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General Certificate of Secondary Education
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Design and Technology: Product Design 45551

(Specification 4555)

Unit 1: Written Paper

Report on the Examination

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General

This is the second year of the single tier examination and preparation sheet for this specification. Candidates scored across the full range of marks and the majority of candidates attempted most sections of the paper. Most centres successfully used the preparation sheet to prepare candidates to respond to Section A and Question 1 differentiated candidates' designing skills well. In Section B, manufacturing in quantity was not well understood with many candidates scoring poorly. Centres are advised to practice making products in the school workshop. This could be through design and make projects, the Controlled Assessment Task and through experiencing manufacturing in small quantities such as in a production line.

Question 1

1 a (i) Many candidates gave full answers explaining the key features of the Memphis design movement. Candidates had been well prepared and only a very few gave observational responses. Popular correct responses were bold colours and geometric shapes which were well explained. Where candidates had given simple statements such as 'uses bright primary colours' only one mark was awarded. Some candidates were able to talk about form over function and one offs as pieces of art.

(ii) A large number of candidates could not name a Memphis designer. The most popular correct response was Ettore Sottsass. Many made up erroneous names which were checked.

b Well answered by many with full marks frequently awarded.
Products chosen were wide ranging with furniture, clocks, toys and lamps being popular.
Many candidates then gave sensible design criteria relevant to a product suitable for under 7s. Popular criteria chosen focused on product function, safety and aesthetics.
Some candidates selected criteria related to the example given and therefore could not be rewarded.

c A full range of responses were seen with few really good answers.
The quality of design depended much on the initial product selection. Less successful products included e.g. bicycles, dolls and toy cars where it was not always easy to incorporate the Memphis theme or give sufficient construction details.
Where candidates had prepared well using the preparation sheet, a clear understanding of the key features of Memphis products resulted in more successful responses.
Responses which used a design development strategy with initial ideas and a final idea were judged equally to those which detailed a single idea.
Responses which scored highly included well drawn ideas, fully explained through alternative views, dimensions, construction details and detailed annotation.

d Many candidates scored well with clear well reasoned points relating to the initial criteria.

Question 2

2 a Successfully answered by many candidates. Many were able to score full marks. Many candidates gave generic names for types of materials such as 'plastic', 'wood' and 'meat' which were not rewarded. Equally generic products such as 'food' and 'paper' were not rewarded.

b (i) This question was very centre specific - either answered well by near whole centres or not at all. Many candidates had no idea what a smart material was and gave answers such as MDF and acrylic.
Popular correct answers were shape memory alloys or thermo chromic paints and plastics.

(ii) Where candidates understood smart materials they could give good examples of products such as dental braces for shape memory alloys and baby feeding products for thermo chromic plastics.

Question 3

3 a The concept of brand identity was well understood by many and a full range of answers were seen. Better answers gave clear examples of how the brand image influences market perceptions of the product. Examples of brand identity such as the Nike 'Swoosh' were used by most candidates. Mid range responses focussed on the logo as a means of communicating the brand. A few candidates confused copyright with brand identity.

b (i) Well answered, many candidates gave three different methods of advertising. Many candidates gave vague responses such as radio/TV which were not rewarded as the mark scheme required some detail of the method of advertisement such as a radio jingle or viral advertisements on the internet.

(ii) Well answered by many with the most successful answers providing developed explanations of how the advertising method persuades the consumer to buy the product. The best answers explained how the advert targeted the consumers and good examples of marketing strategies with product examples were given.

Question 4

4 a A full range of responses were seen. Candidates often gave good ideas to occupy the year 6s but few were sufficiently explained and some pupils failed to draw a design. Some candidates used the box to give details of the making process and gave insufficient detail of the product itself to score fully.
There were a large number of simple laser cut key tags and pendants which did not always have sufficient detail or decoration to access the higher marks in this and the further manufacturing parts of the question.

b (i) Quite well answered although some candidates are not gaining marks for using 'plastic' 'wood' responses and for unsuitable materials such as 'rubber' which cannot be manufactured in school. Food products caused the candidates some confusion with examples such as flour given. The examiners are happy to accept biscuit mix or cake mix.

