General Certificate of Education

Design and Technology: Product Design (3-D Design)

PROD3

Report on the Examination

2550

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General Comments

There were very few rubric infringements seen this year, with students recognising the need to answer multiple items per question. Unfortunately the use of supportive diagrams continues to be an issue with very few responses including vital sketches and relying heavily on written explanations. When students used good quality sketches to explain points made they were more likely able to access the high mark bands within questions.

Lower level responses were identified by, unsupported statements, with little or no relevant explanation. Higher level responses showed an understanding of the relevance of the points made. When points were explained they often had contextual examples, which added further justification to the point made.

Question 1

01 This was a popular question, which required students to explain the specific uses of a range of communication methods within the design process. Many students found the reference to sectional views confusing and failed to explain their use adequately, the use of a simple supportive diagram would have assisted greatly here. Students who linked the method to a specific individual within the design team found it easier to access higher marks. The 3D Computer Aided Design (CAD) renderings section was answered fairly well with higher level responses referring to the use within marketing campaigns and to pitch concepts to focus groups prior to production. Lower level responses referred to the advantages of CAD in general and did not focus on renderings. The exploded views section was another section that benefited from supportive sketches and students who included these were able to access higher marks more easily. The reference to a scale 1:10 model saw some confusion with students referring to scale drawings rather than physical models. However, as with all the other sections, when practical examples were provided students were able to access full marks with concise responses.

02 This is the first time we have asked for a 3D sketch response to a question within this unit and it proved to be a very popular question. Responses were varied, but it was pleasing to see the general clarity in sketch work. The most common mistakes seen were in the interpretation of the hidden detail lines and the counter bored holes.

Question 2

03 This was not a popular question, as tends to be the case with all composite questions. Many students were able to accurately identify a suitable fibre composite and described the lay-up process with varying degrees of accuracy. The use of supportive diagrams was limited and although the bullet-pointed reference list was included many students failed to give adequate explanation of how a gloss finish would be achieved. Reference to release agents and gel coats was only evident in higher level responses.

04 This was another unpopular question, although when students had studied specific movements, such as the Bauhaus, they were able to access higher level marks as they used a range of example products with supportive sketches to directly refer to the socio-economic changes that influenced the designs. Lower level responses tended to refer to generic products and technological developments that have enabled their evolution.

Question 3

05 The majority of students attempting this question were able to accurately define toughness and hardness. The bullet-pointed list was included to guide students and enable them to access the full range of marks. When supportive diagrams were used and students referred clearly to each of the four points their responses were good. However, lower level responses used generic references to making fair tests and simple hammer blows with no possible accurate comparison of readings.

06 This question asked specifically for an explanation of how Computer Aided Design (CAD) can be used to test products prior to production. Where students referred to a range of specific tests, such as FEA or CFD, they were able to offer examples of use and detailed explanations of the benefits to the design team. The reference to aesthetic testing was well received with the majority of students referring to changing materials and textures.

Question 4

07 This question required students to describe and justify specific material finishes. When students recognised the galvanising process they were able to describe the dipping in molten zinc, but often missed off the majority of preparation processes. Supportive diagrams were also very scarce. Some confusion with other metal finishing processes was evident, including anodising and powder coating. The best responses included clear stage by stage diagrams and descriptions of the preparation stages, these diagrams were supported by justified points about the suitability of the finish.

For the pressure treated fence, when students recognised this as ‘tanalising’ they were able to explain the process well. However, lower level responses referred to pressing the wood to compact the fibres and remove moisture. Supporting diagrams of the correct pressure treating process enabled students to access the higher mark band.

08 This was a popular question with many students recognising the wording from past PROD1 papers. Students who performed well referred to specific materials and their properties analysing both aesthetics and ergonomics. Lower level responses made generic statements lacking technical detail or justification for the points made.

Question 5

09 This question required students to describe two different metal fabrication processes and explain their suitability for the application stated. The first method of MIG welding showed a clear difference between students who had practical knowledge of the process and those who had very basic understanding. Where students had experienced the process they tended to refer to specific gases used and could compare MIG and TIG welding for the specific application. If students had studied the process without first-hand experience they either drew the process diagrams accurately and gave detailed descriptions or confused the process with oxy-acetylene welding.

The soldering process was generally justified well with most students seeing the precision and ability to remove solder from components, although the description of the process often lacked some of the key stages.

10 Overall the majority of answers were good, perhaps because most students who chose to answer this question had experience with the products. Few answers, however, were fully detailed or again put themselves in the shoes of the end user and manufacturer. Quite often the points were not explained fully as to why temporary fabrication was easier.

Question 6

11 This question was fairly popular with most students who attempted it having a vague idea of developments in motor vehicle design. When students supported the points they made with relevant examples and explanations they were able to access higher level marks. Better responses also recognised the link between environmental impact and improved motor vehicle design. When students explained the technologies they referred to they were able to access higher mark bands. However, they often listed developments with no explanations.

12 This question required students to recognise a range of smart materials and applications. When students struggled to access the marks they either referred to materials such as Kevlar or other modern materials not fitting into the smart material definition. When selecting applications, lower level responses failed to select applications that directly related to reducing energy consumption or improving consumer safety.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the Results Statistics page of the AQA Website.

Converting Marks into UMS marks

Convert raw marks into Uniform Mark Scale (UMS) marks by using the link below.

UMS conversion calculator