Pearson
Edexcel

Examiners' Report
Principal Examiner Feedback

Summer 2025

Pearson Edexcel GCE
In Design & Technology (1DT0)
1A: Metals

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2025
Publications Code 1DT0_1A_2506_ER

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom

Introduction

This is the fifth full cohort of candidates that has taken the reformed (9-1) GCSE Design Technology.

There are six different material specialist papers on offer, each with a common core in Section A which was worth 40 marks and a Section B worth 60 marks based on one of the six material areas; Metals, Papers and Boards, Polymers, Systems, textiles and Timbers.

Section A

Question 1 (a)(i) The most common answers were soft alongside warm and insulator of heat. Where candidates did not score a mark they generally referred to durable or insulator on its own as opposed to a heat insulator.

It is important to stress here that these opening four small questions are about the properties of materials in the context of the product or component given in the table and therefore generic properties will not be accepted. Candidates often stated characteristics of materials or products instead of properties. A clearer understanding of the difference between these is needed.

Question 1 (a)(ii) This question was quite well answered with a large proportion of candidates referring to the material being hard or rigid. Common mistakes or non-awarded answers were responses such as wont rust or non-corrosive suggesting the candidates probably didn't recognise the material as a polymer

Question 1 (a)(iii) Generally not well answered, good insulator of heat was the most common correct answer observed with recyclable, lightweight and foldable being the frequently observed incorrect answers.

Question 1 (a)(iv) Generally not well answered. Corrosion resistant was observed as the most frequently observed correct response but a lot of incorrect answers mostly to do with hardness, durability or easy to polish, shiny.

Question 1 (b)(i) A generally well answered question but many candidates did not justify the property correctly. Most common answer observed was hard with reference to walking and / or furniture being placed or moved. Many candidates referred to the aesthetics of oak.

Question 1 (b)(ii) The first of the maths based questions. Many candidates were able to correctly calculate the cost of the material at £40. Those candidates who did not score full marks on the question tended to multiply £57.6 by 1.44, rather than divide the two numbers

Question 2 (a) The majority of candidates were able to provide a response related to how easy the paper was to fold. Frequent incorrect responses observed related to being able to recycle the paper or that it was malleable.

Question 2 (b) The majority of candidates were able to provide a response related to being better for the environment however candidates often failed to provide a correct linked justification.

Question 2 (c) Many candidates displayed some knowledge relating to SMAs but struggled to offer context specific responses to animating parts of the rabbit, instead focusing on general descriptions of how SMAs worked. "Move" was a common but vague response. Many candidates got confused and discussed animation on the computer using CAD software. Many candidates were aware of how heat is used but few identified the features that could be animated. The best answers fully understood SMAs and that they provide 'animation of ears' when activated to make them appear to twitch.

Question 2 (d) Those candidates who understood the question were able to work out the calculation and were awarded 4 marks. Some candidates calculated the area used by mistake calculating 71%. A number of candidates rounded ineffectively.

Question 3 (a) This question presented more of a challenge with fewer than anticipated candidates being able correctly identify the component as a resistor.

Question 3 (b) Many candidates were able to identify one advantage of making the circuits in batches with reference to cost, waste and efficiency of time. A number of candidates recognised that changes could be made to the next batch based on feedback. The most common incorrect answer referred to the manufacturer having stock ready to send to a customer.

Question 3 (c) Overall answered well by most candidates. Answers were dependent on whether candidates were able to calculate that 32 boards could be obtained from one larger sheet.

Question 3 (d) A generally well answered question, mostly due to the portable nature that batteries did not require any wires /to be plugged in / use of cables. A few candidates were confused as to whether batteries are good for the environment, and easy to recycle.

Question 3 (e) Candidates generally performed well on this question, often answering the first part but lacking a correct and linked justification. Many candidates discussed the colour of the HIPS and how sustainable it is. Other correct and frequent responses observed related to 'lightweight', 'impact resistance', and 'not break / get damaged'.'

Question 4 (a) Many candidates identified that stainless steel does not rust, but explanations often lacked clarity, depth or a fully correct linked justification. When they did so in relation to not rusting, linked justifications often made reference to not contaminating the salt. Where candidates referenced hardness as a property, the linked justifications relating to withstand abrasive wear from the salt was frequently observed.

Candidates frequently use terms such as ‘strong’ and ‘durable’ as a catch all. References to strong are often not qualified in any way such as torsional strength in this context for example and durable is frequently offered for any material in any context. Most common incorrect answers were lightweight and cheap.

Question 4 (b) Generally very well answered with many candidates offering the correct answer of 54 grams. Some candidates possibly mis-read the question and gave 216 grams which equates to 80% of the material, not 20%.

Question 4 (c) Many candidates completed this question on one page only failing to be aware that there was additional space on the following page. Candidates generally answered this question well when they talked about ‘finding the best parts and faults’ of a product or ‘improving’ designs. Candidates also discussed using products as a form of ‘inspiration’ and would occasionally discuss the materials and manufacturing processes. Many candidates misunderstood the question and focused on disassembly for recycling rather than a design tool.

