GCE EXAMINERS' REPORTS

GCE
DESIGN AND TECHNOLOGY
AS/Advanced

SUMMER 2023

Grade boundary information for this subject is available on the WJEC public website at: https://www.wjecservices.co.uk/MarkToUMS/default.aspx?l=en

Online Results Analysis

WJEC provides information to examination centres via the WJEC secure website. This is restricted to centre staff only. Access is granted to centre staff by the Examinations Officer at the centre.

Annual Statistical Report

The annual Statistical Report (issued in the second half of the Autumn Term) gives overall outcomes of all examinations administered by WJEC.

Unit	Page
Unit 1 – Engineering Design	1
Unit 1 – Fashion & Textiles	4
Unit 1 – Product Design	7
Unit 2 – NEA – Design and Make	12
Unit 3 – Engineering Design	15
Unit 3 – Fashion & Textiles	17
Unit 3 – Product Design	21
Unit 4 – NEA – Design and Make	25

AS ENGINEERING DESIGN

General Certificate of Education

Summer 2023

Advanced Subsidiary/Advanced

General Comments

The number of candidates entered for this specification had increased slightly but it was disappointing to note that the standard had not significantly improved. The quality of the responses was varied. Little evidence was available to suggest that candidates had used the on-line digital learning resources that are available through the WJEC Website to assist with preparation for the written examination. Specific technical knowledge was superficial in many cases and candidates did not demonstrate that they had covered all aspects to the subject content. Illustration techniques were limited and this prevented many candidates from developing a detailed response to the design question.

Comments on individual questions/sections

Q.1 (a) Very few candidates demonstrated knowledge and understanding of the advantages of using surface mount technology, pick and place robots, reflow soldering and track isolation. As a result, this question was generally poorly answered.

(b) The question produced some good responses. Candidates had a good understanding of the stages involved in a five-point risk assessment and those that related the stages to the given context achieved full credit.

(c) The response to this part of the question was disappointing. With a few exceptions candidates did not demonstrate a detailed understanding of the processes involved in CNC manufacture. Many answers consisted of a description of the advantages of using this process rather than focusing on how the process is carried out.

Q.2 (a) (i) This question was well answered by many candidates. Most were able to identify the advantages of using thermoplastic polymers for housing electronic products.

(ii) Those candidates that understood the injection moulding process were able to access this question. As a result, they were able to provide justification as to why this process is an appropriate method for manufacturing the case.

(b) In general candidates had a good understanding of the environmental issues associated to manufacturing products from plastic materials. Most were able to outline at least two ways in which the impact of using these materials can be reduced.

Q.3 Many candidates clearly understood the difference between market pull and technology push but, in several cases, they were unable to relate this to the specific context. Those that were able to reference the specific demands made by consumers and technological progression were able to access higher marks. The quality of written communication was varied.

Q.4 (a) (i) Knowledge and understanding in relation to the function of an operational amplifier was very disappointing.

(ii) Most candidates understood that a diode allows current to flow in one direction only. Those that were able to explain that it prevents damage caused by back EMF were given full credit.

(iii) This part of the question was well answered. Candidates were able to provide justified explanations of the advantages of using LED technology.

Q.5 (a) (i) Those candidates that understood oscillating motion were able to easily access this question.

(ii) Many candidates were able to identify the type of force that might be found in a baby bouncer. Those that provided a detailed description of the identified force were given full credit.

(b) Answers to this question were disappointing. A few candidates attempted to draw rack and pinion or gear mechanisms and were consequently given no credit. Attempts to draw cam or crank mechanisms were rewarded but conventional technical illustration techniques were limited.

Q.6 This part of the question was well answered by many candidates. A few candidates had not read the question of correctly and talked about the advantages of wind powered energy rather than using electrical power.

(a) (i) This question produced some good responses. Those candidates that used correct sequencing and conventionally correct symbols were awarded higher marks.

(ii) The response to section was very disappointing. Initial ideas were limited, and illustrations lacked detail, clarity, and iterative development. As a result, proposals for a final solution were underdeveloped and lacked the sophistication that is anticipated at this level. Candidates had made attempts to identify appropriate materials and to provide some critical dimensions. Notes that were included tended to be descriptive rather than evaluative.

(b) Most candidates were able to provide two reasons why wind powered technology is being used increasingly. Those that provided fully justified answers achieved full credit.

(c) Many candidates were able to outline at least one disadvantage of using wind powered technology. Those that considered the environmental consequences were able to access higher marks.

Summary of key points

- Candidates that used technical terminology to answer questions were able to access higher marks.
- Those that had developed skills in technical illustration achieved higher marks for the Question 5(b) and Question 6.
- Candidates should be reminded to consider the total number of marks available for each question and to allocate a proportional amount of time when answering each section.
- In many cases, it was clear that knowledge and understanding did not cover the full content of the specification. Candidates that made strong responses to some questions often responded poorly to others.
- In some cases, it was evident that candidates had not taken time to read the questions carefully.

AS FASHION & TEXTILES

General Certificate of Education

Summer 2023

Advanced Subsidiary/Advanced

General Comments

A small number of candidates sat this paper. The overall response to this paper was well received with many pupils demonstrating the in-depth technical knowledge and understanding that is required at this level.

In some cases, it was evident that candidates had not prepared thoroughly for the examination and in the depth that might be expected. Some lacked the technical knowledge and understanding that would have enabled them to respond at a higher level.

All candidates attempted all questions, indicating that candidates had managed the time period effectively.

