

# **X211/11/01**

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NATIONAL  
QUALIFICATIONS  
2013

WEDNESDAY, 29 MAY  
1.00 PM – 2.30 PM

PRODUCT DESIGN  
INTERMEDIATE 2

50 marks are allocated to this paper.

Where appropriate you may use sketches to illustrate your answer.

Within each question, marks will not be awarded for repetition.



SECTION A

1. An electric toaster is shown below.



- (a) (i) State a suitable material for the sheet metal inner shell **and** state a reason why this material is suitable. 2
- (ii) State a suitable material for the plastic body **and** state a reason why this material is suitable. 2
- (iii) State a suitable manufacturing process for the plastic control dial **and** state a reason why this process is suitable. 2
- (iv) State **two** reasons why the designer may have produced models during the design of the toaster. 2
  
- (b) Describe **two** ways in which the design of the toaster has been influenced by each of the following ergonomic aspects:
  - (i) anthropometrics; 2
  - (ii) physiology; 2
  - (iii) psychology. 2
  
- (c) State **two** reasons why each of the following is important in the design of the toaster:
  - (i) environment; 2
  - (ii) safety; 2
  - (iii) ease of maintenance. 2

**Total for Section A (20)**

SECTION B

Marks

2. A cordless iron and its stand are shown below.



A consumer magazine wishes to carry out an evaluation of the cordless iron.

(a) **Describe** how each of the following aspects of the cordless iron could be evaluated and how the results could be effectively displayed in the magazine.

(Note: a **different evaluation technique** must be used for each aspect and sketches may be used to illustrate your answers.)

- (i) ease of use; 3
- (ii) time to reach a correct ironing temperature. 3

(b) The symbols shown below can be found on the iron.

Figure 1

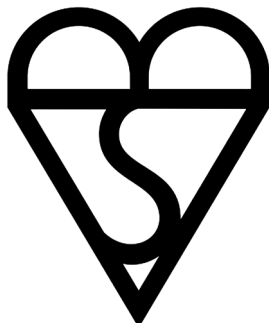


Figure 2



- (i) State the purpose of the symbol shown in **Figure 1**. 1
  - (ii) State **two** pieces of information communicated by the symbol shown in **Figure 2**. 2
- (9)

3. Four mass produced products are shown below. The main manufacturing process for each product is given.

(Note: the products are not shown to the same scale.)



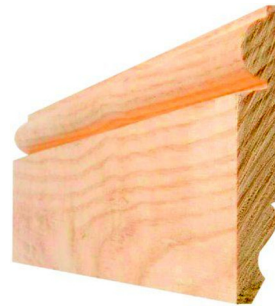
A Bottle: **Blow moulding**



B Chocolate box tray: **Vacuum forming**



C Toy van: **Die casting**



D Skirting board: **Spindle moulding**

- (a) For each product, state **one** visual feature that would appear as a result of its main manufacturing process. 4

(Note: a different visual feature must be used for each product.)

All mass production processes have **initial set up costs**.

- (b) State **two** of the initial set up costs. 2

(6)

4. Images of an iPad are shown below.



During the design of the iPad, research would have been carried out into the following:

- (i) fingertip size;
- (ii) screen size;
- (iii) portability;
- (iv) battery life;
- (v) aesthetics.

Explain why **each** of these is important in the design of the iPad.

**(5)**

**[Turn over**

5. A bus shelter is shown below.



The bus shelter has **primary** and **secondary functions**.

(a) With reference to the shelter, explain the difference between primary and secondary functions. 2

(b) Describe the issues that would affect the life-span of a bus shelter. 3

**(5)**

6. A design proposal for a roll up television screen is shown below.



The designers need to protect **their intellectual property rights**.

- (a) (i) Explain why it is important for the designers to protect their intellectual property rights. 1
- (ii) State **two** methods of protecting intellectual property rights. 2

Advertising is one technique used to increase sales of new products.

- (b) Describe **one** other technique which could be used to increase potential sales when launching a new product. 2

(5)

**Total for Section B (30)**

[END OF QUESTION PAPER]

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*Acknowledgement of Copyright*

Section B Question 6 – Image of a design proposal for a roll up television. Reproduced by permission of Science Photo Library.