A-LEVEL

DESIGN AND TECHNOLOGY: PRODUCT DESIGN

7552/2 Paper 2

Report on the Examination

7552/2

June 2023

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General Comments

This is the third series for this paper with a full cohort of students, the first being in 2019. The paper is structured in two sections and totals 80 marks, making up 20% of the overall qualification.

Where students were given stimulus material, low level responses were typified by observations without greater depth of understanding or application to the context given.

Students find knowledge recall questions accessible, but often find application questions difficult, failing to bring in their material and process knowledge to explain impact on a given context.

Students are advised to show their working out when answering the maths questions, as this may allow them to access method marks for early calculations where the final answer may be inaccurate.

When formulating an extended response many students continue to include the question wording within the first few lines. This is unnecessary and does not increase the quality of the response.

Question 1:

Students were asked to compare two wheelbarrows using a table of information provided.

- Students are familiar with the question style and referred to this data explicitly.
- Low level responses quoted given data without expanding on the information or explaining the relevance to the building site context.
- Where students performed well they utilised the data provided, expanding on the technical detail and successfully applying this to the building site context.

Question 2:

Students were asked to calculate the length of ramp required for a wheelbarrow to ascend.

- The question was reasonably well attempted, although the selection of the correct trigonometry equation caused a degree of confusion.
- Once selected, rearranging the formula with the given values was an area of weakness.
- Students who correctly identified and manipulated the equation were able to access the full range of marks.

Question 3:

Students were asked to complete a Critical Path Network diagram for the manufacture of a wheelbarrow.

- Where students incorrectly positioned the powder coating stage they were unable to access the full range of marks.
- Where students performed well they correctly recognised the parallel processing aspect of the manufacture and positioned all key stages in the correct order.

Question 4:

Students were asked to explain how jigs and templates may have been used in the accurate production of multiple wheelbarrow frames.

- Responses to this question often referred to the purpose of jigs and templates as a whole.
- Where students performed well they were able to apply their knowledge to specific features on the product context given.

Question 5:

Students were asked to compare and evaluate CNC routing and wood machine wasting processes for the production of a flat pack furniture component.

- Responses to this question tended to repetitively focus on the improved accuracy of using CNC routing, with some students confusing this with laser cutting.
- Where students performed well they offered specific reasons for use of CNC routing for each of the three features given in the question and compared these with the use of wood machine wasting processes.

Question 6:

Students were asked to compare two welding masks using tabulated data.

- Low level responses quoted the data given with limited expansion or explanation.
- Where students performed well they were able to show a clear understanding of how the mask designs would impact on welding processes considering the benefits to the user.

Question 7:

Students were asked to outline how designers use market research strategies in concept development.

- Low level responses tended to refer to primary and secondary research into existing products as conducted in NEA project work.
- Higher level responses showed an appreciation for the range of market research activities available and the specific benefits of these, often referring to focus groups and user group testing.

Question 8:

Students were asked to state safety precautions to be taken when turning on a wood lathe.

- This was a highly accessible question with the students offering a wide range of applicable safety precautions.
- Where students listed PPE their marks were limited.

Question 9:

Students were asked to outline the information required to accurately produce a component on a manual metal lathe.

- Low level responses often referred to the turning process and the general set up of the work within the machine to prevent movement.
- High level responses referred to the need for specific machine settings and use of dimensions with appropriate tolerances.

Question 10:

Students were asked to calculate the mass of a bracelet made from three materials.

- Where students failed to show their working out they relied on the correct final calculation to access marks.
- Students who included their working were able to access marks for calculation of the mass of a single part.

Question 11:

Students were asked to analyse and evaluate the environmental impact of three coffee cups.

- This is a familiar style of question and students accessed the tabulated data well.
- Low level responses quoted the data with limited expansion or explanation.
- There continues to be confusion regarding polymer material categories, with many students incorrectly identifying HIPS as a thermosetting polymer.
- High level responses made good use of the provided information, expanding with technical detail regarding the environmental impact of each product.

Question 12:

Students were asked to describe key characteristics of an effective design specification.

- Low level responses were typified by lists of specific points expected on a specification.
- Where students showed an understanding of the underlying principles of an effective specification they were able to access the full mark range.

Question 13:

A two-part question that asked students to calculate the number of packaging design combinations possible.

- The common mistake seen within 13.1 came from students using addition rather than multiplication to calculate the number of combinations, leading to the answer 19 rather than 350.
- The common mistake seen in 13.2 came from students failing to recognise the possibility of **three** appropriate designs being selected.

Question 14:

Students were asked to name two specific measuring devices to ensure components conform to acceptable tolerances.

- This was a well answered question with students offering a wide range of appropriate measuring devices.

Question 15:

Students were asked to identify and explain specific **dimensiona**l quality control checks to ensure a carbonated drinks bottle can be filled and sealed correctly.

- Low level responses failed to explain the relevance of the dimensional checks in relation to filling and sealing the bottle.
- High level responses showed clear understanding of key features required for effective filling and sealing within the production process.

Question 16:

Students were asked to define the terms ‘ergonomics’ and ‘anthropometrics’.

- A well answered question focussing on key terms that students seem to be very familiar with.

Question 17:

Students were asked to describe how two products conformed to the modernist design principles.

- This was a well answered question with the majority of students able to state key modernist design principles.
- High level responses were able to relate these principles directly to the product contexts shown.

Mark Ranges and Award of Grades

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