There are useful resources available when analysing candidate performance in this unit, particularly the Item Level Data which is centre specific and allows a full statistical breakdown of candidate performance question by question. Centres can also compare their performance against ALL centres to identify strengths and weaknesses in delivery of this specification. The Online Examination Review (OER) is also available via the WJEC website. This e-resource contains marked exemplar responses from scripts, where examiners marks are available, together with marking criteria and reasons why marks have been awarded and where responses lack the depth to access further marks. This is a powerful teaching tool for classroom activity with candidates. Useful teaching resources to support learners in the classroom are also available via the WJEC website in the resource section. Here you will find knowledge organisers and interactive teaching resources.

Comments on individual questions/sections

Q.1 This question was well received. 100% of candidates attempted this question. Most candidates scored well with an average mark of 6.1 out of 8.

(a) All candidates showed good knowledge of microfibres and most understood the suitability of microfibres in a changing robe.

(b) Candidates were able to give examples of suitable style details, and some were able to expand on this and give reasoning in relation to the user.

Q.2 100% of candidates attempted this question. Some candidates scored well with an average mark of 4.5 out of 8. Candidates were awarded marks for the quality of written communication in this question.

(a) Candidates were asked to make reference to the environment, the consumer and the manufacturer when answering the question in order to be awarded full marks. Some candidates did not make reference to all three. Candidates are reminded to read the question fully. Most candidates showed a clear understanding of the issues associated with the question. Terminology and technical language were good on the whole.

Q.3 100% of candidates attempted this question. Some candidates scored well with an average mark of 4.6 out of 8.

(a) Candidates were able to describe the properties of banana leaf fibre. Some were able to explain how banana fibre is suitable for a dress.

(b) All candidates showed knowledge of eco-friendly textiles, and some were able to explain why eco-friendly textiles can become less sustainable when used to make a higher volume of garments.

Q.4 100% of candidates attempted this question. This question scored the least marks with an average mark of 4.2 out of 8.

(a)&(b) It was clear to see that some candidates experienced the use of a heat press and others experienced using heat transfer paper in the classroom. Candidates were only able to answer (a) or (b) sufficiently, and not both. It is important for candidates to be shown all techniques.

Q.5 100% of candidates attempted this question. Some candidates scored well with an average mark of 4.3 out of 8.

(a) Most candidates were able to explain why an antibacterial finish might be beneficial to the user.

(b) Some candidates showed knowledge of nylon and elastane and were able to explain why these fibres are suitable for a pair of socks.

(c) Candidates suggested other fabric finishes but most of the finishes suggested were not suitable for a pair of socks. Candidates also failed to give reasons for their choices here.

Q.6 100% of candidates attempted this question. This question scored the least marks with an average mark of 23.3 out of 40. Responses to this question were positive overall and accessible for most candidates on the whole.

(a) (i), (ii), (iii), (iv) Candidates were creative in their design idea overall, and this was pleasing to see. Some lacked creativity and their ideas took the form of very basic line drawings. Annotation and communication varied. Some annotation was detailed and included named style details as well as construction notes and exploded drawings. These candidates were awarded the higher marks. Candidates are reminded to take in all equipment for the exam.

(b) Candidates struggled to answer this question overall. Sketches and notes lacked detail. This was an 8 mark question and required a logical description of the process, good use of terminology, named equipment and quality control measures.

(c) Candidates showed some understanding of a capsule wardrobe and were able to give examples of how accessories can play an important role.

Summary of key points

General weaknesses in candidate performance include:

- Failure to develop a detailed response to gain the higher marks.
- Weakness in specific textile related knowledge in some areas.
- Failure to 'explain.' An 'explanation' requires a fact and an elaboration of that fact.
- Well-planned and structured responses score well. These responses contain clear, and specific details relating to the question. Several candidates' responses require more structure and planning to organise information clearly and coherently and attain higher marks.
- Candidates should be advised to read the question carefully to ensure that all elements are understood and are also included in their response.
- Centres should continue to advise candidates to use the mark allocation indicated at the end of each question to guide the depth of response required and manage time effectively.
- Allocate time appropriately, e.g., Q6 the design question is worth 50% of the marks, this question should take 50-55 mins of the candidate's time.

AS PRODUCT DESIGN

General Certificate of Education

Summer 2023

Advanced Subsidiary/Advanced

General Comments

This year's examination paper was well received by candidates and centres with the vast majority of candidates attempting all of the questions. Item level data identifies continuity with the 2022 paper with a Facility Factor (Accessibility) of 51.7 compared with 52,7 in 2022. In general candidates' responses were good however, in some responses candidates did not demonstrate the depth of technical knowledge or technical detail required at this level. As the content of the specification and the structure of the questions become more familiar to centres it is assumed that the responses of the candidates will access the higher marks.

Comments on individual questions/sections

Q.1 All candidates attempted this question. With 3.4 the average mark attained and a Facility Factor of 42.4 and a Standard Deviation of 1.6, this proved to be the most challenging question on the paper.

(a) This first question was attempted by all candidates and was in many instances well answered. However, some basic analytical skills were not employed in relation to the question, many responses referred to the colour coding of the containers which has little relevance to the effective use of space.

(b) (i) This question was generally poorly answered. Very few candidates linked the process stated in the stem of the question to their response. A lot of responses where generic and not relevant i.e., 'Surface must be non-toxic' or 'Polymer containers can be zinc plated'. Some responses supplied more detail then required for the marks available.

(b) (ii) This question was generally poorly answered. Very few candidates linked the requirements of the mould to the product and were generic in nature. A generic response was credited however, for full credit the response required linking to the containers.

