

GCE 2001

January Series



Report on the Examination

Design and Technology: Product Design

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- Unit PD1D (3D Design) Materials and Components
 - Unit PDIT (Textiles) Materials and Components

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Kathleen Tattersall, Director General

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Design and Technology: Product Design

3D Design

PD1D Materials and Components

General

This is the first Unit 1 examination of this new Advanced Subsidiary level course in Product Design – 3D Design. Candidates studying the specification have a choice between sitting the Unit examination in either January or June. Resit opportunities are also available. With an approximate entry of 1000 candidates for the January session it would appear that by far the majority have elected for the June paper.

It is evident from the candidates' responses to this paper that many had not adequately covered the relevant specification content to allow them to respond to the questions at AS level. The different style of questions from those familiar at GCSE inevitably caused some difficulty for candidates who are not used to questions which require them to analyse and discuss relevant issues. However, the length of the paper and time allowed for questions appeared to be adequate.

Question 1

Candidates were required to specify three products that require a different surface finish and then go on to analyse each finish in turn. In order to assist with this, four salient factors were suggested. A number of issues arose. Some students failed to identify a product but wrote about a specific material as though this were the product. Some described quite similar finishes, for example there were many instances where paint was applied, but there were no significant differences observed between the types and purpose of paints. Rarely were candidates able to define paint or varnish in anything but the most general of terms. Some candidates provided quite good descriptions of an appropriate finish applied to kitchen worktops.

Question 2

The majority of answers to this question were poor, although the examiners accepted a wide range of possible materials as appropriate. There were many candidates who simply suggested that the right-hand CD rack was made out of wood, probably MDF or cut from solid mahogany. Quite a number compared the two racks on purely aesthetic grounds, stating that one was aimed at a teenage market and stated that the other was "classy" but dull and boring. Most answers were superficial, and showed little depth of understanding of the manufacturing techniques involved. It was frequently stated that one of the racks was complicated and therefore expensive to make whereas the other was simple and as a result cheap.

Question 3

This question was, in general terms, the best answered question, with many candidates giving a reasonable description of either vacuum forming or injection moulding. Sketches, when provided and annotated, usually added useful support to the answer and were rewarded with marks. The specific characteristics of named plastics which make them suited to one of the production methods, were

often provided with little of the detail which should be present at AS level. A common error was to classify a particular plastic as a thermosetting plastic when it is not and a number of candidates suggested that thermosetting plastics are ideal for vacuum forming. Candidates do appear to be becoming familiar with a wider range of plastics and are able to name a few of them correctly, although a number did not name a product before describing the process of manufacture.

Question 4

Despite being broken down into five parts, this question generated very few good answers. This question was specifically about metal gates, although a relatively basic knowledge of metals would have been sufficient to be credited with a small number of marks. Typically, this was not the case. Candidates frequently suggested that gates would be manufactured by casting in iron, made out of stainless steel or aluminium, because they are cheap and light etc. For those few who actually understood the part of the question which referred to the form of the metal used for a farm gate, sadly many suggested that solid rods or sheet would be appropriate. Most gained marks for suitable joining methods and many understood the purpose of galvanising steel, even if it was apparent that they did not understand what it involved. Very few candidates showed any awareness of the implications which volume production might have. Often comments such as “it will cost more and it will lead to a reduction in quality” confirmed this.

Textiles

PD1T Materials and Components

General

Although most candidates attempted all four questions some appeared not to have planned their time well and had either rushed the last question or failed to complete it. A large proportion of candidates started their response by copying out the question, which is not a good use of time and will not earn marks.

Many candidates were clearly not confident with the subject matter as their answers were superficial and lacked precision when referring to textile technology.

