



General Certificate of Education
Advanced Level Examination
June 2015

Design and Technology: Product Design (3-D Design)

PROD3

Unit 3 Design and Manufacture

Monday 8 June 2015 9.00 am to 11.00 am

For this paper you must have:

- an AQA 12-page unlined answer book, which is provided separately
- normal writing and drawing instruments.

Time allowed

- 2 hours

Instructions

- Use black ink or black ball-point pen. Use pencil and coloured pencils only for drawing.
- Write the information required on the front of your answer book. The **Paper Reference** is PROD3.
- Answer **three** questions.
- Answer **one** question from **each** of Sections 1 and 2 and **one other** question from **either** section.
- If you choose to answer a question which has several parts, you should answer **all** parts of the question.
- Do all rough work in your answer book. Cross through any work that you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 84.
- There are 28 marks for each question.
- You will be marked on your ability to:
 - use good English
 - organise information clearly
 - use specialist vocabulary where appropriate.

Advice

- Illustrate your answers with sketches and/or diagrams wherever you feel it is appropriate.

Answer **three** questions.

Answer **one** question from **each** of Sections 1 and 2 and **one** other question from **either** Section.

For each question that you answer, you should answer **all** parts of that question.

Section 1

Question 1 Answer all parts of this question.

0	1
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Compare and contrast the casting methods used in the manufacture of the two products shown in **Figures 1** and **2**.

Using diagrams where appropriate, you should explain the suitability of the method to the specific product.

[2 × 10 marks]

Figure 1 Model car



Figure 2 Steam locomotive wheel



0	2
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With reference to casting methods, explain how modern prototyping techniques can be utilised in bespoke jewellery design and manufacture.

[8 marks]

Question 2 Answer all parts of this question.

0	3
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 With reference to your own coursework project, produce a detailed manufacturing plan.

You should include the following:

- Quality Assurance (QA) and Quality Control (QC) procedures
- relevant diagrams
- reference to specific equipment used.

[16 marks]

0	4
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 With reference to a specific industrial context, explain how **two** different measuring techniques are used to ensure accuracy.

[2 × 6 marks]

Turn over for the next question

Turn over ▶

Question 3 Answer all parts of this question.

0 5

For the two packages shown in **Figures 3** and **4** below, state the specific materials and manufacturing methods used. Explain why these are suitable for each product.

Use diagrams where appropriate.

[2 × 10 marks]

Figure 3



Figure 4



0 6

Expanded Polystyrene (EPS) is being used less frequently for protective packaging of products. Discuss the alternative options available to designers, giving reasons for their use.

[8 marks]

Section 2

Question 4 Answer all parts of this question.

0 7

Explain in detail how a designer would use relevant data to ensure an office chair is suitable for use by the widest range of potential users.

Use diagrams where appropriate.

[14 marks]

0 8

Explain how the school chair shown in **Figures 5** and **6** below has been designed to be suitable for use in the classroom.

[14 marks]

Figure 5



Figure 6



Turn over for the next question

Turn over ▶

Question 5 Answer all parts of this question.

0 9

Discuss how the introduction and development of the mobile phone has had both positive and negative effects on society.

[12 marks]

1 0

Explain the modifications and features that could be included in a mobile phone designed specifically for the elderly.

Use diagrams where appropriate.

[16 marks]

Question 6 Answer all parts of this question.

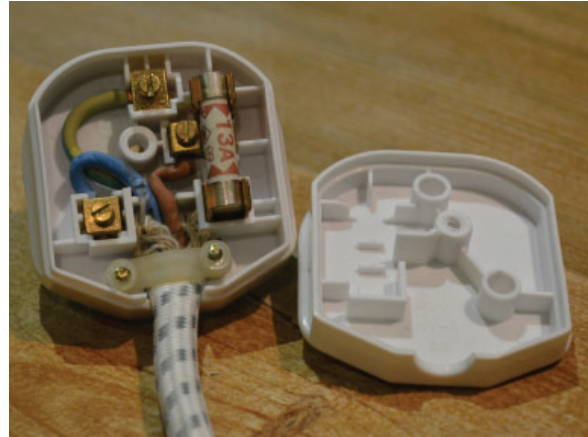
1 | 1 Explain the safety features included in the design of a standard 3 pin plug as shown in **Figures 7** and **8** below.

[14 marks]

Figure 7



Figure 8



1 | 2 Choose **one** of the categories of product stated below and explain how designers and manufacturers are addressing the issue of safe disposal of materials.

- White goods (refrigerators, freezers, washing machines)
- Motor vehicles

Refer to relevant legislation in your answer.

[14 marks]

END OF QUESTIONS

There are no questions printed on this page