Section B

Question 5 (a) Candidates generally answered this question very well.

The question focussed on a shelving unit to display collectable figures. There were a number of annotations produced by candidates which was supported with some reasonable sketching techniques allowing candidates to access high marks for this question. Many candidates were able to score marks for a method to display four additional figures by adding separate units to either side of the existing cabinet or adding additional shelves above and below the existing ones. Common mistakes included all additional figures being added to the same shelves without any size changes to the display cabinet. Many candidates identified a suitable material that allowed the figures to be clearly seen, for example glass or clear acrylic. This was usually accompanied by some kind of locking mechanism to keep the figures secure which also acted as a method of stopping the figures from falling off the shelves. Many candidates were able to develop ideas for fixing the display cabinet to the wall and there were some pleasing ideas for the lighting systems which mainly focused on LED lighting systems. Most responses included a nice balance of clear sketches and written annotation.

Question 5 (b) Candidates who scored well on this question often did so for recognising that there were a full set of numbers and symbols and provided the opportunity for users to be able to make their own sums and complex problems.

Many candidates discussed the aluminium, health and safety, the storage bag or potential choking hazards. These types of responses could not be awarded any credit as they had no relation to the question regarding whether the set met or failed to meet the criterion of being able to help teach users about maths.

Question 6 (a) Many candidates focused on the mechanical properties of mild steel such as its strength, durability or hardness. Where candidates responded well it usually centred around the ability of mild steel to retain its shape when formed or that it can be welded together to form the product.

Question 6 (b) Candidates approached this question in many different ways, some with a single annotated drawing, some which took a story board style answer and some who just wrote a series of steps in a list.

Many candidates clearly understood how to use punches to stamp the lettering on the plate and provided labelled sketches showing how these would be aligned and then struck with a hammer for 2/3 marks. Candidates sometimes mentioned the use of engineer's blue to achieve full marks.

Question 6 (c) Many candidates were able to justify the materials aesthetic appearance, for example making reference to the colour or ability to be polished to a high quality finish.

Question 6 (d) This is a familiar type of question format. Candidates were able to gain marks for the methods used such using adhesives, rivets or mechanical fixings or specific examples of those methods. Incorrect responses centred around naming incorrect methods such as welding. Explanations of each method were very poor with candidates focusing on the advantages of each rather than how they are used.

Question 7 (a) Many candidates were correctly able to identify the hacksaw, with the majority giving the correct answer.

Question 7 (b) Candidate responses appeared to demonstrate a reasonable understanding of stock materials being readily available and a reduction of machining to specific sizes saving manufacturing time and reducing waste.

Question 7 (c) Most candidates were able to provide an answer to this question. In instances where the question was answered incorrectly this was due to not converting units correctly, however candidates were still able to secure a number of marks for showing correct working out. Far too often, candidates added the whole lengths of the material together not considering that 3 of pieces could be produced from one length. There were some alternative methods that attracted some marks and there were errors carried forward for the candidates who did not fully get the question correct.

It is worth encouraging candidates to carry out a 'sense check' in terms of the answer. "It is likely that the cost for the material to make bracket is £1760?". This answer was observed with some frequency and is arrived at because candidates did not convert mm into metres.

Question 7 (d) Candidates struggled to gain full marks for both responses on this question, often identifying one benefit with a linked response such as creating a water proof finish which means that the steel would not rust. Equally, candidates discussed the coloured coating would make the product look nice and therefore attract more sales was also rewarded but very rarely were these responses seen together in full.

Question 8 (a) Candidates seemed to respond well to this question, achieving both marks for identifying that the aluminium is corrosion resistant, or that it is low density. Few candidates were able to provide an expansion that was linked to the application of the tool box.

Question 8 (b) Most candidates engaged with this question but did not respond well. Many candidates provided generic answers, e.g. not environmentally friendly or causes pollution with no consideration of the ecological footprint. Candidates who scored some marks did so for recognising that ore needed to be mined in the first place and that this cause local environmental impacts to habitats. Very few candidates linked any pollution to the processing of the material.

Question 8 (c) This question proved quite challenging. Where marks were awarded, they were focused on the fit of the linkages or compartments and the potential of parts being interchangeable. A significant number of candidates focused on the word tolerance interpreting it as 'tolerate' and offering statements such as the material can tolerate the stress of further damage from any repeated use etc.

Question 8 (d) Candidates tended to focus on the environmental and sustainability costs rather than the three areas of the question; quality of materials, manufacturing processes and commodity prices on the London Metal Exchange.

There appeared to be a small improvement in the way that candidates responded to this question in relation to the previous series.

As often happens with this question, candidates appear to use the facts in figure 18 too much and repeat them, limiting their argument to discuss the real cost factors. Those who were awarded marks mainly gained them from referring to batch production or refence to costs being affected by commodity prices.

Paper Summary

Overall, the paper provided questions that gave candidates the opportunities to demonstrate their knowledge of Design and Technology via a range different context based questions, including several maths based questions but in a DT context. The paper offered a range of differentiated questions that candidates could answer in differing degrees and a full range of marks were observed across the whole cohort.