



# Examiners' Report Principal Examiner Feedback

Summer 2019

Pearson Edexcel GCE  
In Design & Technology: Product Design  
8DT0/01

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## **Introduction**

The following comments are aimed at helping centres and future candidates understand how this student cohort responded to the questions on the 2019 exam paper, with a view to helping future candidates gain a score which reflects the best of their ability in future exam series.

### **Question 1a**

Most candidates scored a single mark for stating that the material will return to its original shape. A few also identified that this happens when the deforming force is removed gaining the second mark. Unfortunately a large number confused elasticity with ductility, simply stating that the material could be stretched, which did not score.

### **Question 1b**

Few candidates scored well here as properties of the mild steel handle needed to be outlined rather than just stated in order to be awarded marks. Many were named but outlined incorrectly, or named without being outlined at all. As a result few candidates scored above 2 out of the 4 marks available.

### **Question 1c**

Most candidates scored 1 of the 2 marks for describing that the tempering process required the steel to be quenched. Few had sufficient knowledge to be able to identify that the springs needed to be heated to a specific temperature or oxide colour. Many just described heating, or heating to red, often confusing tempering with hardening.

### **Question 2a**

Descriptions of the injection moulding process generally showed good knowledge of the process with most candidates scoring 3+ marks. Few candidates scored all 6 marks as responses did not identify the plunging action of the injection screw, or that the die is opened prior to ejecting the moulding.

### **Question 2b**

A straightforward volume calculation that was successfully tackled by a reasonably sized majority of the cohort, whilst still offering a measure of challenge to those who find the calculations difficult. The majority of low scoring responses were due to an incorrect formula being used or applied when finding the volume of the cylindrical hole. Most candidates showed their working in a clear manner with many picking up 5 of the 6 marks available with error carried forward being applied. A small number of candidates confused two significant figures and gave their final answer to 2 decimal places.

### **Question 2c**

This question differentiated well with the full mark range being seen frequently. Commonly seen correct responses tended to focus on the low power consumption of LCD screens, as well as them being robust and economic to manufacture. Many candidates did not explain their points appropriately, either just repeating the same issue with different words, or moving on to a different unrelated issue, or explaining neither.

### **Question 3a**

A straightforward question that few candidates address appropriately. Many candidates directed responses towards trying to explain why chipboard was stronger rather than more stable. The most common correct response seen focused on chipboard having no grain, which scored a single mark. Very few candidates gave a correct reason and explained it appropriately.

### **Question 3b**

A good range of responses were elicited by this question which concerned electroplating steel handles with brass. The most common answers focused on making the handles corrosion resistant and improving their aesthetics, many of which were appropriately explained. Common incorrect answers seen included the brass coating making the steel handles stronger and heavier.

### **Question 3c**

The advantages of self-assembly furniture were well understood by the majority of candidates with most scoring 3+ out of the 6 marks available, although few candidate reached the maximum as issues were not always explained. The most common error was to just repeat the reason for it being cheaper using different words, rather than explaining why the issue made it cheaper. All answers on the mark scheme were seen frequently.

#### **Question 4a**

A short question that probed candidates understanding of marking out tooling for metals. Few candidate gained both marks for two appropriate tools, although many identified one correctly. The most common correct responses included engineers square and centre punches. The most common incorrect responses included try squares, set squares, protractors and pencils.

#### **Question 4b**

A more challenging calculation that stretched most candidates, with an appropriate minority achieving the full 6 marks. A significant number of candidate failed to identify that the length of the rounded end of the bracket was equivalent to the radius of the semicircle, whilst many others struggled to identify and apply the correct trigonometry needed to calculate the length of the diagonal section. A good number of marks were achieved by candidates showing their working, although in some cases it was quite difficult to follow. Candidates should be encouraged to lay out their working in an orderly manner.

#### **Question 4c**

Candidates were required to identify two high volume methods of printing the packaging with full colour photographs. A small minority correctly identified two, with a larger proportion only identifying one. All answers in the mark scheme were frequently seen with common incorrect answers focusing on laser printing and photocopying.

#### **Question 4d**

Visualising and constructing the packaging net was clearly a challenge for many candidates, with only very few producing a fully correct response. Most candidates gained marks for partially complete responses which had sections missing or drawn to incorrect sizes. Some gained further marks for appropriately positioned glue tabs. Few fully understood the internal fold. Some poor responses showed unconnected orthographic views and isometric views.

### **Question 5a**

Very few candidates scored above 2 marks out of a possible 5 on this anthropometric question. Much of this was due to candidates not carefully reading the question and taking time to understand the given example. Candidates needed to relate a feature of the handle to an anthropometric size in order to achieve each mark. Instead many responses were misdirected into identifying ergonomic features that made the handle comfortable or safe. A large number of responses also included points about the pole length and features of the cutter head, when the question clearly directs them a number of times to just consider the handle.

### **Question 5b**

This is a 6 mark explain question which requires candidates to give extended or further justifications of the two benefits to employment arising from mass production. The majority of responses failed to do this and stopped well short of explaining the benefits they named. Most candidates achieved a single mark for stating that mass production had increased employment opportunities, but few went on to explain what benefits increased employment brings or how it came about. Candidates would benefit from further practice regarding these extended explain questions.

### **Question 6a**

Few good responses were seen here in regard to explaining reasons why nylon is appropriate for an umbrella canopy beyond those identified in the question stem. Many candidates fell back onto superficial responses such as cheap. This was not accepted as there are other suitable fabrics that are cheaper than nylon. Many responses also repeated strength in various forms, and lightweight, both of which are given in the stem. All answers in the mark scheme were seen at various times although the most common correct responses identified were related to flexibility, elasticity and aesthetics.

### **Question 6b**

Many candidates struggled to access this higher end question on User Centred Design indicating a poor knowledge of this new topic in the specification. Many candidates simply stated that user centred design was designing centred around the user. A small number of candidates presented good explanations which were then related to the umbrella, although these were rare. The majority of candidates scored 1+ marks for describing a valid reason for the extended canopy on one side of the umbrella.

## **Question 7**

A disappointing response from the majority of candidates on this question which focused on the influence of the Art Deco design movement. Many vague answers that loosely talked about colours and interesting shapes, but gave few points of substance. A significant number were also left blank. Having said this a small number of responses showed a good understanding of the time line and significant events that influenced the movement leading to characteristics of the style. These responses were pleasing to see although rare.

## **Question 8**

This final question required candidates to compare the suitability of the two desk lamps for use in a home study environment. A very accessible form of question that was attempted by all, although the analysis of many stayed at the superficial level, rarely going deeper than the points made in the specification. Better responses analysed many other features of the two lamps and presented connected arguments that probed deeper into the durability, safety, maintenance requirements, aesthetics and likely costs of both purchasing and running the lamps. Candidates would benefit from practicing extended responses to these questions as well as analysing the levels based mark schemes, in order to gain a better understanding of the need to link arguments together showing extended chains of thought. These types of responses that show an ability to use their understanding to analyse beyond the superficial issues presented, will always score better.

## **General Comments**

- Candidates should be taught how to respond to the different command words used and published in the support material. This will help them structure their answers appropriately and will affect their marks.
- The quality of handwriting in a number of situations is a concern. Candidates must write clearly and legibly at all times.
- It is always concerning to see candidates' lose marks due to misinterpreting questions. Centres are encouraged to do all they can to make candidates aware of this issue, and teach good exam technique in order to minimise these errors. Actively teaching candidates to underline key words in questions will help reduce these errors and help them focus their answers much more precisely.

