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General Certificate of Secondary Education (Short Course)
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Design and Technology: Short Course 45751

(Specification 4575)

Unit 1: Written Paper

Report on the Examination

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General

This is the second year this course has been examined. It was felt that overall candidates found the paper less accessible than the previous year as some demanding topic areas from the specification were covered.

A detailed analysis of the level of candidate responses is available to centres if they refer to the Enhanced results Analysis (ERA) system that can be accessed via e-AQA. It is recommended that centres look at this as it may prove valuable in terms of identifying issues which could inform future course planning/ revision programmes.

Administration

A small number of candidates completed questions on additional sheets, which is most cases was unnecessary and did not result in additional marks. Some candidates produced their answers in a manner which caused problems for marking, for example:

- writing outside the area permitted on the question paper
- not rubbing out errors on Q1a thoroughly; when scanned, these lines were still visible to the examiner, which made it difficult to distinguish between correct and incorrect responses

The clarity of handwriting by the majority of candidates was good, however the quality of communication, both written and graphical, varied considerably. A number of responses were not fully developed and it is felt that this reflects the age of entry of some of the candidates.

Question 1

This question related to the functional properties of materials.

(a) Candidates found this question very demanding. This suggested that candidates were not familiar with the technical language in the question. Over half of the candidates only managed to match at least one correct answer. The number of candidates able to match 3 or 4 answers was very small.

(b) (i) There were a number of candidates who failed to score a mark on this question. Some candidates left it blank and others misread the question and named a material, rather than a property. The most common correct answers seen were:

- Absorbent – sponge
- Crease resistant – school shirt
- Ductile – wiring
- Shortening – pastry

Few responses were seen relating to the property brittle.

(b) (ii) Candidates were awarded marks in part (ii) even if they had failed to name a property in part (i) the proportion of candidates scoring zero on this question relates to the number of blank responses seen. The candidates who attempted the question were able to describe the properties of the product. The most able candidates' responses demonstrated an understanding of the property term they were describing and responses made a clearer link between the property and the functionality of the product.

(c) A surprising number of candidates did not attempt this part of the question, which was about producing a design which made use of the properties of thermochromic inks (which were described to candidates in the question).

Of the responses seen, weaker candidates talked about colour in their design, but in general only considered the aesthetic of the product. The best responses produced ideas for products where the change in colour due to a change in temperature was exploited to improve the functionality of a product.

Examples included:

Bath toys used as temperature indicators to ensure bath water was at the correct temperature for children, cups that change colour to indicate whether a drink was still warm, baby grows that changed colour to indicate that a baby

was too warm and T- shirts that got lighter in warm weather to reflect the heat and darker in cold weather to absorb it.

Question 2

(a) This question was well attempted by candidates. The majority scored at least a mark for the production of a geometric pattern. In weaker responses, the patterns produced tended to be very simple, i.e. checkerboard. The most able candidates produced more sophisticated responses e.g. rotating / mirroring / negatives of patterns to produce a more visually exciting design.

(b) This question differentiated well between candidates of different levels of ability and a good spread of marks were seen. Weaker candidates produced poor sketches of the products with the pattern crudely applied. More able candidates copied the product outlines more carefully and the application of the pattern was more considered.

(c) (i) Only half of the candidates were able to name a piece of specific Computer Aided Design (CAD) software. Common responses were Corel Draw, Prodesktop, and 2D design.

(c) (ii) This question was well attempted by the candidates. It was clear that most understood the benefits of using CAD when designing.

(d) Less than 25% of the candidates were able to name a specific process they would use to apply the design to the product. Transfer printing was common. Other vague responses were seen e.g. use CAD / CAM. Where candidates named a piece of equipment e.g. laser cutter rather than naming a process e.g. etching they were not awarded a mark.

(e) This question took a similar format to a question on last year's paper. Majority of the candidates attempted this question well. The question differentiated well between weaker and more able candidates and a full range of responses was seen.

Some candidates did not read the question carefully and talked about how the product would be made rather than how the design would be applied to the product.

The best answers were structured and arranged as a flow chart or table.

Question 3

(a) It was clear that the majority of candidates did not understand the term anthropometric data as most candidates failed to answer this question correctly.

(b) (i) Most candidates were able to describe the colour of the product and the more able linked this to the target market/ product function.

(b) (ii) Most candidates were able to describe the shape / form of the product. More able candidates were able to link this to the target market/ product function / safety.

(b) (iii) Most candidates were able to name or describe an educational feature of the toy, some were able to extend their answer by explaining how/ what the feature helped children to learn, or the level of complexity in relation to the age of the target market.

(c) This question was badly answered generally. Some candidates were able to identify that the CE mark had something to do with Europe, but very few responses suggested that candidate understood its purpose or meaning. Very few candidates identified correctly the Lion Mark and where candidates had recognised it, their understanding of its purpose or meaning was limited.

(d) This question was well attempted and the level of response differentiated well between weaker and more able candidates. The question provided the most able candidates with an opportunity to produce a well structured response to access all 6 marks. The vast majority of candidates were able to name an important safety consideration when designing toys for children. Weaker candidates tended to repeat similar points and did not extend their responses with explanations. Typical responses related to choking, toxic materials, durability, no sharp edges, accessibility of electrical components. Better responses discussed a variety of safety issues and cited examples (toy phone and other products) of how products have been designed to resolve these issues.

Question 4

(a) This question was poorly answered by candidates. Most candidates were able to say what they would measure with their chosen piece of equipment, but did not answer the question which was to describe how this is done. Some good responses were seen for the tri-square which showed in diagrammatic form how the equipment should be placed against the wood and how to mark. A small number of candidates mentioned checking that weighing scales were set to zero before weighing out, but very few candidates provided any additional detail. Very few responses were seen for the paper pattern. Again responses lacked detail and in the main just suggested that the pattern needed to be pinned to the fabric.

(b) Most candidates were able to name another piece of measuring equipment. Only 60% of candidates were able to name up to two measuring equipment. Some candidates named equipment listed in question 4, part (a) and consequently could not be awarded marks

(c) This question was well attempted, but I was surprised that only 22% of candidates were able to provide the correct metric units for the three materials listed. Some candidates stated imperial units. Other candidates either selected a unit type which was inappropriate e.g. millilitres for flour or an unreasonable scale, e.g. suggesting that timber is measured by the kilometre.

(d) Most candidates were able to describe a safety feature built into the design of a piece of equipment. For the laser cutter the responses tended to be very simplistic e.g. a lid so you cannot put your hand in whilst the machine is operating. For the pillar drill, most candidates identified the guard visible in the image provided and food processor answers in the main, related to the funnel. Candidates generally struggled to extend their answer for 2 marks and the explanations related to these features tended to be weak.

(d) (i) The question stem for this question was to explain. Many candidates named safety rules, but missed out on the second mark as they failed to explain what hazards these rules protected the user from. The best responses seen were for goggles, where candidates did describe that they were worn to protect the eyes. Candidates struggled to produce answers for the laser cutter; the best answers related to extraction of fumes. Responses for the food processor were also weak although some good responses were seen related to keeping electrical items away from water (when washing / wet hands on sockets).

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