(ii) Where candidates had selected an appropriate material detailed and specific explanations of the working properties were suggested. Many still gave cheap, easy to work with which was not accepted.

c Poorly answered by most. Many candidates provided a flow chart of production methods but very few highlighted any significant quality checks. Too many included the vague statement 'quality check' as part of the diagram without giving specific details. Most often, the process given was too simplistic to access the full range of marks.
Many candidates described chocolate moulding using vacuum formed moulds but missed the opportunity to access more than half marks by giving poor or no detail of the making of the vacuum forming mould. Simple chocolate moulding without the vacuum forming process was not sufficient to gain the full range of marks.
Similarly, many candidates described laser cutting simple acrylic key fobs but failed to provide full details of the process including finishing techniques and included inappropriate drilling stages which would not be necessary as the laser cutter would do all of the cutting.
Many candidates omitted to include the decorative element.

d Few candidates scored highly. To access the full range of marks, candidates needed to understand that some processes take longer than others and that some processes can be carried out concurrently and some consecutively.
Where candidates had been prepared through experiencing a real production line, they were able to accurately apportion tasks to students and appreciate appropriate division of labour including reusing students at different parts of the production line. This could have been answered much better using a tabular format where candidates focus on what each group of year 6 pupils do within a realistic time framework.
Many candidates duplicated their response to 4c but could not be rewarded.
Most candidates were able to score minimum marks by identifying correct tools and equipment.

Question 5

5 a A few candidates responded successfully to all parts of the table but the majority of candidates did not gain full marks. Most candidates were not able to identify the 'HDPE plastic recycling identification code' although most were able to give an appropriate product. Quite a few candidates confused the 'do not throw in domestic waste' symbol with the harmful chemical symbol and they incorrectly gave product examples such as bleach. A significant number also thought the symbol meant no hot ashes.

b Very well answered by many with very well explained bags for life schemes, incentives for recycling, reduction in packaging and recycling labelling being popular answers. Many candidates scored full marks.

c (i) Well answered by many with popular responses focusing on the large amount of non-recyclable materials in both CDs and the player, the energy consumed by the player in terms of batteries with the disposal problems. A few candidates mentioned 'built in obsolescence' and the 'perceived obsolescence' of the product with many working CD players being disposed of.

(ii) Well answered by many with better answers citing the reduction in materials, reduction in energy to play MP3 files due to fewer moving parts, no need for CDs and CD packaging, and the use of internal rechargeable batteries which can be charged by an already in use PC.
Poor answers repeated responses to part (i).

Question 6

6 a (i) Poorly answered with few candidates having a clear understanding of quality assurance in terms of systems. Many scored 1 mark for quality control tests.

(ii) Very poorly answered by the majority. A small number of candidates understood dimensional tolerance and could support their descriptions with numerical examples. The majority of candidates gave a literal definition of tolerance and a few thought that tolerance meant destructive testing.

b Many candidates were able to access 2 marks for recognising the meaning of the British Standards Kite mark symbol and the CE symbol but very few understood the differences between the two, in particular that manufacturers display the CE symbol by their own judgement without external testing while BSI are an independent organisation and their mark is recognition of testing to a high standard of quality and safety.

c Many candidates did not read the question carefully and misinterpreted it as user trials referring to e.g. ergonomics/anthropometrics and comfort particularly for the chair. A few also wrote an evaluation of the product. Some did come up with appropriate quality checks but few candidates gained all the marks on offer.

Question 7

7 a Well answered by the majority with many giving explanations of the value of modelling and prototyping in terms of testing the design, user trials and evaluation of construction, materials and function of the product.

b Many good answers were seen however some answers gave generic responses of how ICT was used. These were often not specific enough in relation to developing and modifying ideas to access all the marks. Popular responses focused on the use of CAD and CAM, emailing designs and allowing customer feedback.

Mark Ranges and Award of Grades

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