



**General Certificate of Secondary Education**

**Design and Technology:  
Product Design**

**3544F Written Paper**

**Report on the Examination**

**2007 examination – June series**

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# 3544F Design & Technology Product Design

## *Report on the Examination*

### **General**

The examination papers have settled into a common format and centres appeared to have prepared candidates well for the examination using previous papers. Examiners reported that most candidates were able to attempt most of the questions on both papers. With a few common exceptions, the papers were generally well answered with most candidates demonstrating a good understanding of the various topics associated with product design. It was felt that papers were generally more accessible to candidates this year, however, that has led to some very superficial answers which failed to attract the higher marks. There appeared to have been far fewer misunderstandings this year and the basic terminology used in the papers was helpful to most candidates.

It might be significant to report that AQA have provided increased support to centres this year in the form of one-day workshops and around 200 centres have attended these. The notion that the whole subject content needs to be taught to gain high marks in the written papers is beginning to be fully understood. It was obvious to examiners by the quality of candidate responses which centres had done this and they should be congratulated. By contrast examiners reported that there were several questions where candidates appeared to be basing their responses on general knowledge and responses were superficial.

The communication skills shown by the candidates, was an improvement on previous papers and a lot of good graphics was seen at both tiers. Many scripts made good use of colour which made them visually interesting and clear to mark. The expectation that candidates will bring coloured pencils into the examination is understood by the majority of centres although it is still surprising to report how many candidates, particularly at the Foundation Tier did not use colour and so prevented themselves from accessing a considerable number of marks.

There is still a lack of technical vocabulary being used by candidates and far too many generic terms are used in the answers. Generic material groups such as “wood” and “plastic”, for example, gain no credit

Paper/card is the compulsory material and as such there are always likely to be questions relating to the properties, the sources and the manufacturing issues associated with these materials. This appears to be fully understood by the majority of centres and this was reflected in candidate responses at both tiers. Candidates who studied more than the minimum of paper/card plus one other material were advantaged by having more choices and it was apparent where centres had encouraged a multi-material course.

Candidates are expected to be able to deal with issues such as labelling, packaging and instructions (including symbols) as well as having a basic understanding of nets for constructing in paper/card. They should also be able to name the main printing methods, lithography, flexography, screen printing etc and should be particularly aware of die-cutting as a major manufacturing technique associated with paper/card products. Whilst this was an area of considerable improvement at the Higher Tier it was a major omission on many Foundation Tier scripts.

Manufacturing in quantity in school technology rooms was established in 2005 and this type of question was replicated in 2006. The similar question this year was, again, a major differentiator and potentially offered the highest marks in the papers. It is essential that candidates are confident about manufacturing simple shapes in quantity using school facilities. Many candidates, however, failed to access the full marks through lack of technical detail. It is essential that CAM and/or manufacturing aids are mentioned and that the quality assurance issues and safety implications are fully understood. Where coursework has encouraged this approach candidates should be better prepared for this question. The Appendix to the Mark Scheme which aided consistency for markers might be useful to centres in dealing with this type of question in the future.

Product analysis/product evolution is also well established in the papers and candidates should be able to compare products with similar functions but designed for different markets. The Foundation Tier requirement this year to suggest changes to make a product more appealing to a different target market was poorly answered by many candidates with suggestions for colour changes being the most common.

Candidate's knowledge about the impact of named designers/design movements on the products we use is often poorly addressed both in coursework and the written papers. Again this year these questions attracted superficial responses in most cases. Where candidates are encouraged during KS3 and/or Y10 to 'design in the style of....', they might be better equipped to answer such questions. The Foundation Tier question related to natural forms was reasonably well answered by candidates and commercially viable designs from the more able candidates were reported by examiners.

Questions relating to the use of ICT in manufacturing industry have continued to appear in the papers and once again this year responses were generally lacking in technical detail. Whilst "Computer Numerical Control" on the Higher Tier could be named, few candidates could provide detailed responses as to the application of CNC. At Foundation Tier few candidates could provide a detailed response to how CAD could aid design development.

