Pearson Edexcel

Examiners' Report
Principal Examiner Feedback

Summer 2023

Pearson Edexcel GCE
In Design & Technology (1DT0)
1D: Systems

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Introduction
This is the third full cohort of candidates has taken the reformed (9-1) GCSE Design Technology given the disruptions to learning because of COVID.

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.

Question 1 (a)(i) A generally well answered question, with a good number of candidates offering a correct response, mostly related to the material being an electrical insulator, appropriate within the context of the question.

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. Waterproof is an example of the more generic type of response seen but in the context of a PCB, being waterproof is not appropriate given the circuit would fail before the PCB is potentially damaged by the water. 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 generally well answered with light/lightweight being the most popular correct response. In respect of the comments made above about characteristics rather than properties, an example here for the balsa wood toy plane would be ‘easily cut’ which is a characteristic of the material and not a property.

Question 1 (a)(iii) Most candidates answered this question correctly with hard or resistance to corrosion being the most popular answers seen. Many candidates made reference to the scissors being sharp.

Question 1 (a)(iv) Many candidates were not able to recall a relevant property of the solid white board book cover. When correct responses were observed, they were mostly related to the materials rigidity or printability.

Question 1 (b)(i) A generally well answered question, with many candidates scoring at least 1 mark for recognising that the company could be much more flexible in how they run and control their business and business decisions. Lots of reference to being able to keep profits within the company but lots of misconceptions related to not having to pay tax or stick to the rules.

Question 1 (b)(ii) The first of the maths based questions where very many candidates were able to correctly work out the mass the investment would be £45,000. Many responses were seen whereby candidates had simply multiplied the £150,000 by 1.3 to get an answer of £195,000. Had they then taken away the original sum of money they would have had a correct answer of £45,000 for the full 2 marks.

Question 2 (a) This question was overwhelmingly poorly answered with isometric being offered most frequently.

Question 2 (b) This was answered reasonably well with the most common answers being responses related to the concrete being fireproof or related to the concrete being heavy and therefore stable.

Question 2 (c) This was answered reasonably well with the most common answers being responses related to the availability of the candles and users likely to have some at home already given they were of a standardised size.

Question 2 (d) This maths question provided some challenge, especially at the point at which unit conversion took place making the numbers manageable for candidates. It is important to note here that candidates should always be encouraged to show their full working out for all maths questions. In this instance if a candidate had an answer of 163 or a factor of 10 of 163 then it may still have been possible to be able to award 3 of the 4 marks due to error carried forward (ECF) with the issue being related to the conversion of units. It was encouraging to see more candidates showing a logical sequence to their work in how they laid their responses out, giving a note to explain what they were doing, such as volume of cuboid and volume of cylinder for example. This approach is to be encouraged as much as possible.

Question 3 (a) A good number of candidates were correctly able to identify a softwood with pine or cedar being the most frequently seen correct responses.

Question 3 (b) A mixed set of responses from candidates with a good number scoring at least 1 mark, most commonly for softwoods growing faster or softwoods being cheaper. On many occasions, responses were observed offering softwoods grow fast and are cheaper. This type of response can only be awarded 1 mark because the question is an 'Explain' type question which requires a linked justification. The example cited above is essentially two give responses.

Question 3 (c) Nearly all candidates attempted this question with a reasonable proportion getting the correct answer of $1/10^{th}$ or a version of that such as 10/100ths or $30/300^{th}$ for example. The most commonly observed incorrect response was a calculation to show how much timber had been used i.e. $9/10^{th}$.

Question 3 (d) This appeared to be a very well answered question with candidates most commonly coming up with a response relating to the fact that the mild steel fixing would corrode for 1 mark. Fewer linked responses were observed but when seen, appropriate reference to the frame coming apart or the joint failing were in evidence.

Question 3 (e) A mixed set of responses but a good number of correct responses seen for the full 4 marks, most often due to the material being impact resistant and then either being lightweight or its ability to be recycled, with fully linked justifications.

Question 4 (a) Generally answered well with a reasonable proportion of candidates demonstrating some knowledge of polyester, with waterproof being the most frequently observed correct response with the linked justification of protecting the laptop inside from liquids and rain.

Question 4 (b) A maths question with a very large proportion of candidates being awarded full marks for a correct answer of 128g that had been calculated using a range of methods.

