



Examiners' Report Principal Examiner Feedback

Summer 2025

Pearson Edexcel GCE
In Design & Technology: Product Design
9DT0/01

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Principal Examiner's Report 9DT0_01: Summer 2025

This is the fifth full summer series sitting of the examination, with only small resit entries in the 2020 and 2021 October series during the pandemic. This was a new A Level in Design and Technology (Product Design) in 2019 and has an externally assessed exam reflecting 50% of the qualification assessment.

The overall paper includes several types of questions which include short, medium and long open response questions, calculations and drawings. This provides increased rigour over the legacy specification examinations as candidates need a wider skill set in order to access the different types of question.

There is a 3 mark explain type question which requires a candidate to give a fact (sometimes knowledge in isolation and sometimes related to a specific context and follow it up with a justification which leads to further conclusion or a further consequence. This type of question provides additional rigour. Questions can require one, two or three explain responses totalling 3, 6 or 9 marks.

The long response essay questions together with the drawing question are assessed by use of a levels-based mark scheme. This type of mark scheme rewards more able candidates who can now go into greater depth and be awarded for knowledge and deep understanding.

The feedback on individual questions will follow together with commentaries on individual responses.

Feedback on Individual Questions

Question 1(a) (2 marks short open response)

This question required candidates to give two uses of a densitometer in the printing industry. This question proved to be a challenging question, and candidates clearly found this difficult. Many candidates gave incorrect answers relating to the print media rather than the quality of the printed image.

The response below shows a typical error where the candidate has realised that density is measured but has applied it to the paper/substrate rather than the printed image. The second response was awarded 1 mark.

(a) Give **two** uses of a densitometer in the printing industry. (2)

1 Check density of Paper/substrate

2 ~~check~~ ^{check} ink once printed onto substrate,
(thickness / opaqueness)

Question 1(b) (4 marks short open response)

This question required candidates to explain two benefits of screen printing. This was a moderately challenging question with candidates achieving a spread of marks across the mark range utilising a range of responses from the mark scheme. The most common response was the ability to print onto a broad range of surfaces so is a versatile process not restricted to papers and boards.

Question 1(c) (3 marks short open response)

This question required candidates to explain one drawback of screen printing. Most candidates could identify a benefit and one linked explanation however only the more able candidates could provide a second link to expand upon the first for the full three marks. Candidates responded with a range of responses across the mark scheme; however, the most frequent response related the method not being suitable for mass production.

The response below is a good three-mark response meeting MP3 in the mark scheme.

~~(a)~~ Explain **one** drawback of screen printing.

(3)

a new screen has to be used for each colour meaning
it produces high amount of waste (physically) ^{especially} a complex
designs as multiple screens will be used and disposed. this also
wastes time too meaning the process of screen printing tends to
only be suitable for one off jobs not mass/batch production.

Question 2(a) (2 marks short open response)

This question required candidates to give two benefits of using pop rivets. Most candidates were able to give one benefit of using pop rivets. The most common answer related to a strong permanent joint. More able candidates, achieving the full two marks, provided more technical responses such as can be fixed when only one side of the material can be accessed, or a single operation forms the rivet.

Question 2(b) (5 marks maths)

This was a calculation question relating to the cost of rivets and rivet guns needed to complete a given riveting job. Candidates demonstrated good mathematical application with 65% of candidates achieving 4 or 5 marks on this question.

The response below is a full 5-mark response. Note candidates get full marks when the correct answer is seen, however full working should be shown so that credit can be given for correct stage calculations and error carried forward where an intermediate error has led to an incorrect final answer.

(b) A metalworking company will take 6 hours to complete a riveting job that has 235 rivets.

A hole can be drilled and rivetted every two minutes.

Cost of rivets: £2.50 per pack of 50.

Cost of rivet guns: £38.25 each.

Percentage waste allowance: 7.5%.

The company needs to buy new rivet guns to complete the job.

