



GCE AS/A LEVEL

2603U10-1

MONDAY, 16 MAY 2022 – AFTERNOON

DESIGN AND TECHNOLOGY – AS unit 1

Product Design

2 hours plus your additional time allowance

Surname _____

First name(s) _____

Centre Number _____

Candidate Number 2 _____

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	8	
2.	8	
3.	8	
4.	8	
5.	8	
6.	40	
Total	80	

ADDITIONAL MATERIALS

A calculator, ruler, pencil and coloured pencils.

INSTRUCTIONS TO CANDIDATES

Use black ink, black ball-point pen or your usual method.

You may use a pencil for graphs and diagrams only.

Answer ALL questions.

Write your name, centre number and candidate number in the spaces provided on the front cover.

(Turn over)

Write your answers in the spaces provided in this booklet. If you run out of space, use the continuation pages at the back of the booklet, taking care to number the question(s) correctly.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question. You are advised to divide your time accordingly.

The total number of marks available is 80.

You are reminded of the need for good English and orderly, clear presentation in your answers. The quality of your written communication, including appropriate use of punctuation and grammar, will be assessed in your answer to question 4.

(Turn over)



Answer ALL questions.

1. The photographs opposite show four different uses of mild steel.

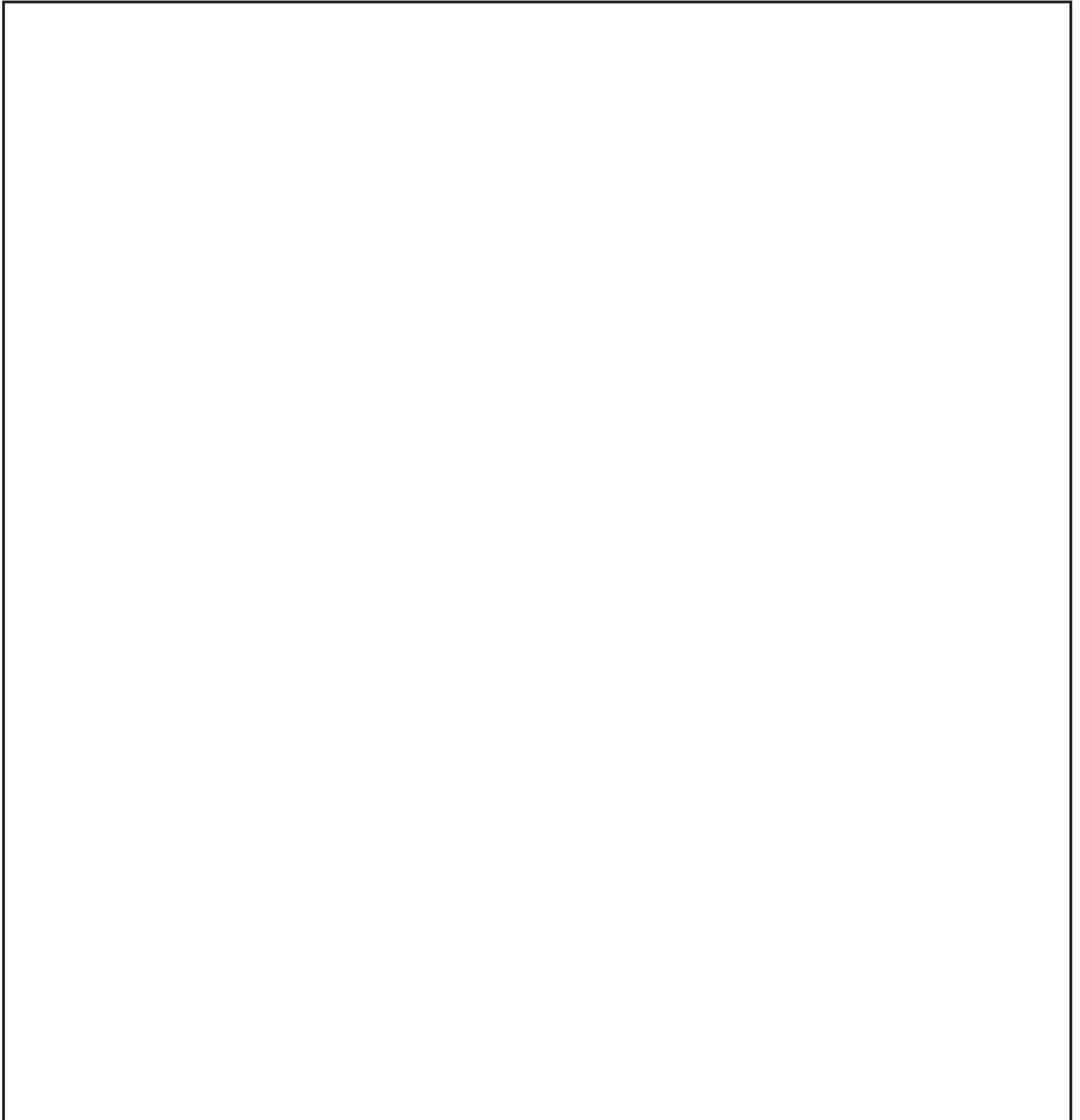
(a) State the physical properties of mild steel that make it suitable for the uses shown above. [2 marks]

(Turn over)

1 (b) The steel frame in parts of the building and the trailer has been galvanized.

Give a detailed reason for this surface finish. [2 marks]

1 (c) Using notes and sketches describe a method of permanently joining mild steel to mild steel. [4 marks]



2. Product designers and manufacturers have access to materials that are produced in ‘stock size/form’.

(a) Explain the term ‘stock size/form’.

