



Rewarding Learning

General Certificate of Secondary Education
2013

Centre Number

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Candidate Number

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Technology and Design

Unit 3: Product Design



[GTD31]

FRIDAY 7 JUNE, AFTERNOON

GTD31

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper.

Complete in blue or black ink only. **Do not write in pencil or with a gel pen.**

Answer **all eight** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 80.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.



Answer **all** questions

1 **Table 1** lists a number of materials and their properties.

(a) For each material listed, place a tick (✓) in the box that relates to the property of that material.

Table 1

Property Material	Ferrous Metal	Non-ferrous Metal	Hardwood	Softwood	Thermosetting Plastic	Thermoplastic
Cedar						
Aluminium						
Epoxy Resin						
Nylon						
Copper						
Ash						
High Carbon Steel						

[7]

(b) Which of the above materials is an alloy?

_____ [1]

Examiner Only	
Marks	Remark
Total Question 1	



2 A company engaged in the soft drinks industry plans to develop and manufacture a new container for a new soft drink that they hope to launch.

As part of the product analysis for the new container the drinks company sub-contracts the task of developing a product specification to a product designer.

(a) Outline what sub-contracting means.

_____ [1]

(b) Give **one** reason why the company may wish to sub-contract the development of the product specification.

_____ [1]

(c) Produce a design specification that clearly outlines **six** key specification points to be considered in the design of the container.

1. _____ [1]

2. _____ [1]

3. _____ [1]

4. _____ [1]

5. _____ [1]

6. _____ [1]

Examiner Only

Marks Remark

Total Question 2

[Turn over



- (c) Part of the handrail consists of a tube and a round plate both made from the same material as shown in **Fig. 1**.

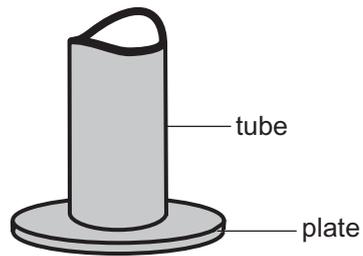


Fig. 1

Name a permanent method of joining the round plate to the tube of the handrail.

_____ [1]

- (d) Show by means of a sketch, **one** semi-permanent method of joining the round plate to the tube.

Examiner Only	
Marks	Remark
Total Question 3	
[3]	

[Turn over



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- 5 Fig. 2 shows a forklift truck used for lifting and moving materials. The truck is driven by an electric motor powered by a battery.

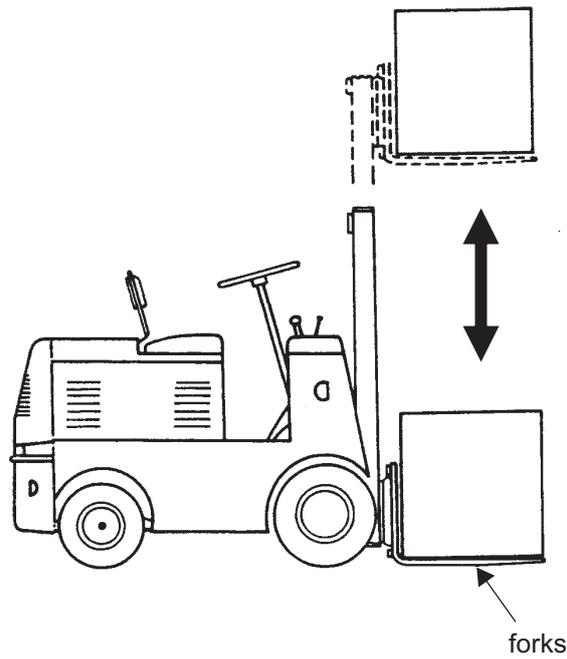


Fig. 2

- (a) Give **one** advantage and **one** disadvantage of this truck compared to one driven by a petrol engine.

Advantage _____

Disadvantage _____ [2]

Examiner Only	
Marks	Remark



6 A product life cycle consists of five important stages.

One of these stages is called the **Growth** stage.

(a) Name the other **four** stages.

1. _____ [1]

2. _____ [1]

3. _____ [1]

4. _____ [1]

(b) Outline **four** characteristics associated with the growth stage of a product.

1. _____
_____ [1]

2. _____
_____ [1]

3. _____
_____ [1]

4. _____
_____ [1]

Examiner Only

Marks Remark

Total Question 6



7 (a) Name **two** smart materials and suggest a **use** for each.