Q.2 All candidates attempted this question and presented a wider range of responses. The average mark was 4.5 and a Facility Factor of 55.7 and a Standard Deviation of 2.1

(a) The vast majority of responses were able to provide a clear definition of a smart materials. A small number of candidates confused smart materials with composite materials.

(b) The majority of candidates correctly identified photo chromic glass/polymer as an appropriate smart material. A few responses named a material for the frames and where not credited, and a number of these responses stated 'Shape Memory Alloy' as a material. Candidates should be reminded that a suitable response to a question will not be provided in a subsequent or previous question.

(c) This question was generally well answered with many responses able to discuss the benefits of SMA being used in the frames compared with other materials. A few candidates linked SMA to the functionality and lifespan of the glasses, these clearly read the question and were fully credited for the response which related to the question.

Q.3 99.8% of candidates attempted this question. The average mark was 4.3 and a Facility Factor of 53.7 and a Standard Deviation of 1.9.

A small number of candidates did not attempt this question. The majority of responses were able to describe the use of anthropometric data in response to the two different headphones. However, many responses did not analyse the use of anthropometric data in this context. A few candidates were confused regarding the application of anthropometric data, and some demonstrated no distinction between ergonomic and anthropometric data. Almost all successful responses referred to the ears and head data, however, very few made the link to hand sizes and the placing/removing of the devices. Again, some responses used a bullet pointed list to structure their response, describing in detail benefits of the use of the two strategies and this would have been appropriate in this answer.

Q.4 All candidates attempted this question. The average mark was 4.5 and a Facility Factor of 56.1 with a Standard Deviation of 1.8

(a) Responses to this question tended to be generic with many identifying speed of manufacture, repetition of manufacture as benefits. A few responses identified benefits in using CNC for the aluminium case with examples including accuracy required for keypads and small electronic components. These responses gained full credit as the answer was contextualised.

(b) Responses to this question tended to be generic with many identifying the material properties of aluminium. A few responses identified benefits in using aluminium in the laptop case with examples including heat dissipation, strength to weight ratio and aesthetics. These responses gained full credit as the candidate's response was again contextualised. It is noted that a significant number of candidates did not know the material properties of aluminium.

Q.5 100% of candidates attempted this question. The average mark was 4.0 and a Facility Factor of 50.4 with a Standard Deviation of 1.6.

In this question the QWC (quality of written communication) was assessed, and some candidates did not respond in the appropriate manner providing a GCSE type list of benefits of recycling, in a few cases this was a bullet point list, this will have prevented them accessing the higher mark boundaries. The essay type response required by this question posed the greatest challenge to some candidates and is an area that with thorough preparation will easily allow them to improve their marks.

Most candidates were able to explain the benefits and drawbacks of recycling ocean waste from the sea however, the response was generally simplistic in nature and often appearing as simple lists of benefits and drawbacks. Very few made reference to the moral of ethical reasons for recycling ocean waste which was required by the question. Most candidates did not provide a simple concluding statement. Candidates must be reminded that additional space for expanding their response is available on the continuation pages.

Q.6 A design-based question. 100% of candidates attempted this question and highlighted a wide range of marks achieved. The average mark was 20.8 and a Facility Factor of 52.1 with a Standard Deviation of 7.3.

This question proved to be challenging for candidates with a wide distribution of marks.

(a) (i) The variety of solutions in response to the question was impressive and highlights that creativity remains a strength in this subject. Many responses demonstrated a range of simple yet appropriate innovations. The weaker design solutions did not demonstrate the anticipated level of analysis of the specification with many key requirements not met. In these instances, the innovation demonstrated was very limited. In a few cases the response appeared to be rushed.

(ii) Candidates were expected to identify how their design could be easily removed from a desk, hold a cup securely. Many responses were overly complicated using a range of screw type fixings requiring two hands to remove it and in addition many were poorly annotated. Many answers were simply not responding to the requirements of the question and were credited accordingly.

(iii) Two justified responses were expected in this response; Most responses were able to name two appropriate materials with appropriate justification, however, some failed to justify why stated materials would be used and were credited accordingly. A few candidates named more than two materials with no justification in this instance they were credited only ½ marks. Many candidates named and justified 3 or more materials. Candidates should be discouraged for spending time adding more information than is required for the question.

(iv) There was a wide variety of response to this question. Almost all responses employed a simple use of sketches to display their ideas, it was pleasing to see that very few responses were coloured or excessively rendered. However, the quality of simple sketching and supporting notes varied significantly with a disappointing number of candidates presenting poor 2D or 3D drawings with little or no supporting annotation and in few cases only 2D pen drawings were presented, the question clearly required a combination of drawings. Candidate would be encouraged to spend time during the course developing and practising this key communication skills.

(b) This question proved to be challenging with a wide variety of responses and marks. Many candidates did not link this question to the skills and knowledge that they would have developed through the NEA task and the information that they would have produced in the ***Generating and developing design ideas (AO2)*** section of the NEA. A surprising number of candidates did not respond to this question and many of the responses presented little information other than a simple sketch or a drawing. In some instances, the response was a redraw of the information presented in question (a) and in this instance candidates were only credited with any new information that was provided. Candidates who were able to produce a simple drawing/drawings together with critical details that were complied with BSI standards i.e. dimensions and tolerances were suitably credited and achieved high marks.

(c) (i) This question was attempted by all candidates and generally well answered. Responses generally were able to identify and discuss the benefits of modelling and testing their ideas with most candidates responding with the detailed reasoning expected at this level.

