



GCE AS Examiners' Report

Design and Technology – Product Design
GCE AS Level
Summer 2024

Introduction

Our Principal Examiners' report provides valuable feedback on the recent assessment series. It has been written by our Principal Examiners and Principal Moderators after the completion of marking and moderation, and details how candidates have performed in each component.

This report opens with a summary of candidates' performance, including the assessment objectives/skills/topics/themes being tested, and highlights the characteristics of successful performance and where performance could be improved. It then looks in detail at each unit, pinpointing aspects that proved challenging to some candidates and suggesting some reasons as to why that might be.¹

The information found in this report provides valuable insight for practitioners to support their teaching and learning activity. We would also encourage practitioners to share this document – in its entirety or in part – with their learners to help with exam preparation, to understand how to avoid pitfalls and to add to their revision toolbox.

Further support

Document	Description	Link
Professional Learning / CPD	Eduqas offers an extensive programme of online and face-to-face Professional Learning events. Access interactive feedback, review example candidate responses, gain practical ideas for the classroom and put questions to our dedicated team by registering for one of our events here.	https://www.eduqas.co.uk/home/professional-learning/
Past papers	Access the bank of past papers for this qualification, including the most recent assessments. Please note that we do not make past papers available on the public website until 12 months after the examination.	Portal by WJEC or on the Eduqas subject page
Grade boundary information	Grade boundaries are the minimum number of marks needed to achieve each grade. For linear specifications, a single grade is awarded for the subject, rather than for each component that contributes towards the overall grade. Grade boundaries are published on results day.	For unitised specifications click here: Results and Grade Boundaries and PRS (eduqas.co.uk)

¹ Please note that where overall performance on a question/question part was considered good, with no particular areas to highlight, these questions have not been included in the report.

Exam Results Analysis	Eduqas provides information to examination centres via the WJEC Portal. This is restricted to centre staff only. Access is granted to centre staff by the Examinations Officer at the centre.	Portal by WJEC
Classroom Resources	Access our extensive range of FREE classroom resources, including blended learning materials, exam walk-throughs and knowledge organisers to support teaching and learning.	https://resources.edugas.co.uk/
Bank of Professional Learning materials	Access our bank of Professional Learning materials from previous events from our secure website and additional pre-recorded materials available in the public domain.	Portal by WJEC or on the Eduqas subject page.
Become an examiner with WJEC.	We are always looking to recruit new examiners or moderators. These opportunities can provide you with valuable insight into the assessment process, enhance your skill set, increase your understanding of your subject and inform your teaching.	Become an Examiner Eduqas

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Executive Summary

Component 1: Design and Technology in the 21st Century

The paper was well received by candidates and the majority of candidates answered all questions on the paper. Candidates' use of terminology and technical language together with knowledge of materials and manufacturing processes is improving with a number of scripts demonstrating this in their responses.

There is a clear indication that in the higher mark questions, a number of candidates require more structure and planning in order to organise information clearly and coherently. In many cases the length of responses was too short to show any real depth of understanding and there were several instances where the responses throughout were not detailed enough in terms of providing enough points to gain the higher level of marks.

Well-structured and planned responses scored well. These responses contain clear, and specific details relating to the question. They also showed breadth and depth in their knowledge and understanding of the technical principles from the specification.

There has been an improvement in candidates' responses to the mathematical based questions. Centre's need to ensure that candidates carefully examine the questions carefully to ensure they apply the correct mathematical skills. Candidates must show their working out.

In a number of cases, candidates knew the mathematical skill but were unable to apply them correctly, some candidates did not convert units and did not place the exponent into answers.

Centre's need to ensure that candidates have the mathematic skills to answer mathematical questions in the paper; they also must ensure that candidates can apply this skill correctly from the information provided in the question.

Questions with command words such as analyse and evaluate, AO3, generally require more structure and planning, whilst ensuring that all elements of the question are covered. Candidates who gained higher mark bands consistently made sound and valid justifications to the points that they are making. Analyse questions require candidates to show evidence of deconstructing information to find connections and provide logical chains or reasoning and to then apply this relevantly to the question. Evaluate questions require the candidates to show clear evidence of appraisal and/or making judgements and then apply this to technical principles. Candidates should be discouraged from using bullet points or listing when attempting extended written responses, particularly those with analyse and evaluate command words.

Centres should continue to advise candidates to use the mark allocation indicated at the end of each question to guide the depth of response and manage time effectively and to read the questions carefully to ensure that all elements are understood and are included in their responses.

