

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GCSE**

A554/01

DESIGN AND TECHNOLOGY

Product Design

Designing Influences

FRIDAY 22 JUNE 2018:

Morning

**DURATION: 1 hour 30 minutes
plus your additional time allowance**

MODIFIED ENLARGED 24pt

Candidate forename		Candidate surname	
-------------------------------	--	------------------------------	--

Centre number						Candidate number				
--------------------------	--	--	--	--	--	-----------------------------	--	--	--	--

Candidates answer on the Question Paper.

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

None

READ INSTRUCTIONS OVERLEAF



INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the boxes on the front page. Please write clearly and in capital letters.

Use black ink. HB pencil may be used for graphs and diagrams only.

Answer ALL the questions in Section A AND Section B.

Read each question carefully. Make sure you know what you have to do before starting your answer.

Write your answer to each question in the space provided. If additional space is required, you should use the lined page(s) at the end of this booklet. The question number(s) must be clearly shown.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [] at the end of each question or part question.

The total number of marks for this paper is 60.

SECTION A is worth 30 MARKS. You are advised to spend no more than 45 minutes on it.

SECTION B is worth 30 MARKS. You are advised to spend no more than 45 minutes on it.

You will need to select from the tables in SECTION B when answering Question 4 and Question 5 of this paper. ‘Trend setter’ and ‘Iconic product’ must be linked to the ‘Era or Movement’.

Your quality of written communication will be assessed in Question 4(a) which is marked with an asterisk (*).

BLANK PAGE

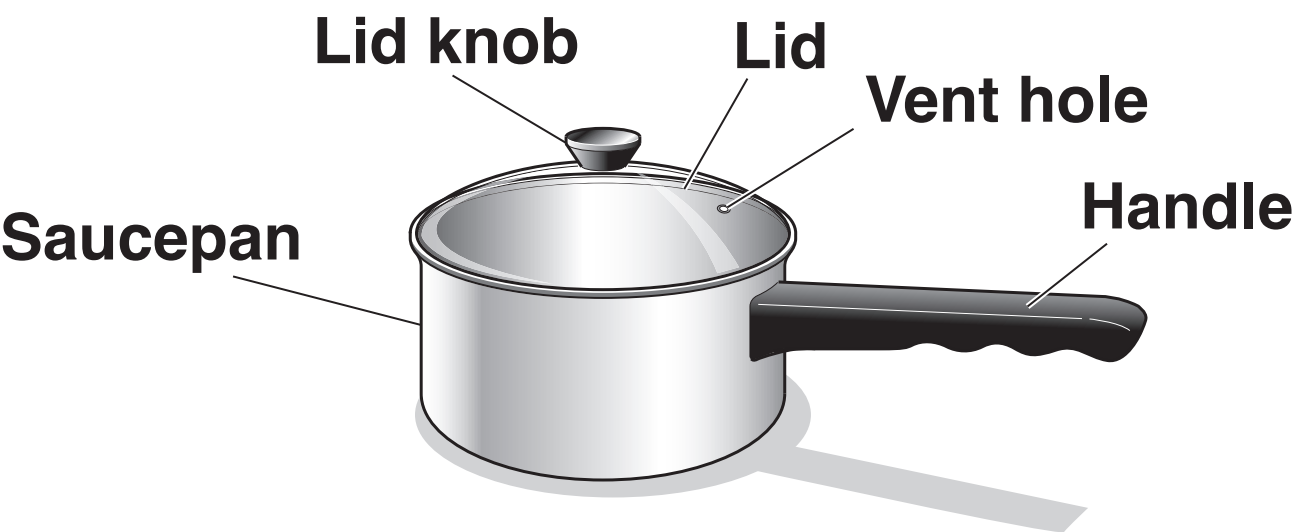
Answer ALL the questions.

SECTION A

You are advised to spend 45 minutes on this section.