Calculate the total cost of rivets and rivet gun that need to be purchased to complete this job.

Show all of your workings.

$$6 \times 60 = 360 \text{ (total time)} \quad \frac{360}{2} = 180 \text{ (rivets from 1 person)} \quad (5)$$

$$\frac{235}{180} = 1.3 = 2 \text{ people needed to rivet. (2 guns needed)}$$

$$\begin{array}{r} 235 \\ + 10 \\ \hline 245 \end{array} \quad 235 \times 1.075 = 252 \text{ (rivets with waste)}$$

$$\frac{252}{50} = 6 \text{ packs of rivets needed}$$

$$£2.50 \times 6 = £15 \text{ (rivet cost)} \quad 38.25 \times 2 = £76.5 \text{ (gun costs)}$$

$$15 + 76.5 = £91.50$$

Answer £ 91.50

Question 3(a) (2 marks short open response)

This question required candidates to explain why thermoplastics are used to mould given components. A well answered question that candidates, in the main, found relatively easy. Overall, 63.9% of candidates achieved full marks on this question. The most common correct answer related to low melting point allowing the plastic to flow into and fill the mould.

Question 3(b) (4 marks sketches and annotations)

This question required candidates to describe, using labelled sketches, the injection moulding process. A well answered question that candidates, in the main, found relatively easy. Overall, 60.5% of candidates achieved the full four marks on this question. Candidates demonstrated a sound understanding of the injection moulding process and we're able to produce appropriately labelled sketches.

Question 3(c) (6 marks short open response)

This question required candidates to explain two drawbacks of injection moulding. The question proved to be a good discriminator between candidates of differing abilities with marks awarded following a normal distribution curve across the six-mark range. More able candidates were able to identify two disadvantages and provide two appropriately linked points for each explanation of the disadvantages. Most correct responses related to the impact of high startup costs and therefore only suitable for mass/volume production.

The response below is a full 6-mark response where the candidate has provided two fully linked 3-mark explanations.

(c) Explain **two** drawbacks of injection moulding.

(6)

- 1 injection moulding has a high initial cost as the machinery is expensive and due to its complexity and high ~~technology~~ quality. this means it is not suited for one off productions as the cost of the machine and energy to run it is unlikely to be justified by small scale production - therefore injection moulding is not suitable for all companies and projects.
- 2 injection moulding is a highly energy intensive process with the heater and hydraulic press having to be on for it to function. this means it can ~~be~~ have negative impact on the environment especially since factory use tends to rely on fossil fuels and non renewable energy sources - therefore the use of the machinery may contribute to global warming and ~~carbon~~ ^{climate} change through the release of carbon.

(Total for Question 3 = 12 marks)

Question 4(a) (3 marks short open response)

This question requires candidates to give three types of quality monitoring system. Here the candidates needed to name the system rather than identifying individual quality control checks. Candidates found this moderately difficult and 40% of candidates failed to score on this question.

The response below is a typical zero-mark question where the candidate did not give three quality monitoring systems but focused on individual testing methods.

4 Manufacturers need to ensure that their products are good quality, free of defects and meet the needs of consumers.

(a) Give **three** types of quality monitoring system.

(3)

- 1 Go / no go gauges
- 2 Sample testing
- 3 vernier calipers

Question 4(b) (6 marks extended open response)

This question required candidates to outline the impacts on costs and profit associated with the introduction stage of a products lifecycle. Candidates performed reasonably well on this question with marks following a normal distribution centred around a modal mark of 4. Candidates who did less well tended to write about all four stages of a products lifecycle rather than the required specific focus on the introduction stage.

Question 4(c) (2 marks short open response)

This question required candidates to name two organisations that produce standards that UK manufacturers might need to follow. Candidates performed reasonably well on this question with 43.2% being able to name two organisations and a further 27.8% being able to name one organisation.