(ii) This question was attempted by all candidates with many responses demonstrating a basic understanding of the benefits of user trials. In several cases candidates repeated the answers that were given in the previous question without identifying the benefits of user trials, in this instance they were not credited. Candidates who were able to identify and explain the benefits of specific user trials were fully credited.

Summary of key points

- Candidates should be advised to read the question carefully to ensure that all elements are understood and are also included in their response.
- Candidates are advised to use any source material provided i.e., images etc. and link their response to this material.
- There were several examples where the responses throughout were not detailed enough at this level to gain the higher marks.
- Centres should continue to advise candidates to use the mark allocation indicated at the end of each question to guide the depth of response required and manage time effectively, there were many examples of candidates providing too much information for the question.
- Allocate time appropriately, e.g., Q6 the design question is worth 50% of the marks, this question should take 50-55 minutes of the candidate's time.
- Well-planned and structured responses score well in any extended written responses. In many cases if candidates spend time organising their thoughts and response this will ensure that the questions are fully answered and allow them to improve their mark.
- Question 3 responses varied considerably; In an 8 mark written response candidates would be advised to plan their answer and read the question carefully this will allow them to address all aspects of the question.
- Question 5 responses varied considerably; responses generally require more structure and planning, whilst ensuring that ALL elements of the question are covered. Centres are reminded that this type of question requires an essay style response. Majority of candidates were able to identify benefits and drawbacks of recycling sea waste but very few discussed them in the context of the ethics and morality.

- Centres should also be advised to remind candidates that answers could be amplified with detailed labelled sketches and/or diagrams where appropriate; many of the answers were unfortunately brief with a few words and simple sketches not allowing the candidate to fully explain the response and display the depth of knowledge required at this AS level.

AS NEA – DESIGN AND MAKE

General Certificate of Education

Summer 2023

Advanced Subsidiary/Advanced

General Comments

It was a pleasure once again to be able to witness student creativity and innovation being encouraged at many centres. Summer 2023 saw NEA with no adaptations and generally most centres returned smoothly to delivering the full specification requirements but there were some issues. Many of the issues at AS were replicated at A2. In general, the majority of centres applied the assessment criteria consistently and fairly, but close scrutiny is required to the mark bands if high or full marks are to be awarded. Several of the shortcomings highlighted in the 2022 report were once again still evident at some centres despite WJEC releasing a range of NEAs for standardising purposes. All teachers at the centres need to be encouraged to use the WJEC resources available to them and to act on any recommendations. This report needs to be used in conjunction with your centre report to move the subject forward.

Comments on individual questions/sections

Identifying and investigating design possibilities

The assessment criteria clearly demands that candidates identify a broad range of problems/opportunities to clearly inform the development of possible design briefs. This was not the case in all centres. There are still some centres directing candidates in certain briefs or context. The candidates need to be allowed to choose and develop their own briefs and it is not expected that whole samples show the same contexts. Care is needed to ensure that access to the higher mark bands is possible, because with only limited very focused research, access to the higher bands is not possible. Candidates also need to be encouraged to use a variety of different design strategies during this section.

Developing a design brief and specification

Not enough evidence was witnessed to suggest that some centres had acted upon the recommendations of the report from last year. Many centres assessed this section too generously. Several centres produced design specifications with sufficient details required, but not all. This must be addressed if higher marks are to be awarded. The design specification needs to be specific and detailed and include a range of objective and measurable criteria. The design specification needs to direct and inform the designer whilst developing the design. A quality, measurable, in-depth design specification will help greatly when evaluating the product. It must be remembered that specifications are working documents and should be referred to throughout the iterative process.

Generating and developing design ideas

Some candidates had fully embraced the iterative design approach with some high-quality work being produced. This is where thorough use of relevant modelling and testing of ideas, driven by the design specification can support decision making and move the project forward on the journey. Those candidates who had done this extensively gained valuable information and feedback prior to making their final prototype. Research of different findings and possibilities can also be included here, to aid once again with the iterative design process. Centres need to continue to encourage candidates to develop this iterative process as much as possible and to always remember to record their findings in some way. Models, tests and concepts could take on the form of a physical model from any material or a 3D CAD model. Sketchbooks must also continue to be developed and used as the iterative working tool that it should be. With thorough testing and modelling, the candidates gain a real understanding of their project and for a method of gaining valuable development feedback from the target users or clients.

Manufacturing a prototype

Evidence of a logical sequence and achievable timeline for the stages of production is required in this section if higher mark band marks are to be awarded. Does the evidence communicate enough information to enable a 3rd party to manufacture the product? Excellent making skills were witnessed in many centres, but the standards of manufacture varied greatly as did the application of the assessment criteria. Some of the products developed and manufactured were not really suitable for the course and a more innovative approach needed to be encouraged at the centre. Several prototypes manufactured were lacking in accuracy and skills, yet high band marks had been awarded. Last year the principal moderator's report stated, "if top mark band marks are to be awarded the product needs to be a high-quality functioning prototype, displaying very good attention to detail with a quality finish". Recommendations like these need to be acted upon. It must be remembered that marks cannot be awarded for models and test pieces in this section, these are rewarded in 'generating and developing design ideas. Assessment of this section was generous overall and very generous in some centres and is an area to focus on next year.