Smart material 1 _____ [1]

Use _____ [1]

Smart material 2 _____ [1]

Use _____ [1]

(b) For each smart material above outline a main property.

Property (Smart material 1) _____

_____ [1]

Property (Smart material 2) _____

_____ [1]

(c) In what way has the development of smart materials offered product designers new opportunities?

 _____ [2]

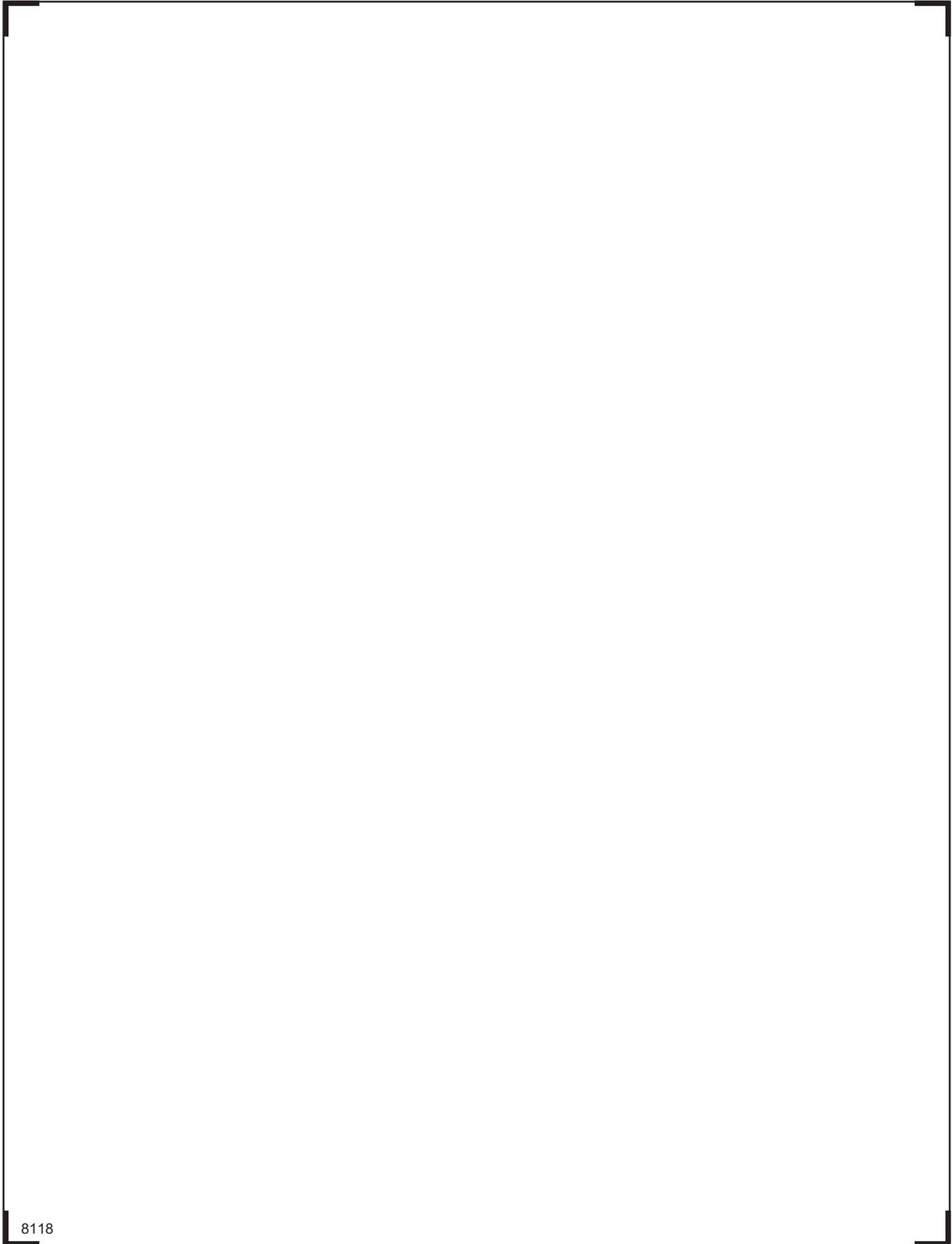
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Marks Remark

Total Question 7

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For Examiner's use only	
Question Number	Marks
1	
2	
3	
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6	
7	
8	

Total Marks	
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Examiner Number

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