Question 4(d) (9 marks extended open response)

This question required candidates to discuss how a manufacturer can maintain their share of the market during the Maturity Stage of a products lifecycle. The question performed well, discriminating between candidates of differing abilities. with outcomes across the mark range following a normal distribution curve centred around a modal mark of 4. However, only relatively few candidates were able to discuss a full range of strategies that companies could use to maintain their market share

Question 5(a) (5 marks maths)

This question was a maths question requiring candidates to calculate the cross-sectional area of a steel beam. Candidates performed well on this question with 77.4% of candidates achieving three marks or above and a modal mark of 5 with 33.9% of candidates achieving full marks. A number of candidates failed to achieve the final mark because they didn't show their final answer to 4dp.

The response below was awarded the full 5 marks for the correct answer.

(a) Calculate the cross-sectional area of the beam.

Give your answer in m^2 to 4 decimal places.

Show all of your workings.

(5)

0.01
 $(0.175 - 0.01 - 0.01)$
 $= 0.155 \text{ m}$

$A = 0.01 \times 0.175$
 $= 1.75 \times 10^{-3}$

$\times 2$
 0.01
 0.125

$A = 0.01 \times 0.125$
 $= 1.25 \times 10^{-3}$
 $\times 2 = 2.5 \times 10^{-3}$

$2.5 \times 10^{-3} + 1.75 \times 10^{-3} = 4.25 \times 10^{-3}$
 $= 0.00425 \text{ m}^2$

0.0041
 Answer 0.0041 m^2

Question 5(b) (3 marks maths)

This question required candidates to calculate the total weight of 12 number 5m long beams using the cross section from question 5(a). Error carried forward applied so candidates could use their 'own' cross sectional area as a starting point. This question proved to be a good discriminator of mathematical ability although 44.3% of candidates achieved the full three marks.

Question 6(a) (2 marks short open response)

This question required candidates to give manmade fibres used in the textile industry. Candidates found this question relatively easy with 66.6% of candidates achieving full marks. The most common correct answers were nylon and polyester. Candidates who failed to achieve on this question tended to respond with natural fibres.

Question 6(b) (6 marks short open response)

This question required candidates to explain two uses of anthropometric data in the fashion/clothing industry. Many candidates struggled to think beyond the obvious answer, that anthropometrics can be used to ensure clothes sizes are accurate and therefore enable customers to feel comfortable. Several candidates therefore often produced a re-wording of that type of answer for both points. The question proved to be a good discriminator between candidates of differing abilities with marks awarded following a normal distribution curve, centred around a modal mark of 3, across the 6-mark range.

The response below was typical of a candidate who focused on size and fit only and was awarded 3 marks. For further marks the candidate would need to include things such as demand predictions and stock ratios.

(b) Explain **two** uses of anthropometric data in the fashion / clothing industry.

(6)

- 1 Anthropometrics can be used measure different body types to create clothes which are able to fit a range of customers. This makes the product more inclusive towards others.
- 2 Anthropometrics can be used to ensure customers comfort by manufacturing products which will not be too tight or cause movement restrictions.

Question 6(c) (6 marks extended open response)

This question required candidates to discuss the benefits of automated storage and retrieval systems. Generally answered very well by many candidates. It was clear that they knew what ASRS are and could then explain what the benefits could be of using this type of system. Many candidates were able to explain several relevant benefits and link these together. The question proved to be a good discriminator between candidates of differing abilities with marks awarded following a normal distribution curve, centred around a modal mark of 4, across the six-mark range.

Question 6(d) (2 marks short open response)

This question was a recall question requiring candidates to give two end of life design considerations for consumer goods. Candidates found this to be a relatively easy question with 78.11% of candidates achieving full marks.

Question 6(e) (3 marks maths)

This question required candidates to calculate the how many items would have to be produced on a Friday to achieve a mean hourly output of 9 items per hour over the full week. Candidates generally performed well on this question with 53.0% achieving full marks.

The response shown below is correct and demonstrates a clear calculation to arrive at the correct answer of 73 so was awarded the full 3 marks.