Component 2: Design & Make NEA

- Centres should use the marksheets to annotate and support marks awarded. The annotation should also explain why the candidate has been awarded the mark. Not a copying of the assessment criteria.
- A range of problems must be identified by the candidate not prescribed by the centre.
- The problems could come from one in-depth context, or a range of different contexts could be considered.
- **Initial specifications** must be annotated and include developed, specific measurable criteria following on from research and iteration. Several centres are providing initial outline specifications and then producing fully detailed specifications following further research. This has been found to provide a more solid foundation for the development of products.
- Continue to develop the use of sketchbooks as an iteration tool.
- The **journey** candidates have followed should be clear throughout the folio and sketch book.
- A number of centres are making extensive use of 3D printing, this is acceptable and can access band 4 marks if, products have had post processing finishing applied to ensure a high-quality product appearance.
- The final concepts and prototype should **look and feel** like a real product. Quality of finish is important. Could the product be taken to an investor?
- 'Manufacturing plans should show how the product is to be manufactured. 'Making diaries' should only be used as a tool to evaluate issues encountered in the manufacturing process.
- Evaluations should contain end testing and user trials with clear suggestions of possible modifications to the product. Use of video evidence here can be highly beneficial.

Areas for improvement	Classroom resources	Brief description of resource
Reading the question carefully particularly in AO3 Analyse and Evaluate high tariff questions and providing an answer that fully reflects the question.	Edugas Educational Resources Website	A Level D&T Notes and Worksheets.
Avoid presenting stock answers/prepared answers about particular topics as these do not answer extended questions fully.	Question Bank	Question Bank is a free tool which allows you to create practice question papers from thousands of WJEC past paper questions. Find the questions you need, add them to your paper and export your paper with accompanying mark scheme and examiner's comments as a PDF ready to use in the classroom.
Many candidates produce repetitive answers that duplicate the same point multiple time. This does not gain any additional credit.	Exam Walk Throughs	Aimed at learners, these materials offer practical hints and tips on how to effectively approach questions in examination papers and preparing for NEA.

DESIGN AND TECHNOLOGY – PRODUCT DESIGN

GCE Advanced Subsidiary

Summer 2024

COMPONENT 1

Overview of the Component

The Eduqas AS Product design paper was well received by candidates with a very high attempt rate throughout, slightly dipping in the last three questions of the paper. The use of specialist terminology and technical language together with knowledge of materials and manufacturing processes is improving with a number of scripts demonstrating this in their responses. Questions are set in context, with images or photographs to support and engage candidates. The stem of the question also provides important information. Candidates are reminded to study this information thoroughly before tackling the response, and also at the end of producing their answer to ensure they have fully responded and not drifted away from the premise.

Comments on individual questions/sections

Question 1

This was answered well on the whole. The construct was well understood and the 2 mark tariff questions provided good opportunities for candidates to show breadth of understanding. Functional qualities was slightly more tricky, because there were two requested, and sometimes candidates repeat responses, gaining no additional credit. Part (c) required a clear understanding of PTFE and why it is suitable for this application. This should remind centres that knowledge in isolation is not rewarded highly in responses, as the reasoning is directly related to the saucepans in this case. A knowledge of PTFE would not answer this question alone.

Question 2

Mathematical content is mandatory, and where this appears in exam papers is carefully embedded into design and technology-based contexts and not assessing pure maths. This question related to UPVC downpipes; a product well understood by candidates. Most candidates could provide good levels of responses for two properties of UPVC for downpipes.

Mathematical processing is improving, but candidates must show their working out. In a number of cases, candidates knew the mathematical skill but were unable to apply them correctly, some candidates did not convert units and did not place the exponent into answers.

Centre's need to ensure that candidates have the mathematic skills to answer mathematical questions in the paper; they also must ensure that candidates can apply this skill correctly from the information provided in the question. A methodical 'step by step' approach works well and ensure that candidates gain marks even if an error is made and carrier forward.

Question 3

This was a well answered question overall. There are three high tariff marks available. The quality of notes and sketches in responses for (a) was quite good but could be improved with increased practice and preparation. There was a pattern of difference centre by centre, clearly showing those who were well prepared for this and those who were not. (b) required a detailed explanation of properties of polypropylene for the chair's seat. This was generally well answered. Ergonomics and anthropometrics are quite well understood and did not prove too challenging for most in part (d).