Question 4 (c) Many candidates offered a definition of a LCA as opposed to an explanation of an outcome of a LCA that could help reduce the environmental impact of the laptop bag.

Question 4 (d) This question worked very well as a discriminator at the end of Section A. Many candidates failed to read this question carefully enough before starting their response. Many talked solely about remote working with its pros and cons but did not relate that to the features of a laptop. Some even purely discussed laptop bags. Many candidates failed to expand their answers to enable marks to be awarded e.g. "They are portable" rather than "they are more lightweight and compact which means they are easily portable". Many candidates discussed Apps and software rather than the laptop itself which was not always creditable. Many candidates wrote a page describing the features of ‘Teams’ or ‘Zoom’. The question performed well by providing a range of responses about fair trade across the whole range of marks available.

Question 5 (a) Most candidates attempted the question with a sketch and some annotated changes. The vast majority had both sketches and notes. Many candidates drew a large area to accommodate 3 more boxes and most added notes. Electronic methods to show and change prices included LCD screens and microprocessor with keypads to change prices.

Question 5 (b) Many candidates did not access the full range of marks available. Most popular answers referenced the LED turning on but failed to explain how the puzzle is tilted and turned to move the ball. Many candidates made reference to the clear acrylic screen and were able to articulate a response related to seeing the ball and seeing where it was supposed to go. Many candidates repeated the phrase ‘hand-eye co-ordination and so were not awarded a second mark as it was repetition of the question.

Question 6 (a) Most candidates gained at least half marks with this question on the ‘benefits’ of a buzzer on the steady hand game.

Question 6 (b) Very few candidates received full marks for this question. Very few candidates failed to show any sketches which is encouraging.

Question 6 (c) Most responses included that the choice of colours had to be considered and that the colours could have different connotations or represent different things in different countries. Some responses thought about the colour but then did not justify why this was important or just said to keep the wood natural so as not to offend.

Question 6 (d) Most candidates scored some marks on this question by identifying two methods with vacuum forming being the most popular response, followed by 3D printing and Injection moulding. A small number writing 'hand tools' or 'laser cutter'. Unfortunately, most candidates failed to follow up on their initial answer by failing to offer suitable explanations.

Question 7 (a) A good candidates were able to answer this question correctly naming the tool.

Question 7 (b) In general, this question was completed to a satisfactory standard. Many candidates were able to provide at least one or two reasons and some were able to provide a justified statement for 2 marks however. Not many candidates were observed securing all four marks. The most common answer was related to the wheels being perfectly round and smooth. Many candidates referenced accuracy but did not then elaborate fully to gain the justification credit.

Question 7 (c) This question was answered very well and provided clear evidence that most centres are teaching this method of 3D graphical communication to a high standard. Many candidates got full marks for the isometric drawing using the grid correctly however some mistakes with length and height resulted in marks being dropped.

Question 7 (d) This question was answered by many candidates with mixed responses. When candidates correctly identified a disadvantage not many went on to mention two linked justifications. Many responses only scored half marks as they would correctly identify and justify one disadvantage but would either repeat part of the first or just not have a second answer. The template being an incorrect shape or size from the outset and being moved whilst being drawn around or that the template was worn or damaged were the most frequently seen correct responses to this question.

Question 8 (a) This question was attempted by most candidates but many candidates did not give a correct response. Most responded stating that the LDR could be used to change the brightness of the bulb.

Question 8 (b) The majority of candidates failed to gain all the available marks here. Although they commented that the 'tolerance' of resistors can be a factor that affects the cost of the product, most candidates further added that higher tolerance resistors would cost more. Very few commented on the supply or availability is also a cost factor to be considered.

Question 8 (c) Candidates responded to answering this question with varying degrees of success. The most popular responses with checking the soldering and the use of equipment to test current / voltage or continuity.

Question 8 (d) This style of question continues to give many candidates problems in the articulation of a good answer. Many answers focused on transport issues and carbon footprint but they did not then link this to pressure groups to describe why this might be a problem. Most responses included that that the chopsticks could be used by lots of people and can be used for lots of different foods around the world. The most common errors related to candidates simply repeating what was stated in the question without attempting to interrogate or deconstruct the information supplied. The best responses took each aspect, clarified each point before logically linking it all together in a carefully constructed conclusion.

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.