Note candidates get full marks when the correct answer is seen, however full working should be shown so that credit can be given for correct stage calculations and error carried forward where an intermediate error has led to an incorrect final answer.

Calculate how many items will need to be produced on Friday to achieve an overall mean hourly output of 9 items per hour over the full week.

Show all of your workings.

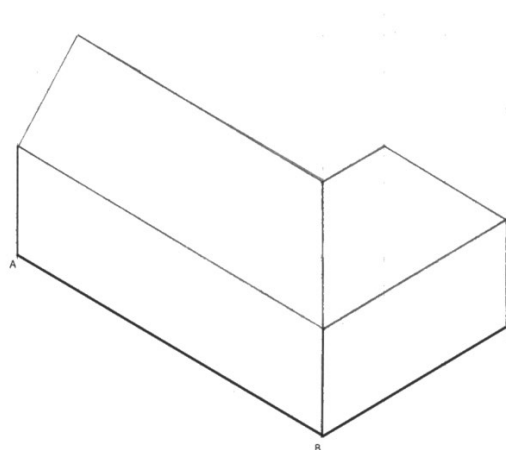
(3)

$$\begin{aligned}16 \times 4 + 8 &= 72 \text{ hours} \\ 72 \times 9 &= 648 \\ 648 - (145 + 160 + 155 + 115) &= 73\end{aligned}$$

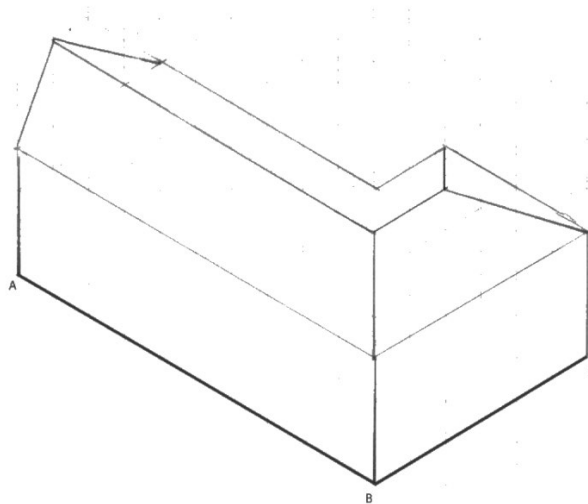
Question 7 (6 marks drawing)

This question required candidates to produce an isometric projection of a building that had been presented to them in the form of an orthographic projection. Whilst many candidates performed well on this question, however a common mistake was to incorrectly plot the 'node' points for the start, the change in direction and the end of the ridge line. Candidates generally performed very well on this question with 34.0% of candidates scoring the full 6 marks. A number of candidates thought that you should be able to see the slope on the reverse side of the roof but with correct node plotting using 3D coordinates they should have realised that this was not possible.

The response below is correct, with all roof 'node' points correctly plotted, and therefore was awarded the full 6 marks.



The response below is from a candidate who thought you would be able to see the reverse of the roof and has a missing valley line. Therefore, the roof 'node' points are incorrectly plotted. This response was awarded 3 marks.



Question 8 (9 marks extended open response)

Candidates were provided with an image of a service station designed under the influence of the streamline movement and its associated Googie architectural style. The question required candidates to discuss how the design of the service station was influenced by Streamline Moderne movement philosophies in the Googie architectural style. Many candidates were aware of the key design features of the streamline movement and were able to link these to the design of the service station. However, some candidates were not able to discuss a wide range of design features of that movement, so they often produced long, wordy answers relating to one feature such as the 'teardrop' shape. The question did therefore prove to be a good discriminator between candidates of differing abilities with marks awarded following a normal distribution curve, centred on a modal mark of 5, across the 9-mark range.

The example below is an extract from a response where the candidate has covered the influence of the teardrop shape and the space age.