Analysing and evaluating design decisions and prototypes

The depth and quality of evaluations did vary significantly across centres. A consideration of the time allocated to this section should be revised by many centres when considering the marks available to them. More end user trailing, and testing needs to be encouraged and then to communicate the further developments required to better meet the functional and/or aesthetic needs of the product. There were some good examples in several centres of using video evidence for end user testing and there were some good examples of the consideration of how the product better meets the needs of the user. Modifications should be fully realised in annotated sketches or CAD presentations. A quality design specification with good measurable qualitative and quantitative criteria enabled the candidates to produce a much more meaningful final summative evaluation. Many of the summative evaluations were well written, and considered the design brief and specification, and considered views of users and referenced end testing. As mentioned, with the marks available for this section, after the manufacture of the prototype, the students must be encouraged not to rush and to produce a quality evaluation covering all the assessment criteria.

Summary of key points

- Research is most effective when it is focussed and relevant to the problem. Avoid superficial and meaningless research.
- Design Specifications points require full development to ensure they contain measurable criteria and support idea refinement. Specifications should be used as a designing tool, and reference to the ‘success criteria’ should be made continually during the iterative journey.
- The intended user or target market should be a ‘constant’ consideration during the project. Not just a source of information at the start, and a means of testing at the end.
- Analysis that constantly occurs during designing and development is important. And decision making that results from this demonstrates a mature approach to problem solving.
- Final evaluations require user trials and offer plenty of opportunities for modifications. Additional designing and development activity can also occur.

A2 ENGINEERING DESIGN

General Certificate of Education

Summer 2023

Advanced Subsidiary/Advanced

General Comments

2023 saw a return to ‘full’ status assessment for this cohort, with Advance Information. A traditionally small entry for this very specialist focus area, with high retention rates from AS Level within the limited number of centres participating. The paper was very well received by candidates, with a 100% attempt rate throughout, with the exception of question 9. The mean mark for this paper was 50.57, with one candidate scoring maximum marks.

Comments on individual questions/sections

- **Question 1.** mean mark of 4.7 out of 8. Focus on two hand dryers, examining cost and performance issues, alongside radically new design.

- **Question 2.** 6.1 out of 12. Stripboard construction fairly well understood, with JIT providing more challenge at the end of the question.

- **Question 3.** 6.9 of 12. Mechanical log splitter requiring block diagram and understanding forces.

- **Question 4.** 8.0 out of 12. Target markets and users of personal laptops, with the 4Ps providing an 8 mark completion to this question.

- **Question 5.** 2.4 out of 8. This question required detailed technical knowledge of individual electronic circuit components from a given diagram. Knowledge and understanding here in fairly low. Diagram for modifying the system proved difficult.

- **Question 6.** 5.9 out of 8 which was the second most accessible on the paper. Analysing images of digital baby soother, accessible and a good source of marks.

- **Question 7.** 4.4 out of 12. Understanding of PCBs and their production methods was not well understood.

- **Question 8.** 6.1 out of 8 being the most accessible question on this paper. This was well answered, unsurprisingly, with the content being very well known / most modern homes owning or using a wifi doorbell with remote smart phone app.

- **Question 9.** 5.4 out of 10 with a lower 95.7% attempt rate. A disappointing level of response for a James Dyson essay. One of the AO3 questions with a high tariff 10 mark weighting.

- **Question 10.** 5.7 out of 10. A broad environment-based essay, requiring AO3 evaluate skills. Generally well answered, with some scope for increased depth and critical evaluation in responses.

Summary of key points

- Candidates need to read the question thoroughly, and ensure responses answer the question fully. Some questions have multiple ‘strands’ and some aspects are easily missed.
- Candidates need to ensure the correct ‘depth’ is provided in responses. Avoid repeating similar facts – this does not increase marks awarded.
- Candidates need to ensure the quality of written communication is effective and legible. Extended responses often carry high tariff marks.

DESIGN

General Certificate of Education

Summer 2023

Advanced Subsidiary/Advanced

UNIT 3 – FASHION & TEXTILES

General Comments

The current academic year sees the return of the full award for this GCE A level qualification in Fashion and Textiles including the AS element, since the first award in 2019. The number of entries for this GCE qualification has fallen and is now very low when compared to Product Design. All candidates taking this examination are female which is consistent with past exam series.

Questions were drawn from a broad range of topics listed in the full course specification. The style and demand of questions varied and were set to test candidates' ability to demonstrate knowledge, understanding and skills acquired over the two-year period of study. The structure and demand of the paper was very similar to past series. Candidate performance however was considered much weaker with most candidates seemingly less well prepared than in previous examination series. The publication of advance information does not appear to have had any impact on candidate performance. Most candidates have an adequate breadth of knowledge but do not have sufficient depth of knowledge and understanding consequently many were not able to access the full range of marks available. Subject specific technical knowledge continues to be weak. Many responses were considered superficial, clearly lacking the technical knowledge which is expected at this level. On a more positive note, the overall attempt rate for each question was good with only a minority of candidates failing to attempt questions 9 and 10.

Comments on individual questions/sections

Q.1 This question was considered accessible to all, with the mean mark above half marks.

(a) Most candidates had a reasonable understanding of the purpose of draping fabric on a dressmaker's dummy in the early stages of design. (b)(i) Most candidates understood the concept of deconstruction but for this part question, did not relate it to a piece of fabric or did not know why this would be applied to a piece of fabric. (ii) There were no issues relating to reverse engineering in the development of a new product.

Q.2 As the mean mark was marginally above half marks, this question was deemed accessible to all.

(a) Responses varied; some candidates described the diagrams, but their knowledge did not extend beyond that. Detailed knowledge of thermoregulation in textile fabrics was not evident. (b) Knowledge of micro-encapsulation was mostly good.

Q.3 The mean mark for this question was below half marks.

