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# Examiner's Report Principal Examiner Feedback

Summer 2018

Pearson Edexcel GCE Advanced Level  
In D&T Graphis Products (6GR03)  
Paper 1 Designing for the future

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## **Introduction**

This was the final series of the legacy specification for Design and Technology, Product Design Graphic Products. There will be a resit opportunity in the summer of 2018 for candidates who have previously been entered for this qualification but need the opportunity to improve their performance, or may have, due to illness or unforeseen circumstances, been unable to sit the paper or complete the non-examined element of the qualification.

As in past series the examined unit covers knowledge and understanding of a range of modern design and manufacturing practices and contemporary design issues. This includes a good working knowledge of the use of ICT, systems and control technology, and industrial production systems, in the design and manufacture of commercial products. Additionally, candidates needed to be aware of important contributions by designers from the past, which may provide the inspiration for future designs. Candidates also needed to know that sustainable product design is a key feature of modern design practice. The more able candidates performed well across the paper, demonstrating detailed knowledge and understanding of key concepts and content. They were able to:

- Analyse and respond appropriately to the command verb used in the question
- Read the question carefully and respond appropriately to the specific focus or scenario of the question
- Draw upon detailed knowledge of the specification content
- Demonstrate a sound understanding of key elements of CGI including rotoscoping
- Demonstrate a sound understanding of modern industrial systems including lean manufacturing, computer aided quality control and the use of quick response manufacturing within industry
- Demonstrate sound knowledge and understanding of energy options available in a modern technological society
- Demonstrate understanding of the streamlining design movement and its design style and philosophy, including the associated architectural style, and how Raymond Loewy specifically influenced industrial and product design
- Evaluate, with sound analysis of benefits and drawbacks, a modern technological product incorporating smart materials

Less able candidates:

- Provided more generic responses with limited attention paid to the specific requirements or focus of the question
- Once again were not able to differentiate between different industrial systems and design movements and provided confused answers
- Relied upon knowledge recall rather than application to a question focus or scenario

- Used sustainability responses extensively when, whilst still gaining some credit, a broader or more specific response is required.

Overall the paper performed well and in line with previous examination series providing appropriate content and rigour across the ability range.

### **Question 1(a)**

This four-mark question required candidates to outline the principles of minimising the disposal of waste to landfill during the manufacturing process. Four key methods of disposal to landfill had to be identified and these had to be relevant to period of manufacturing. Many candidates were able to respond generically and covered: reclaim, recycle, recover and reuse. However, these were often focused on the consumer or 'end of life' disposal, as such, candidates missed the key focus of the question. Additionally, a large number of candidates focused on biodegradability, which is not relevant to the focus of the question; as the question relates to the reduction of disposal to landfill and not what happens to the material once within landfill. Therefore, many candidates did not perform well on this question.

### **Question 1(b)**

This question required candidates to discuss ways a manufacturer can reduce their carbon footprint. Candidates performed much better on this part of the question, which is open to more generic responses. Candidates were able to demonstrate sound knowledge and understanding across a broad range of key points contained within the mark scheme.

### **Question 2(a)**

Candidates were required to explain three advantages of using CGI in film production. This question was an explain question, with candidates required to identify three advantages with an associated extension detailing why the identified point is an advantage. Candidates generally were able to demonstrate sound knowledge and score well on this question with a modal mark of 6. Less able candidates tended to provide multiple identifications without linked responses. A broad range of points from the mark scheme were evident in candidate responses.

### **Question 2(b)**

This four-mark question required candidates to discuss how rotoscoping is used in CGI production. Whilst candidates were able to provide a good description of the motion capture process only the more able candidates were able to link this to rotoscoping and how traditional rotoscoping has evolved into CGI production. Many candidates identified the links to motion capture with more able candidates referring to tracing frame by frame over live action movement and the use of interpolated rotoscoping.

### **Question 3(a)**

This three-mark description required the identification of a key point such as 'single product production' together with two further linked pieces of information about a product focused lean manufacturing cell. Candidates generally found this to be a tough question despite the key steer of the wording **product focused**.