The streamline moderne philosophies was influenced by ideas of aeronautics flight and space travel having an aerodynamic aesthetic, this can be seen with the rocket statue. The similar to a teardrop the top of the rocket represents aerodynamic and calculated dimensions. By using the idea of cutting through the

The example extract below is from a candidate who made clear links between 1950s automotive design and the architectural style of the service station.

Streamlining could often be 'over the top' or 'Georgie'. This was seen on the 1950's Cadillac with its tail fins, and it can be seen in this service station too, present in the swept roof, stylised stylised rocket, the design of the main building which resembles a space station, its simple geometric design.

Question 9 (9 marks extended open response)

This question required candidates to discuss the potential conflicting influences of aesthetics and ergonomics when designing car interiors. Most candidates were able to relate to the product chosen and could discuss features that they were clearly familiar with. However, some answers were lacking in depth of explanation and became almost lists of every feature they could think of in a car that could be anyway relevant. The question did prove to be a good discriminator between candidates of differing abilities with marks awarded following a normal distribution curve, centred on a modal mark of 5, across the 9-mark range

Question 10 (9 marks short open response)

This question required candidates to explain two benefits and one drawback of LCDs when used in televisions. Some candidates answered this question well as they were clearly familiar with the product and could identify benefits well. The drawback answers were often much weaker/incorrect and occasionally discussed simple things like expensive. The question did prove to be a good discriminator between candidates of differing abilities with marks awarded following a normal distribution curve, centred on a modal mark of 2, across the 9-mark range indicating that this was found to be a challenging question.

The extract from a response below shows an explanation of a benefit that attracted 3 marks following marking point 4 in the mark scheme.

Benefit 2 LCDs offer a high definition range of coloured cells that will show a clear image on a television screen. This will create a better viewing experience when watching television

Question 11 (12 marks extended open response)

This question required candidates to evaluate a covered outdoor dining area with a focus on how the designer addressed aesthetics and user requirements for outdoor lifestyles and dining. This was often answered well. Candidates and teachers are clearly becoming aware of how to approach this type of product analysis question. The better answers linked these points well and then had a good conclusion that highlighted the main focus points of the question. Many candidates discussed the self-assembly issues which were accepted as a loose link to user requirements. The question proved to be a good discriminator between candidates of differing abilities with marks awarded following a normal distribution curve, centred around a modal mark of 7, across the twelve-mark range.

The extract from a response below shows how the candidate addressed user requirements and aesthetic features in a reasonably well-crafted answer.

Evaluate how the designer of the covered outdoor dining area has addressed aesthetics and user requirements for outdoor lifestyles and dining.

(12)

The design has used a variety of features that make the outdoor dining area appropriate for outdoor dining. The designer has used a roof. This is made from pressure treated soft wood, which means it will be ~~be~~ able to protect users from UV and rain water. The designer also used a boarded base, which adds another layer of protection and aesthetic value. The boarded base would be able to keep people's feet dry if rain was to occur. This is because it is raised above the ground and covered by the roof. The fixed table means it cannot be blown over by the outdoor weather. Aesthetic features are: Lattice side panel, layered roof slope, baseboard, front design on roof. All of these features have made the product more eye-catching and aesthetically pleasing. Natural Timber wood has made the roof water resistant. The curved back of the seats add aesthetic value and comfort to the users. The side panels mean less UV and sunlight will be able to get through.

The extract from a response below demonstrates how the learner has considered ease of assembly to be a user requirement. Other candidates dismissed this as an issue due to the weight of the assembled components when needing to be lifted into position e.g. the roof.

The process of the building being assembled seem user friendly due to pre built aspects allowing for the product to be easily put together and taken down. This easy assemble process takes into consideration the transportability of the product it can easily be shipped to different manufacturers or retailers due to the product being assembled by the

Summary

Overall, the candidates performed very well with an increase in the mean score from previous series. Very few blank responses were seen, and most candidates attempted every question. Candidate ability to respond to the command verbs and specification topics have clearly improved and responses seen are now fully back to pre-pandemic levels.