(a) It would be reasonable to think that GCE A level candidates would recognise a diagram of warp knitting; many did not, consequently could not answer the question. Other responses lacked depth of knowledge. (b) There were some good diagrams showing how elastane is incorporated into yarn with most candidates demonstrating some knowledge relating to the benefits of its use in sports clothing (c).

Q.4 This question was the most accessible on the paper with the mean mark well above half marks.

(a) Most candidates understood the concept of applying a waterproof finish but overall, there was little evidence of detailed understanding.

(b) (i) No issues relating to piping supporting the structural integrity of the bag or (ii) the significance of the stitching detail on the handle of the bag.

(c) Some candidates did not seem to know what a bound finish on a seam was and consequently couldn't access the rest of the question. Other responses lacked the necessary detail. A minority of candidates were awarded full marks.

Q.5 A slightly more challenging question for some with the mean mark well below half marks.

(a) Responses varied but overall were quite weak with little evidence of detailed understanding. Launching a Designer collection via a fashion show is a fundamental part of the fashion industry therefore it is surprising that this was not answered well. (b) A few candidates fully understood the term market segmentation, and its importance in promoting fashion and textile products. Most responses however referred to different groups of users in society being targeted but overall responses lacked the necessary detail or depth of understanding.

Q.6 As the mean for this question was below half marks, this question proved challenging for most candidates.

Responses to this question varied. (a) Some candidates referred to technology in more general terms, missing the critical point of the question which was specifically about the technology of 3D printing. Given many candidates refer to the work of designers such as Iris Van Herpen (who is known for her inspirational 3D printed concepts) in their NEA submissions, it was disappointing that they could not answer this question. Full marks were rarely awarded. (b) This part question proved challenging for some, many responses took the form of a general overview of Issey Miyake's work but did not explain how Japanese tradition and culture influenced his work. Recalling lists of facts does not gain credit, overall responses lacked maturity.

Q.7 An accessible question for all, with the mean mark well above half marks.

(a) No issues with this question on hazards in the workspace.

(b) Responses relating to how COSHH protects employees varied but overall were mostly good.

(c) Some responses to how the Health and Safety at Work Act affects Fashion and Textile students were juvenile in nature and did not reflect the standard expected at A level, however most gained some marks.

Q.8 As the mean mark was marginally above half marks, this question was deemed accessible to all candidates.

(a) Surprisingly, some candidates did not appear to know what the term 'bought-in' components meant; some referred to JIT in this question when this topic is clearly tested in the next part question. Candidates need to be reminded to read the whole question before attempting to answer to avoid this happening which ultimately affects the marks that can be awarded.

(b) Some candidates did very well on this question and fully understood both advantages and disadvantages of this stock control management system with high marks awarded accordingly. Most candidates demonstrated some understanding of JIT.

Q.9 This was the least accessible question on the paper and proved problematic for some; a few candidates did not attempt this question.

Responses varied to this question, but most candidates gained at least a few marks. Similar to past series candidates sitting this qualification have good knowledge of sustainability and environmental issues relating to the fashion and textile industry. This question challenged that knowledge by asking specifically about the circular economy – the focus being on the elimination of waste. Few candidates grasped that fact, consequently high marks were rarely awarded. In this AO3 'evaluate' question there must be evidence of appraisal. There was little evidence of this in a number of responses.

Q.10 This was the second least accessible question on the paper and proved too challenging for some; a few candidates did not attempt this question.

Responses varied but most candidates gained at least a few marks but overall, responses were a little disappointing. Reference to user-centred design was slightly superficial, with little evidence of detailed understanding. Several responses strayed off the main point of the question particularly when discussing the benefits to the environment of a user-centred approach. In this AO3 'analyse' question there must be evidence of reasoning. This skill was lacking in a number of responses. There were no issues with the quality of written communication which was assessed in the question.

Summary of key points

- Candidates need to be taught all the topics listed in the full GCE Fashion and Textiles, covering both AS and A2 content.
- Topics need to be revisited, revised, and tested regularly throughout the two-year period of study to ensure candidates have the necessary knowledge and skills to succeed at this level. Regular practice answering exam style questions is essential.
- Candidates need guidance on carefully considering the question construct before attempting a response. Key points are often missed as the question has not been more thoroughly considered.
- AO3 'analyse' questions, need evidence of logical lines of reasoning in the response.

This report should be read alongside the 2023, unit 3 paper and mark scheme. Centres are reminded of the item level data available on the WJEC secure website when they reflect on their candidates' performance. Centres are reminded to make use of the many digital resources that support the delivery of this GCE Fashion and Textiles course, available on the main and secure WJEC websites. It is hoped that the feedback provided in this report will enable centres to reflect on the strategies and advice given to their candidates as they prepare for the 2024 examination.

DESIGN AND TECHNOLOGY

General Certificate of Education

Summer 2023

Advanced Subsidiary/Advanced

UNIT 3 – PRODUCT DESIGN

General Comments

- The paper was generally well received by candidates and most of the candidates answered all questions on the paper, however question 9 and 10 were attempted the least with a 97.6% and 96.8% attempt rate respectively.

- Most candidates are conscious of the need to read questions carefully and pay particular attention to command words. However there is still a clear indication that the longer style analyse, evaluate and discuss responses generally require more structure and planning, as many candidates failed to clearly cover all requirements of the questions to gain the higher banding marks.

- Centres should continue to advise candidates to use the mark allocation indicated at the end of each question to guide the depth of response required along with the importance to ensure the command word is being met.