### **Question 3(b)**

This was a fairly straightforward question requiring candidates to outline the key stages of lean manufacturing. Candidates needed to cover the stages of: value, value stream, flow, pull (Kanban) and perfection (Kaizan). This question was a good discriminator between candidate ability levels; as it was answered well by more able candidates, whilst weaker candidates tended to answer generically, and repetitively, about production systems or simplify the overall process e.g. order materials, mark out, make product.

### **Question 3(c)**

This question required candidates to discuss the use of computer aided quality control systems, within a modern manufacturing facility. Candidates were generally able to demonstrate sound knowledge and understanding of this topic. With a modal mark of 6 the question did not discriminate well across the grades; however, it did provide an appropriate saw tooth effect to the challenge gradient of the paper.

### **Question 4(a)**

This question was answered well by the majority of candidates. This was even though the question focuses on the advantages of fossil fuels; whereas, candidates are normally required to consider the advantages of sustainable energy, which subsequently forces them to consider the drawbacks or disadvantages of fossil fuels. Most candidates provided two linked explanations. However, there is still a small number of candidates that think four bulleted identifications will achieve four marks; in such instances they are limited to two marks.

### **Question 4(b)**

This is a six mark discuss question where candidates were required to discuss the disadvantages of biomass as a source of energy. Candidates were able to demonstrate that they had good knowledge and understanding of this topic area. A number of candidates did however focus on biofuels for use in transportation, and ignored biomass used in heating and electricity generation.

### **Question 5(a)**

This question required candidates to outline how streamlining has influenced architectural design. There was a 'steer' within the stem wording to point candidates towards the 'Googie' style of architecture although streamlining, and its motor vehicle/transportation associations,

allowed candidates to access a broad range of points from the mark scheme. Most candidates were able to demonstrate good knowledge and understanding of the design movement, and the question helped to provide access, for more able candidates, to the mark range required for the higher grades.

### **Question 5(b)**

Candidates generally performed well on this question and with a modal score of 6 candidates appeared able to demonstrate sound knowledge and understanding of how Raymond Loewy's design style has influenced industrial and product design. Candidates that did less well on this question did not link Raymond Loewy to the streamlining movement and discussed Post Modernism, Art Deco, Arts and Crafts, Art Nouveau or Bauhaus; mistakenly believing that Raymond Loewy was a key designer within those movements. Alternatively, they mixed the features of the various design movements.

### **Question 6(a)**

This was a two mark linked explain question, covering one advantage of smart glass for the glazing of modern buildings. Candidates generally knew that smart glass can have its opacity changed by the application of an electrical current and they were able to link this to a range of benefits covered by the mark scheme. The modal mark was two and candidates that incorrectly responded to this question mistakenly thought that self-cleaning glass was smart glass.

### **Question 6(b)**

This was an eight-mark **evaluation** question addressing the use of e-readers as an alternative to magazines and books. The majority of candidates answered this very well and the modal mark was 8. The familiarity of the product has clearly made the question accessible to all candidates. A few candidates focused mainly on sustainability, rather than the use of the product, and whilst some credit was given for such responses the approach is self-limiting and does not provide access to all areas of the mark scheme.

### **Question 7**

This question required candidates to discuss the use of quick response manufacturing (QRM) within industry. This question was answered well by the majority of candidates with a modal mark of 8 and a mean approaching 5. There was less confusion relating to the different manufacturing systems within the specification compared with previous series. Most candidates were able to maintain a focus on the features of QRM. Candidates were able to demonstrate a broad knowledge range covering the breadth and depth of the mark scheme.

## **Paper Summary**

Overall the paper generally performed as expected and designed, allowing sufficient stretch to discriminate across the full range of available grades yet providing accessibility for all candidates.

Based on candidate performance on this paper, resit candidates are offered the following advice:

- Gain an understanding of the use of command verbs in examination questions and the type of expected response
- Read the question thoroughly so you understand the focus of specific questions
- Identify how many marks are available for the question
- Avoid the temptation to write all you know about a generic topic area as you will lose the focus of the question
- Revise the full breadth and depth of the specification, anything that could be interpreted from the specification content could be included on the paper
- Use all available resources, including core textbooks, when preparing for the examination
- Use the learning opportunities presented during the completion of coursework to help prepare for the examination.