did not answer the question.

Question C23 – orthographic drawing of a toy car

A good discriminator, allowing students who understood orthographic drawing and drawing conventions to perform well. The question provided several opportunities to gain different marks for basic understanding of the plan view, but also technical detail evidencing different features using hidden detail and centre lines. Any recognisable attempt at a basic plan view either vertically or horizontally drawn gained at least one mark.

Question C24 – calculation of time taken for stitching

24.1 Virtually all attempted responses gained the first method mark of 320. Where students did work through to an answer, many were rounded to the nearest second and gained maximum marks. Providing just a correct answer gained maximum marks.

24.2 Students could still gain one method mark in this part of the question even if their answer to QU 24.1 was wrong. A single method mark was available for recognising that their answer from Qu 24.1 had to be multiplied and not divided by 30.

Question 25 – avoiding design fixation

Responses just stating what design fixation was did not gain credit. The question was looking for how design fixation could be avoided. Many students correctly considered looking at /creating more than one design idea. Several discussed collaborating with others to avoid fixation, eliminating preconceived ideas and even using biomimicry to avoid fixation. Some weaker responses incorrectly focused on ‘fixing things’ and ‘upcycling.’

Question C26 – tolerance and quality control

26.1 This part of the question had to reference measurement in one way or another to gain credit. Many correct responses discussed upper- and lower-dimension limits within a range e.g. +/- 0.1 mm.

26.2 This part of the question was not looking for a more detailed repeat of Qu 26.1. Answers needed to focus on the key word ‘how’ in the command line. Where students responded correctly, some detailed descriptions using real examples were discussed e.g., go/no go gauges. Some students discussed physical limits e.g., bending within a range to ensure a component would function properly and meet quality standards.

Question C27 – researching the work of designers and companies

A well attempted question. Many responses considered gaining inspiration, improving designs, avoiding mistakes and looking into products that were working well and already popular on the market. Many students used their own examples to clarify their understanding and access the top band of marks.

Question C28 – using a focus group

Many correctly identified the use of focus groups allowing people to be gathered together to gain an insight into how a product or range of products worked, identifying strengths and weaknesses in a design or product. Some discussed opportunities to see people in a specific target market interact with a product and gain an insight into its working.

Some students did not know what a focus group was and were unable to correctly respond at a basic level to this question. For example, some took the question literally and talked about staying on task and remaining on task in their own work.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) page of the AQA Website.