Issues related to commercial manufacturing are a general expectation and the Higher Tier question this year produced some of the weakest responses within the paper. Terms such as Batch Production, Just in Time etc were poorly understood and even the principle of assembly line production was not widely understood by many candidates.

Environmental issues continue to appear in the papers and the Higher Tier question this year attracted some superficial responses in a lot of cases. Human Factors were dealt with as Anthropometrical data in the Higher Tier and access in the Foundation Tier. Whilst many candidates did score well on these sections many more provided very weak responses. The social issues addressed in the Foundation Tier appear to have been misinterpreted by many candidates and some inappropriate responses were reported by examiners.

The examination paper is settling into a common format and centres and candidates seemed to have prepared well for the examination using previous papers.

It was pleasing to note that, as last year, the vast majority of candidates attempted most questions on the paper. The communication skills shown by the candidates, was an improvement on previous papers and a lot of good graphics was seen. Many scripts made good use of colour which made them visually interesting and clear to mark. There is still a lack of technical vocabulary being used and far too many generic terms are used in the answers.

### Question 1

- (a) This question asked candidates to complete two rows of different types of materials. Many candidates correctly followed the instructions and the food and metal rows seemed the most popular choices. There were many candidates scoring full marks. A significant minority named processed foods such as pizza, burgers etc which was not acceptable. Textiles answers sometimes named components such as zips and Velcro which were not raw materials.
- (b) The vast majority of candidates correctly joined two of the boxes with food and paper being the most popular answers. There were a number of candidates who joined all the boxes on this question but this was not penalised.

### Question 2

- (a)
  - (i) Well answered on the vast majority of scripts. Candidates responded well to the image board and were able to present a detailed idea. A few candidates did not draw a product and just produced an enlarged image from the ones given. A minority did not use natural forms. Where candidates had used annotation effectively this helped the examiners to award marks.
  - (ii) The standard of colour, tone and texture varied immensely but a lot of good colour pencil rendering was seen.
- (b) Many candidates could give some reasons why they had incorporated specific features in their design but these were often descriptive rather than analytical.

### Question 3

Generally well answered, with most candidates selecting three symbols. The most popular correct choices were the kitemark, hazardous waste symbol, and Mobius loop. Some candidates did not give a specific product which lost them marks. The handle with care symbol and the suitable for freezing symbol were often incorrectly interpreted.

### Question 4

- (a)
  - (i) Well answered with most candidates giving good advantages such as no replacement batteries needed or more effective brushing action.
  - (ii) Again many good answers were seen with clear disadvantages such as may run out of charge, bulky or difficult to transport. Candidates often described the toothbrush being damaged by water which is very unlikely due to the design of the toothbrush casing.
- (b) Very well answered by many. Credit given for answers which worked well without words. Stage 2 proved to be most difficult part to sketch effectively.

- (c) Very well answered by the majority. Most candidates were able to identify a euroslot as an appropriate hanger and popular choices were a blister pack or package with clear plastic windows to display product. Very few candidates were able to identify a specific specialist material or use technical language for materials or packaging solutions.
- (d) Poorly answered overall. Hardly any candidates could name a commercial printing process such as lithography or give a suitable sealing method. Very few candidates had any knowledge of commercial cutting and creasing of packages using die cutting. Where the question was attempted, most candidates focused on a school based solution using scissors, craft knives or laser cutters which was inappropriate for the scale of production.

### Question 5

- (a) (i) and (ii) On the whole well answered with the Wellington boot being a popular choice. Candidates struggled to give a specific consumer and tended to give generic answers such as e.g. farmer, which was awarded one mark. Fuller answers gave a specific user and a context for use.
  - (iii) and (iv) Well answered by many who could give some reasoning relating to the function or styling of the footwear for the specific end user.
- (b) Very mixed answers. Many answers did not identify a new consumer group and a lot of changes to the design were superficial such as changing the colour.