Question 1

There was widespread confusion about the differences between nap and pile fabrics (a). Many were able to name three nap/pile fabrics (b) and give an acceptable fibre. A small minority offered only 'cotton', 'silk' or 'polyester' as a fabric, for which no credit was given, while a few named fabrics but offered inappropriate fibres, eg woollen velvet. There were some very good attempts to show the construction of cut pile fabrics with clear diagrams to aid the explanation; candidates who selected this construction method generally had good knowledge of pile fabrics and their manufacture and were able to respond with some confidence, scoring high marks. On the whole, this section of the question was not well answered with many candidates describing the raising of a fabric surface by brushing, thereby earning few, if any, marks. Where (c)(i) was answered well, (ii) was also usually done well; some marks were allowed in (ii) if the manufacture of a brushed fabric had been described in (ii).

Question 2

It was obvious that many candidates had not taken into account the breakdown of marks for parts (a) and (b) as many spent longer on (b) than on (a).

- (a) Most candidates gave general reasons for the blending of fibres, eg lower cost, improved strength and crease resistance, together with some examples of blends, most commonly polyester/cotton. Although there was a basic understanding that blending cancels out the negative qualities of the fibres involved, few examples of fibre properties and precise examples of blending were given. Candidates would have been awarded more marks had they, for example, explained that cotton creases badly but polyester does not and so a polyester/cotton blend fabric creases less than a pure cotton fabric, whilst still retaining the more acceptable qualities of a 100% cotton fabric.
- (b) Two examples of popular blends with appropriate applications were given in most cases.

Question 3

Very few were able to give an accurate definition of SMR (a); explanations were mainly along the lines of a fibre's ability to hold water. There was widespread misunderstanding of the application of SMR to the comfort of clothing (b) with only a minority of candidates able to explain that fibres with high SMR were considered desirable for sportswear as they have the capacity to absorb sweat but the

moisture does not evaporate quickly leaving the wearer feeling clammy. Many candidates had a basic grasp of new fibres and fabrics currently used for sportswear and were able to refer to their ability to breathe and allow moisture to pass through, although they were unable to explain the ‘wicking’ effect. Many candidates do not realise that elastanes such as Lycra are not waterproof, nor are they used on their own but with other fibres whose properties dominate the blend. Gortex and Sympatex were the most popular fabrics selected in response to (c) and good accounts were given of how they operate. Many candidates appeared confused between Tencel and Tactel and their uses.

Question 4

- (a) There was some understanding that lustrous fibres such as silk and nylon, filament yarns and satin weave construction give a fabric shimmery qualities. Many candidates are, however, confused about the differences between a fibre, a yarn and a fabric, using the terms interchangeably in their responses. Many thought that satin is a fibre. Answers to this question were not generally good because candidates gave little accurate and clear detail showing a lack of knowledge and understanding of the relationship between fibre, yarn and method of fabric construction.
- (b) The effects of two well chosen components were described by most, but a small minority sought to hide the component rather than use it to add to the shimmery qualities of the fabric.

Mark Ranges and Award of Grades

Unit PD1D (3D Design) Materials and Components

Grade	A	B	C	D	E	U
UMS	72	63	54	45	36	0
Boundary Mark	57	49	42	34	27	0

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
Written Paper	100	100	34.5	11.4

Unit PD1T (Textiles) Materials and Components

Grade	A	B	C	D	E	U
UMS	72	63	54	45	36	0
Boundary Mark	58	50	42	34	26	0

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
Written Paper	100	100	34.7	13.6

Definitions

Boundary Mark: the minimum (scaled) mark required by a candidate to qualify for a given grade.

Mean Mark: the sum of all candidates' marks divided by the number of candidates. The mean (or average) mark measures a central tendency of a mark distribution (provided that the distribution is not skewed).

Standard Deviation: a measure of how widely candidates' marks are spread about the mean mark. When expressed as a percentage of the Maximum mark (scaled), small standard deviations indicate that the marks are "bunched" and large standard deviations indicate a wide spread of marks. In general, the marks of approximately two-thirds of all candidates lie in a range of plus or minus one standard deviation about the mean mark.