Question 4

This proved the most accessible question on the paper. Candidates may have tackled this type of task as a KS3 or 4 project, and the CAD CAM content was very well understood and processed. Again, the mathematical elements tested here were done quite well overall.

Question 5

This was quite accessible, showing that the content on SMART and modern materials is taught and understood well in centres. Shape Memory Alloys was fairly well known, but the comparison against traditional dental braces was slightly more complex. Most candidates were familiar with Polymorph and could identify at least one advantage here. Again, weaker responses were those that were repetitive or too similar to gain the additional marks available.

The responses to (c) were generally good, particularly as this was a lower 2 mark tariff.

Question 6

The mean mark for this question was just over half marks, showing that most had a reasonable attempt here. A global 6-mark tariff required some real depth, and some could recall but not provide sufficient detail to access the higher end marks. Candidates should be encouraged to practice providing whole, balanced and well-reasoned responses as part of their theory study during the course. This will help for examination questions like this.

Question 7

The two parts here relate to the AO3 Analyse and Evaluate commands, which are the most challenging and offer higher mark tariffs available throughout the paper. Candidates need to provide logical lines of reasoning here, and also apply judgement. The content is not too challenging as the sustainable coffee cups are not unfamiliar to candidates. The responses here did not access the marking criteria and so the marks yielded are generally lower than expected with a mean mark of just under half marks.

Question 8

This question is statistically the least accessible on the paper. Providing the balance of push and pull factors proved challenging for most. Candidates are familiar with revitalized products, such as mobile phones, Dyson vacuum cleaners or iconic designs that are in their multiple edition phase. However, the reasons behind product development were not well understood. Candidates did not see the user demand as being a driving force for product development. Having completed a detailed NEA as part of their AS course, candidates should have been more aware of the user centered design required to ensure a product meets the needs, wants and values of the target market. This was sadly lacking. This was a difficult AO3 question for most to score well on.

Question 9

The last AO3 question carrying a large 9 mark tariff. This was answered better than Q8, with a mean mark just under half marks. An accessible product that most would own or have used. This response required a very broad range of factors to be identified and discuss. It is this depth and detail that often restricts candidates due to their ability to deal with complex information and the variety of perspectives involved. Again, this would be a good homework task or a test type question in a lesson or mock exam. Practicing these will help drive up the mean marks for this type of response.

Question 10

Candidates did not score highly on this question, with this being the second most difficult on this paper. There are 12 marks available, and the mean mark is 4.6 reflecting the issues candidates had in accessing the required detail, depth and high level response required to score well here. Exam strategy would help here – if candidates highlighted the key words advantages and disadvantages, alongside underlining standardized components, parts and materials. These would be the focus of the question. Many responses here included waffle and repetition and failed to drill down to detail. This was a huge differentiator and a clear indicator of the A grade candidate over the E.

DESIGN AND TECHNOLOGY – PRODUCT DESIGN

GCE Advanced Subsidiary

Summer 2024

COMPONENT 2

Overview of the Component

- Centres should use the marksheets to annotate and support marks awarded. The annotation should also explain why the candidate has been awarded the mark. Not a copying of the assessment criteria.
- A range of problems must be identified by the candidate not prescribed by the centre.
- The problems could come from one in-depth context or a range of different contexts could be considered.
- **Initial specifications** must be annotated and include developed, specific measurable criteria following on from research and iteration. A number of centres are providing initial outline specifications and then producing fully detailed specifications following further research. This has been found to provide a more solid foundation for the development of products.
- Continue to develop the use of sketch-books as an iteration tool.
- The **journey** candidates have followed should be clear throughout the folio and sketch book.
- A number of centres are making extensive use of 3D printing, this is acceptable and can access band 4 marks if, products have had post processing finishing applied to ensure a high-quality product appearance.
- The final concepts and prototype should **look and feel** like a real product. Quality of finish is important. Could the product be taken to an investor?
- 'Manufacturing plans should show how the product is to be manufactured. 'Making diaries' should only be used as a tool to evaluate issues encountered in the manufacturing process.
- Evaluations should contain end testing and user trials with clear suggestions of possible modifications to the product. Use of video evidence here can be highly beneficial.

Comments on individual questions/sections

The work moderated at AS Level component 2 has on the whole been well interpreted. Moving forward, consideration to the following comments and recommendations should be made.

