Rewarding Learning

Centre Number

Candidate Number

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2019

Technology and Design

Assessment Unit AS 1
assessing
Design and Materials

MV18

[STE11]

THURSDAY 16 MAY, AFTERNOON

Time

1 hour, plus your additional time allowance.

Instructions to Candidates

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Answer **all seven** questions.
Answers to Question **7(a)** and **7(b)** should be made on the blank A4 pro forma answer pages provided.

Information for Candidates

The total mark for this paper is 40.
Marks for quality of written communication will be awarded for Question **6**.
Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.

Design and Materials

Answer **all** questions

1 Design briefs and design development are key elements when designing.

(a) Explain what is meant by a design brief. [2 marks]

(b) Explain the purpose of undertaking design development work. [2 marks]

2 Pine may be used to manufacture floorboards.

(a) Give **one** main specific property of pine (other than strength) which would make it suitable to be used for floorboards. [1 mark]

(b) Give **one** main working characteristic of pine which would make it suitable to be used for floorboards. [1 mark]

_____

_____

(c) Stains or oils may be used as a finish on floorboards. Briefly outline the main purpose of using a stain as a finish on floorboards and the main purpose of using an oil as a finish on floorboards. [1 mark for each]

Stain as a finish: _____

_____

Oil as a finish: _____

_____

3 Ferrous and non-ferrous metal alloys such as mild steel and brass are commonly used in everyday products.

(a) State the difference between ferrous and non-ferrous metals. [1 mark]

_____

_____

(b) Outline **one** main property of mild steel which makes it suitable for screws, nuts and bolts. [1 mark]

_____

_____

(c) Give **one** specific application for brass and outline **one** main property of brass which makes it suitable for your chosen application. [1 mark for each]

Application: _____

_____

Property: _____

_____

4 Traffic cones can be manufactured by the process of rotational moulding.

(a) Give **one** main reason why rotational moulding is the preferred manufacturing process to produce traffic cones. [1 mark]

_____

_____

(b) In the space below, draw a detailed annotated sketch of the rotational moulding process. [4 marks]

5 To assist in the design and manufacture of plastic toys many companies employ the use of solid modelling, computer-aided manufacture (CAM) and computer-integrated manufacture (CIM) for stock control.

(a) Give **one** specific characteristic associated with solid modelling. [1 mark]

_____

_____

(b) Briefly outline **two** main advantages of using CAM for companies manufacturing plastic toys. [2 marks]

1. _____

_____

2. _____

_____

(c) Explain how companies manufacturing plastic toys could use CIM for stock control. [2 marks]

_____

_____

_____

_____

6 For all students and staff, minimising risk in the school workshop is a key element when trying to maintain a safe working environment.

With reference to **one** common manufacturing machine-based process and **one** common hand manufacturing process of your choice explain:

- the risks associated for each of your chosen processes, [4 marks] and

- the methods used to minimise these risks. [4 marks]

Quality of written communication will be assessed in this question.

7 The hairdryer as shown in **Fig. 1** below is a lightweight and compact product.

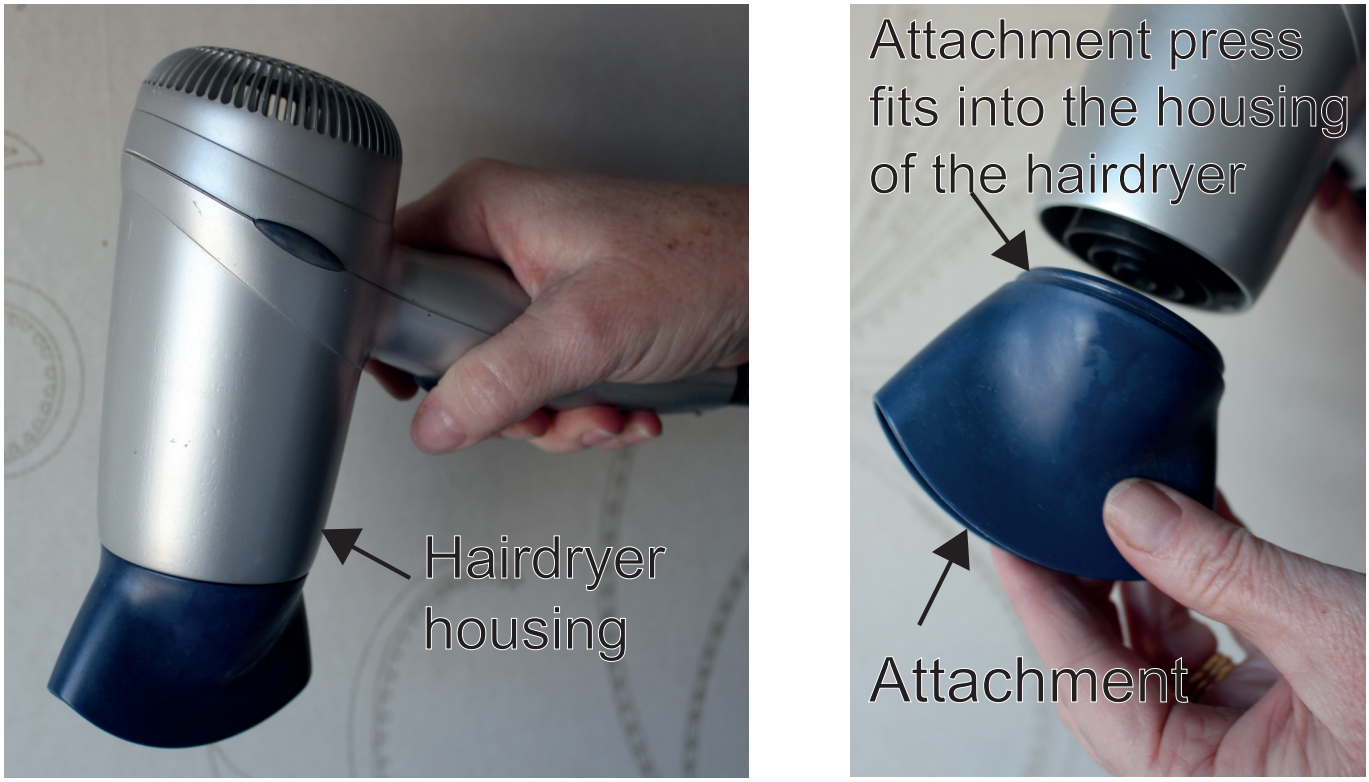

Fig. 1

For convenience of the user the hairdryer is required to be located on a wall mounted bracket. Using the blank A4 pro forma answer page (**answer no.7(a) on page 10**) produce an appropriate annotated design for the following:

(a) A wall mounted bracket which uses the minimal amount of materials to securely hold the hairdryer while not in use. Explain how your design would be considered cost effective to produce (do not make reference to minimal use of materials in your explanation). [6 marks]

After prolonged use of the product it was noted that the attachment which is a press fit into the housing of the hairdryer became loose and was prone to falling out. Using the blank A4 pro forma answer page (**answer no.7(b) on page 11**) produce an appropriate annotated design for the following:

(b) A means of preventing the attachment from falling out of the housing of the hairdryer but which will allow the user to quickly remove or insert the attachment. [4 marks]

A4 pro forma answer page (answer number **7(a)**)

A4 pro forma answer page (answer number **7(b)**)

THIS IS THE END OF THE QUESTION PAPER

SOURCES

Q7.....Source: Chief Examiner

For Examiner's use only	
Question Number	**Marks**
1	
2	
3	
4	
5	
6	
7	
Total Marks	