- It appeared that most candidates used the time of the examination effectively and were able to dedicate sufficient time to all questions. Occasionally, candidates missed out a question or provided brief responses, but this seemed to be due to a lack of knowledge rather than an issue with time.

- There were some scripts or sections of scripts that were ineligible, candidates are reminded that they need to ensure the quality of written communication throughout is consistent.

Comments on individual questions/sections

Q.1 With a facility factor of 61.2 this proved to be one of the most accessible questions on the examination paper.

Part (a) was answered well, however some candidates' responses listed more than one benefit and negative rather than explaining one of each in detail, this limited their ability to gain the top marks for this part of the question.

Part (b) generated mixed responses, with the better answers relating the speaker aesthetics to colour, shape and form. Many responses made reference to target needs and wants but didn't link it to the aesthetical design requirements.

Q.2 This proved to be the most accessible question on the examination paper, with a facility factor of 66.3 and mean mark of 5.3 from 8. Candidates were able to describe the term of reverse engineering well in part (a). Overall, candidates gave the main benefits to the consumer in part (b). It was clear from the responses that many centres have clearly covered this topic throughout the course.

Q.3 This was a well answered question with a facility factor of 62.2 and mean mark of 7.5 from 10.

Part (a) was accessible to all candidates and nearly all were able to name a type of primary research that could be carried out with many referring to surveys and questionnaires.

For Part (b) candidates demonstrated their ability to interpret the stimulus provided from the two images and develop some good considerations of how the selection of materials and components relate to the price. Many identified that the increase in electrical components will drive the price up and increase manufacturing costs.

Part (c) was also well answered with many candidates describing the key benefits for the development of the new lock with answers including references to Wi-Fi and Bluetooth for easy access from smart phones and devices and improving security due to the fingerprint and electronic locking systems.

Q.4 The facility factor for this question was 54.5 and a mean score of 2.9 from 12, proving to be the most challenging question to candidates. This question had two elements to it and part (a) was better that part (b).

The main concern with this question was that responses for part (b) did not address what was being asked from the question and most responses explained the process of vacuum forming rather than explaining the features required to produce a successful industrial former.

This highlights the importance of reading the question carefully. Where the answer was answered well it was clear that candidates were able to identify draft angles, support ribs and the need for the former to be designed with a working hinge to make it one piece.

Q.5 There were mixed responses to this question with the mean mark of 4 from 8. Part (a) was answered better than part (b) with many candidates able to achieve marks by identifying that chipboard is inexpensive and can make use of recycled wood in its manufacture and it can be manufactured into bigger sheets.

Part (b) was more sporadic with answers lacking in detail and only talking about how “screws could be a problem and to glue would be the solution” rather than explaining the reasons and offering knock down fittings as a more suitable joining method.

Q.6 There were mixed responses to this question with the mean mark of 3.8 for both part (a) and (b). Many candidates were able to achieve marks in part (a) by referring to speed and accuracy.

Responses to part (b) were generally weaker, with fewer candidates being able to design an effective jig to ensure the holes were drilled effectively. There was a lot of responses designing automated manufacturing lines rather than a jig.

Candidates could have answered this question in terms of developing a jig to cut the part to length, mark the holes and drill the holes. Higher tariff answers had an understanding of all of these aspects to help batch produce part A.

Q.7 This question proved difficult for many candidates, with a facility factor of 46.3 and a mean mark of 5.6 out of 12.

There were some good responses in which candidates identified a range of benefits and negatives of JIT, however many didn't go onto evaluating the impact this could have on the manufacturer. As in previous years it is vital that candidates ensure they structure their response for the A03 evaluate questions.

Q.8 This was a well answered question with a facility factor of 64.7 and mean mark of 7.8 from 12. For the separate parts of the question candidates were able to identify and describe the properties of the three materials.

This question shows that centres and candidates are starting to transfer knowledge from the NEA unit through to the examination. Where candidates gained the higher marks for this question, they were able to describe the property along with an explanation of how that benefits.

Q.9 The advanced information provided this year clearly identified that one area of focused content was section "2.2 (c) the use of feasibility studies on the practicability of proposed solutions to problems."

This question proved surprisingly difficult for many candidates, with a facility factor of 46.6 and a mean mark of 3.7 out of 8. Again, many candidate responses are superficial and lack the depth required for this discussion question.

Q.10 Candidate responses to this question were hugely varied due to the open nature of this question, however this should have been an accessible question topic with many candidates exploring the term 'Circular Economy' from a previous GCSE Contextual Challenge, along with the inclusion of this topic in the advanced information provided.

The mean mark was 4.7 out of 12, which sees a drop from last year's 5.2 mean score for this longer analyse question. Stronger candidates approached this question by focusing the response around the "cradle to grave" approach of product design and this allowed them to clearly articulate their responses for the higher marking bands.

The A03 analyse and evaluate questions particularly need to be an area of focus for centres as there are still a large number of candidates that lack the structured well written answers required to meet the higher band marks and it would be beneficial if centres could continue to allow candidates to practise answers in a structured approach; using introduction, main points followed by a conclusion.

Summary of key points

- The questions are set in a context with a picture of a product or a scenario so candidates should be encouraged to carefully consider the context of each question before attempting an answer.

- If candidates spend time organising their response this will ensure that the questions are fully answered and allow them to achieve the higher band marks.

- Centres should also be advised to remind candidates that answers could be amplified with detailed labelled sketches and / or diagrams where appropriate.