Administration for the moderation process still poses an issue for some centres. It should be made clear that all candidates must have a fully completed DT2 form, this should include all marks and totals, authentication by the candidate and teacher. Centres should also ensure they use the marksheets to annotate and support marks awarded. The annotation should explain why the candidate has been awarded the mark and even, why not more. Not a copying of the assessment criteria. Finally, centres are reminded to present the sample print out from IAMIS and a copy of the whole entry. When all these are completed the moderation process is found to be much smoother and ensure a fair and equal process for candidates.

Identifying and investigating design possibilities

Centres need to continue ensuring that candidates explore and analyse a range of project possibilities. These project possibilities could come under a range of contextual situations or could be under one broad context. There are still some centres directing candidates in certain briefs or context. The candidates must choose and develop their own briefs and it is not expected that whole samples show the same contexts. The aim of the iterative process is to allow the students to consider a range of problems and briefs based on analysis of client requirements, research and deconstructing existing products and problems.

Developing a Design Brief and Specification

Specifications continue to pose an issue for a number of candidates. It is seen often that candidates lack the detailed quantitative information in the early stages of development. A number of centres are providing initial outline specifications and then producing fully detailed specifications following further research. This has been found to provide a more solid foundation for the development of products. However, to access the higher bands in this section. It is expected that specifications contain all the relevant details that would allow a product to be successfully developed and suit the needs of its intended use.

Generating and developing design ideas

Design folios again were generally well laid out with good examples of the iterative process being followed by many centres. This was evident in A3 folios and some good use of sketchbooks. Centres should continue to encourage candidates to model, develop and iterate as much as possible. These models, tests, concepts could take on the form of a physical model or a 3D CAD model. Sketch books must also continue to be developed and encouraged as an iterative working tool, marks for good use of sketch books should be rewarded in the generating and developing ideas section. There is no directive as to where the design process should start and modelling or deconstructing could be the starting point for designing.

Manufacturing a prototype

Product solutions and prototypes across many centres were appropriate however, centres should consider the timing and marks allocated to their prototype. Products should still represent a finished functioning prototype. When centres are making concept models, the products, regardless of function, must look and feel like a real product. Quality of finish is vital at this level. Could the product be taken to an investor? A number of centres are making extensive use of 3D printing, this is acceptable and can access band 4 marks if, products have had post processing finishing applied to ensure a high-quality product appearance. A number of centres were awarding band 4 marks to prototypes presented straight from the printer.

Please also note, only the finished prototype/s can have marks awarded in this section. Marks cannot be awarded for models and test pieces; these are rewarded in 'generating and developing design ideas'.

Along with the finished prototypes centres should ensure that the logical sequence and timeline completed should be in a pre-emptive context. 'Manufacturing plans should show how the product is to be manufactured. 'Making diaries' should only be used as a tool to evaluate issues encountered in the manufacturing process. Centres should also ensure that flow charts and manufacturing plans contain sufficient detail, considering the '3rd party' aspect. Moderators are seeing Gantt charts as a means of planning the manufacturing; although this is an acceptable method, a simple coloured box on a chart is meaningless unless it is reinforced with realistic detail including reference to H&S, QC and timings that reflect the true manufacturing process. The logical sequence should not be confused with the project planning noted in section A.

Analysing and evaluating design decisions and prototypes

The depth and quality of evaluations varies across centres, a consideration of the time apportioned to this should be revised by many centres when considering the marks available. In general centres need to ensure that greater time and emphasis is placed on evidencing, testing and user trials and live feedback from the proposed intended users. Good examples are of using video evidence, this has been a successfully used tool by many. Consideration here should also be made to how the product could better meet the needs of the user throughout its life cycle. Modifications should be fully realised in annotated sketches or CAD presentations.

Supporting you

Useful contacts and links

Our friendly subject team is on hand to support you between 8.30am and 5.00pm, Monday to Friday.

Tel: 029 2240 4303

Email: designandtechnology@edugas.co.uk

Qualification webpage: [AS and A Level Design and Technology | Edugas](#)

See other useful contacts here: [Useful Contacts | Edugas](#)

CPD Training / Professional Learning

Access our popular, free online CPD/PL courses to receive exam feedback and put questions to our subject team, and attend one of our face-to-face events, focused on enhancing teaching and learning, providing practical classroom ideas and developing understanding of marking and assessment.

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We support our education communities by providing trusted qualifications and specialist support, to allow our students the opportunity to reach their full potential.



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