[2 marks]

(Turn over)



4. **Environmental issues are a world-wide concern. Study the image opposite and evaluate the advantages and disadvantages of using polymers in product design.**
[8 marks]

Marks will be awarded for the content of the answer and the quality of communication.

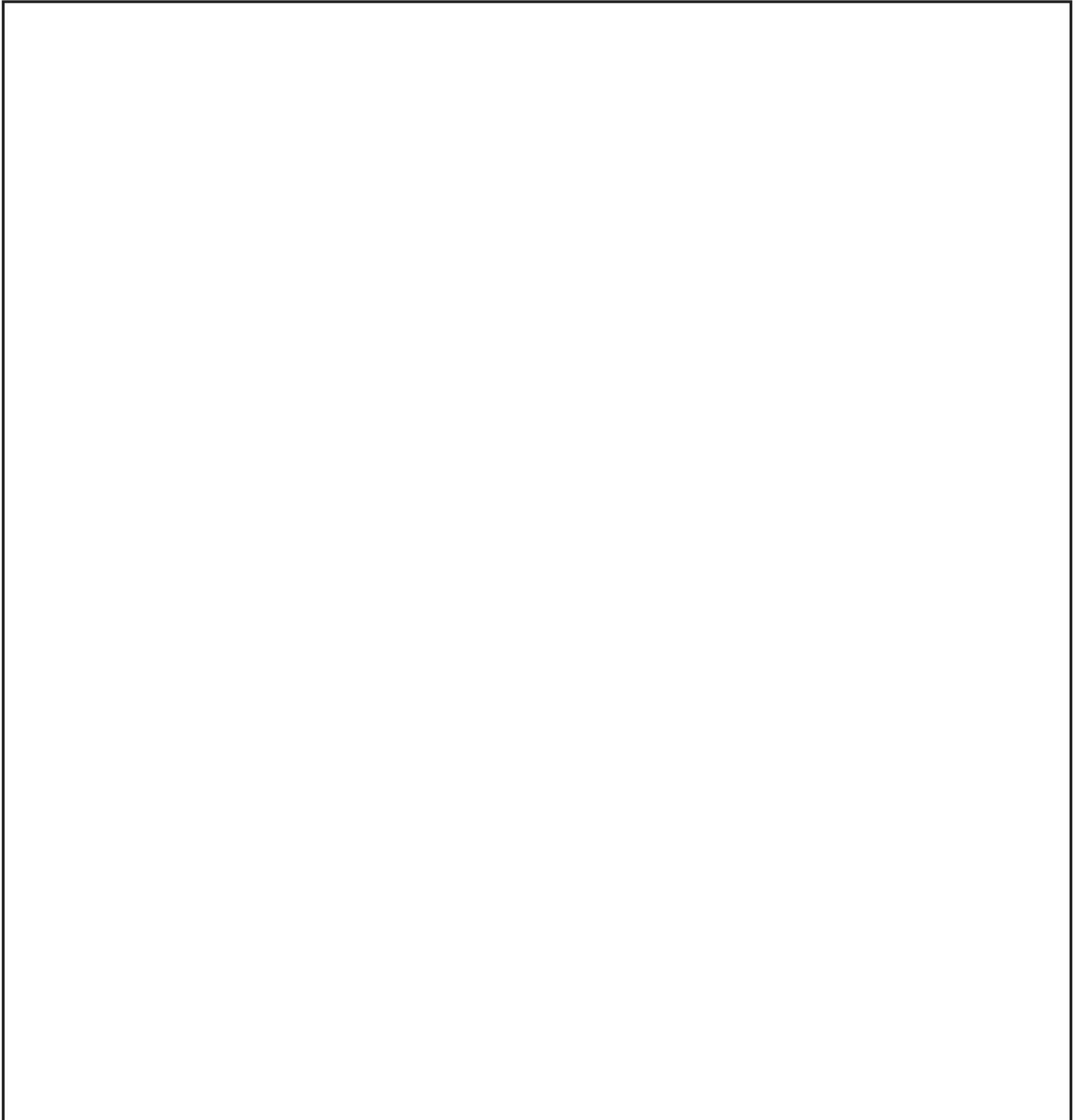
(Turn over)



5. The storage unit opposite is manufactured from a regenerated material, plywood. The unit consists of three parts that are slotted together.

(a) Identify with reasons a possible method of manufacture for the End Piece. [2 marks]

5 (b) Using notes and sketches explain how the body of the unit could be formed. [4 marks]

A large empty rectangular box with a black border, intended for the student to provide their answer to question 5(b) using notes and sketches.

5 (c) State the properties of plywood that make it a suitable material for this storage unit. [2 marks]



6. For a range of outdoor activities, from family picnics to music festivals, the use of disposable BBQs is both convenient and popular.

(a) With reference to the contexts opposite fully describe FOUR different issues associated with the use of disposable barbecues.

[8 marks]

(Turn over)

6 (b) Design a REUSABLE PORTABLE UNIT that will hold a disposable BBQ. Use annotated 2D and 3D sketches to communicate your idea.

A standard size disposable barbecue is 300 mm x 300 mm x 100 mm.

Marks will be awarded for:

- (i) an innovative and REUSABLE PORTABLE UNIT that holds the disposable barbecue. [8 marks]**
- (ii) how the unit addresses environmental issues. [4 marks]**

(Turn over)

6 (b) (iii)

how it meets the safety requirements of the user when cooking the food.

[4 marks]

(iv) the quality of communication and the use of annotated, 2D and 3D drawings. [4 marks]

(Turn over)

Present your design idea in the space below.

You are not expected to render, colour or shade your design.

(Turn over)