- Centres are advised to use the many free resources available to them, including the Item Level Data which is centre specific and allows statistical breakdowns of candidate performance. The Online Examination Review is also available via the WJEC website. This contains marked exemplar responses from scripts, where examiners marks are available along with reasons why marks have been awarded. These resources could prove beneficial when looking at the strengths and weaknesses of the course delivery at centres.

DESIGN AND TECHNOLOGY

General Certificate of Education

Summer 2023

Advanced Subsidiary/Advanced

UNIT 4 - NEA – DESIGN AND MAKE

General Comments

It was wonderful once again to be able to witness student creativity and innovation being encouraged at many centres. There were no adaptations for NEAs in 2023, and generally most centres returned smoothly to full specification requirements but there were some issues. In general, most centres applied the assessment criteria consistently and fairly, but close scrutiny is required to the mark bands if high or full marks are to be awarded. Several of the shortcomings highlighted in the 2022 report were once again still evident at some centres despite WJEC releasing a range of NEAs for standardising purposes. All teachers at the centres need to be encouraged to use the WJEC resources available to them and to act on any recommendations. This report needs to be used in conjunction with your centre report to move the subject forward.

Comments on individual questions/sections

Identifying and investigating design possibilities

The assessment criteria clearly demands that candidates identify a broad range of problems/opportunities to clearly inform the development of possible design briefs. This was not the case in all centres. There are still some centres directing candidates in certain briefs or contexts. The candidates need to be allowed to choose and develop their own briefs and it is not expected that whole samples show the same contexts, as this is considered a very teacher-led approach and possibly providing support and guidance. Care is needed to ensure that access to the higher mark bands is possible, because without very focused research, access to the higher bands is not possible. Candidates also need to be encouraged to use a variety of different strategies during this section.

Developing a design brief and specification

The following statement is basically repetition of the 2022 report. Not enough evidence was witnessed to suggest that many centres had acted upon the previous recommendations. There should be clear evidence within the project showing how the design brief and design specification has been arrived at, and a thorough understanding and requirements of the task ahead, including the user's perspective. Several centres produced design specifications with sufficient details required, but not all. This must be addressed if higher marks are to be awarded. Some centres had assessed this section too generously. The design specification needs to be specific and detailed and include a range of objective and measurable criteria. The design specification needs to direct and inform the designer whilst developing the design. A high quality, measurable, in-depth design specification will help greatly when evaluating the product. It must be remembered that specifications are working documents and should be referred to throughout the iterative process. To become more of a valuable working document a suggestion could be to produce a draft specification which can then be refined during the development of the product before arriving at the final design specification.

Generating and developing design ideas

This section should be the most exciting and varied depending on the direction of the project. Some candidates had fully embraced the iterative design approach with some exceptionally high-quality work being produced. This is where thorough use of relevant modelling and testing of ideas, driven by the design specification can support decision making and move the project forward on the journey. Those candidates who had done this extensively gained valuable information and feedback from the target market prior to making their final prototype. Research of different findings and possibilities can also be included here, to aid once again with the iterative design process. Centres need to continue to encourage candidates to develop this iterative process as much as possible and to always remember to record their findings in an appropriate way. Models, tests and concepts could take on the form of a physical model from any material or a 3D CAD model. Sketchbooks must also continue to be developed and used as the iterative working tool that it should be. With thorough testing and modelling, the candidates gain a real understanding of their project and for a method of gaining valuable development feedback from the end users or clients. The implications of the proposed design and its impact on social, moral and sustainability issues should also be evident.

Manufacturing a prototype

Evidence of a logical sequence and achievable timeline for the stages of production is required in this section if higher mark band marks are to be awarded. Does the evidence communicate enough information to enable a 3rd party to manufacture the product? Some excellent making skills were witnessed in several centres, but the standards of manufacture varied greatly as did the application of the assessment criteria. Some prototypes were lacking in accuracy and manufacturing skills, yet high band marks had been awarded. Last year the principal moderator's report stated, "if top mark band marks are to be awarded the product needs to be a high-quality functioning prototype, displaying very good attention to detail with a quality finish". Recommendations like these need to be acted upon. It must be remembered that marks cannot be awarded for models and test pieces in this section, these are rewarded in 'generating and developing design ideas'. Assessment of this section was very generous in some centres and is an area to focus on next year.

Analysing and evaluating design decisions and prototypes

Many of the summative evaluations were generally well written, and considered the design brief and specification, and considered views of users and referenced end testing. The depth and quality of evaluations did vary significantly across centres. A consideration of the time allocated to this section should be revised by many centres when considering the marks available to them. Some centres included good examples of using video evidence for end user testing and there were also some good examples of the consideration of how the product better meets the needs of the user throughout its life cycle. Modifications should be fully realised in annotated sketches or CAD presentations. A quality design specification with good measurable qualitative and quantitative criteria enabled the candidates to produce a much more meaningful final summative evaluation. More end user trailing, and testing needs to be encouraged and then to communicate the further developments required to better meet the functional and/or aesthetic needs of the product.

Summary of key points

- Research is most effective when it is focussed and relevant to the problem. Avoid superficial and meaningless research.
- Design Specifications points require full development to ensure they contain measurable criteria and support idea refinement. Specifications should be used as a designing tool, and reference to the 'success criteria' should be made continually during the iterative journey.

- The intended user or target market should be a ‘constant’ consideration during the project. Not just a source of information at the start, and a means of testing at the end.
- Analysis that constantly occurs during designing and development is important. And decision making that results from this demonstrates a mature approach to problem solving.
- Final evaluations require user trials and offer plenty of opportunities for modifications. Additional designing and development activity can also occur.

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