1 Fig. 1 shows a saucepan.

FIG. 1



(a) Give THREE design requirements of a saucepan.

- 1 _____
- 2 _____
- 3 _____

[3]

(b) (i) The saucepan is made from different materials.

Tick (✓) the most suitable material property for the parts of the saucepan. [3]

	Material property	
	Heat resistant	Heat conductor
Handle		
Lid knob		
Saucepan		

(ii) Give ONE safety benefit, to the user, of a plastic handle on the saucepan.

[1]

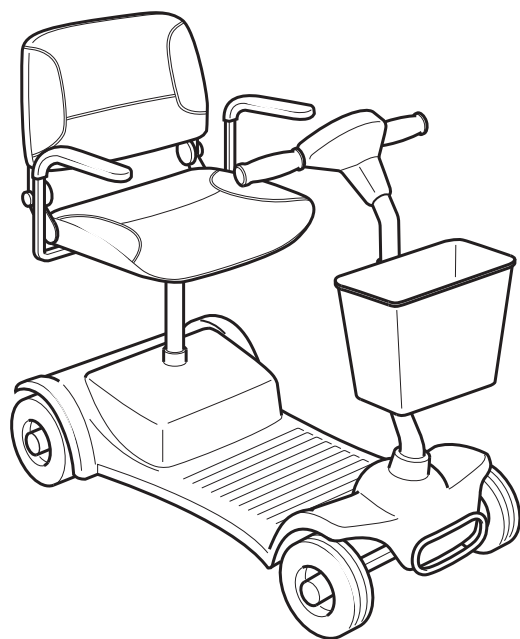
(c) One way a company can lower the cost of making products is by reducing the workforce.

Describe OTHER ways that companies can reduce their costs when making products.

[3]

2 Fig. 2 shows a mobility scooter.

FIG. 2



(a) Mobility scooters can help disabled people in their daily lives.

Give THREE features of a mobility scooter that makes it easy to use.

1 _____

2 _____

3 _____

[3]

(b) Mobility scooters have to be designed to fit a range of different people.

(i) Give ONE specific anthropometric measurement that could be used to ensure that a mobility scooter fits the user.

_____ **[1]**

(ii) Give ONE feature of a mobility scooter that ensures the COMFORT of the user.

_____ **[1]**

(c) Explain how the size of wheels benefits the user.

_____ **[2]**

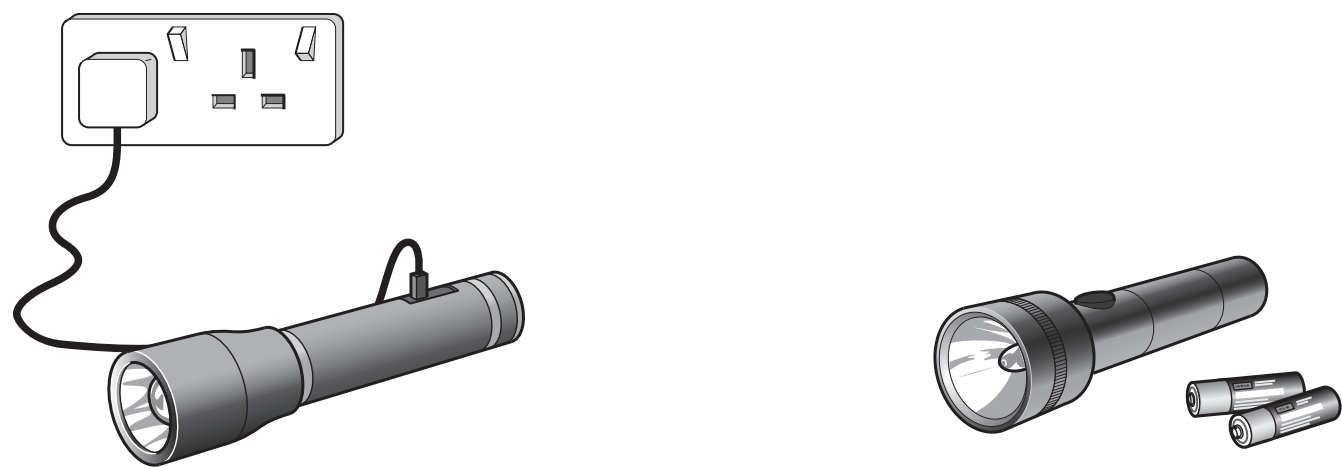
(d) Inclusive design tries to meet the diverse needs of as many people as possible. This is done by designing or adapting products in a way that makes them useable by a wide range of users.

