Pearson Edexcel

# Examiners' Report
# Principal Examiner Feedback

## Summer 2023

Pearson Edexcel GCE
In Design & Technology (1DT0)
1F: Timbers

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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) There were a significant number of blank responses which was unusual for this type of question given it is well established format and candidates should be familiar with the style. Those candidates who attempted the design question with responses that were clearly drawn and annotated, understanding the challenge tended to score well. Many candidates interpreted the 3 blocks on the front of the drawing as chocolate boxes with many not showing where 3 additional boxes would go and only accounting for the original 3 boxes. Therefore candidates proceeded to draw another three small boxes thinking they would fit onto the existing surface. Some candidates annotated all sorts of details, some irrelevant to the task such as what materials it was made from and how it would be joined together or manufactured with construction details.

Question 5 (b) Most candidates attempted this but many were confused by not discussing enough justifications. Many gained 1-2 marks. There were not many candidates that achieved the full 4 marks.

The most common response seen was that there was a clear acrylic screen so that they could see the steel balls and could see where they are going or where they needed to be moved to inside the puzzle.

Many responses included that because the puzzle has a clear acrylic screen it stopped the balls from falling out. Some responses justified that this is a good thing because they did not lose any of the steel balls and that it also prevented cheating/ prevented from moving the ball by picking them up.

There were many incorrect responses from candidates saying that the steel balls would make the maze too heavy for the young child to hold or that it should have handles to make it easier to handle.

Question 6 (a) Most candidates attempted this question. Answers were varied with many getting a characteristic but unable to identify any justification. Many candidates made reference to comfort and being able to withstand being dropped by a child. Many responses referred to water resistance, toxicity, flexibility, and comfort without any attempt to link them to the finish of the material.

Question 6 (b) Very few candidates received full marks for this question. The only acceptable saw for cutting around the shape of the fish was a coping saw, yet many referenced tenon saw, jig saw or band saw for example. Few mentioned that the shape should be rotated in the vice whilst the coping saw is rotated in the hand and keeping the work as low as possible in the vice. The large majority of responses also spent a lot of time and effort explaining how you would mark out the plywood initially, then cut it out before explaining how to achieve a smooth finish with an assortment of rasps, files, chisels and sand/glasspaper, none of which was being asked for in the question.

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 who attempted this question were able to identify at least one process, with most selecting a lathe or sanding but then struggled to expand more than 1 mark on the explanation. It was clear from this question that many candidates had very limited knowledge of different workshop tools especially the lathe.

Question 7 (a) A large number of candidates did not answer this question correctly with many suggesting it was a nail or a flat head screw.

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 with the fact that birch does not splinter easily but most struggled with the reason being to do with the grain.

Question 8 (b) Overall, this question posed problems for most candidates as they ignored the three main factors; the availability of birch, the levels of supply or the quality of the timber. Many candidates referred to the cost of energy used in the manufacturing process or in the felling of the trees in the first place. Some discussed comparisons between birch and other woods that could be used as a replacement.

Question 8 (c) This question was completed to a good standard by many candidates but very few actually used the term ‘surface finish’ to describe the type of quality check being carried out instead opting for “checking for smoothness” but failing to make the connection between the two.

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. Most included that it would be used in lots of restaurants and in homes. Some candidates wrote that the chopsticks are being used for delivery food and takeaway foods but most focused on being used in different restaurants. Most included thoughts about the high demand of chopsticks through continuous manufacture. 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.

The most common points discussed were; chopsticks are a very common method/tool used to eat food in Asia, huge number of chopsticks are required/used hence the need for continuous manufacture, growing concerns around the use of wooden chopsticks given the negative impact of transporting the birch from Europe to China.

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.