### Question 6

- (a) Well answered with a neatly drawn shape of a Christmas decoration, with an appropriate hole, evident in the majority of scripts. Popular shapes were presents and bells.
- (b) (i) Many candidates selected an appropriate material with card and acrylic being popular choices. There are still far too many generic responses such as plastic or wood which were not acceptable. Fewer food examples were seen than in previous years.
  - (ii) Candidates could generally give some reasoning for their choice of materials but in many cases there was a lack of understanding of the working properties of the material. Too many generic responses such as 'cheap' or 'easy to use' were seen.
- (c) (i) On the whole, poorly answered with most candidates describing a manual process that was not suited to the scale of production. Where candidates had described laser cutting or CAM they were often unclear about the process beyond designing it on the computer.
  - (ii) Tools and equipment were usually correctly named however a lack of technical vocabulary was evident with candidates opting for simple tools to cut card being a very popular response.
  - (iii) Very poorly answered. Few candidates could give good methods of applying the surface decoration applicable to the scale of production. Painting was the most popular answer where the question had been attempted.

- (iv) Most candidates used notes and sketches in their answers but these often lacked clarity. The best strategy for these questions is to use a clear step by step production plan, which should be familiar from their coursework.
- (d) Well answered with the majority of candidates giving a viable method of hanging the tree decoration.
- (e) There was some confusion with quality control in these answers. Popular successful answers were checking for sharp edges, no small parts or non toxic.
- (f) Very poorly answered. Where safety rules were given they were often generic and not related to the production process cited in part (c). Answers such as tie your hair back and check emergency stop works were not accepted. A significant number of incorrect answers gave quality issues such as check there are no sharp edges and a number talked about safety putting up the Christmas tree with issues such as tree lights and stability.

### Question 7

- (a) (i) Most candidates could identify the child lock lid and labelling features of the tablet bottle. Other acceptable responses included the roll proof shape of bottle, moisture proof, shatterproof, etc.
- (ii) Most candidates knew the lid was linked to child safety. Many were able to describe one of mechanisms frequently used, and the better candidates were able to identify a user group other than children affected by the lid, such as the elderly.
- (b) This section was poorly answered by many.
  - (i) The most popular correct answers were other forms of liquid medicine, bleach, knives and polythene bags.
  - (ii) Many candidates confused (ii) and (iii). Candidates needed to state a clear risk to the user such as 'toxic chemical which could be drunk accidentally' to gain the mark.
  - (iii) Some good answers were seen where candidates had identified features of the product or packaging which reduced risk to the consumer.
- (c) (i) Very poorly answered. There was a widespread misinterpretation of the question and a significant minority of candidates gave strange responses that were inappropriate for the context of product design.
- (ii) Often their choice of product in part (i) affected the candidates' ability to answer parts (ii) and (iii). Often nuisance was due to the inappropriate use of the product by the user rather than the product itself causing a nuisance to another user group. Better responses were seen when candidates had selected appropriate products such as mobile phones, radios, skateboards, etc.

- (iii) Where an appropriate product had been selected candidates could come up with some design improvements. In many cases these were superficial in depth such as 'supply headphones'.

### **Question 8**

- (a) Well answered with many candidates giving three technical or design features. Popular correct responses were bag less, clear dust container and easy to store.
- (b) Many candidates could give a reasonable response which was linked to their answer to part (a)
- (c) Poorly answered by many. Candidates tended to write vague statements about designing better products or modelling whole products to be manufactured directly by CAM.
- (d) Not well answered. Very simple responses such as 'a successful company' or 'other companies could copy the Dyson' were popular. Very few candidates included the innovative use of materials, processes, technology or design in their answers.
- (e) (i) Many other vacuum cleaners or cleaning aids were given as a product to be displayed with the Dyson. Television, mobile phone and ipod were also popular answers.
- (ii) The quality of reasoning depended on the product chosen. The concept of a design classic was not clearly understood although some appreciation of how products change over time was evident in a lot of answers.

### ***Mark Ranges and Award of Grades***

Please see the following link:

<http://www.aqa.org.uk/over/stat.html>