Using ONE example of an inclusive designed product, explain how the product has been adapted to meet the needs of a wide range of people.

[3]

3 Fig. 3 shows two ways of powering a torch.

FIG. 3



Rechargeable battery torch

Disposable battery torch

(a) The demand for electronic products that can be recharged is increasing.

Give **THREE** advantages of a rechargeable battery torch that benefit the user.

- 1 _____
- 2 _____
- 3 _____

[3]

(b) Rechargeable electronic products are generally more expensive to make.

Give TWO factors other than cost that affect the design and manufacture of rechargeable electronic products.

1 _____

2 _____

[2]

(c) The electrical energy required to charge electronic products can be produced by using environmentally friendly methods.

Give ONE environmentally friendly method of producing electrical energy and explain how the energy is collected.

Environmentally friendly method _____

Explanation of how the energy is collected _____

[2]

(d) To appeal to a wider market, manufacturers often make claims about eco-friendly aspects of the design and of the manufacture of their products.

Explain how manufacturers can improve the eco-footprint of their products.

[3]

SECTION B

You are advised to spend 45 minutes on this section.

This question draws upon the research you carried out as part of your examination preparation.

4 The table below shows the eras and trend setters for this examination.

Era or movement	Trend setter
2010s to present	David Constantine – Motivation
1970s to present	Light Emitting Diodes (LED)
1950s to present	Pierre Cardin
1950s to present	Robert Sabuda
1980s to present	Vegan diet

(a)*Select ONE trend setter from the table above.

Trend setter chosen _____

Explain why this trend setter has been so influential. [6]

(b) The table below shows the iconic products for this examination.

Era or movement	Iconic product
2010s to present	Motivation – Multisport Wheelchair
1970s to present	LED Automotive lamps
1950s to present	Avant-garde – Space age dresses
1950s to present	Children’s pop-up books
1980s to present	Green smoothies

Select ONE iconic product from the table above.

Iconic product chosen _____

Give TWO reasons why the product you have chosen has been so influential.

You must justify each answer.

1 _____

2 _____

[4]

5 This question draws upon the research you carried out as part of your examination preparation.

You will need to:

write a specification

produce a range of initial ideas

develop ONE idea

evaluate your final proposal.

Five different design needs are given below.

Indicate, using a tick (✓), ONE design need you are going to consider.

Design need	✓
A child’s push toy that helps children develop balance and walking skills	
A full colour LED changeable window display for a mobile phone shop	
An avant-garde uniform for the service staff at a futuristic space themed restaurant	
A pop-up information leaflet promoting a new children’s book about animals	
A vegan ‘meal deal’ for a leading supermarket appealing to all customers	

(a) Identify FOUR important design specification points for the design need you have chosen to consider.

These must specify key design requirements other than those detailed in the design need in the table on page 15.

1 _____

2 _____

3 _____

4 _____

[4]

(b) Use sketches and notes to produce a range of initial ideas that meet your specification. [6]

(c) Use sketches and notes to develop ONE of your initial ideas to meet the original design need.

Give details of materials and construction. [6]

[illegible]

END OF QUESTION PAPER

ADDITIONAL ANSWER SPACE

If additional space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margin(s).

[illegible]

Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, First Floor, 9 Hills Road, Cambridge CB2 1GE.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.