



DESIGN AND TECHNOLOGY

0445/12

Paper 1 Product Design

May/June 2019

1 hour 15 minutes

Candidates answer on the pre-printed A3 Answer Sheets.

Additional Materials: Standard drawing equipment and coloured pencils.

READ THESE INSTRUCTIONS FIRST

Write your centre number, candidate number and name in the spaces on **both** printed Answer Sheets.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Answer **one** question.

Write/draw your answers in the spaces provided on the Answer Sheets.

You may use a calculator.

At the end of the examination, fasten all your work securely together.

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

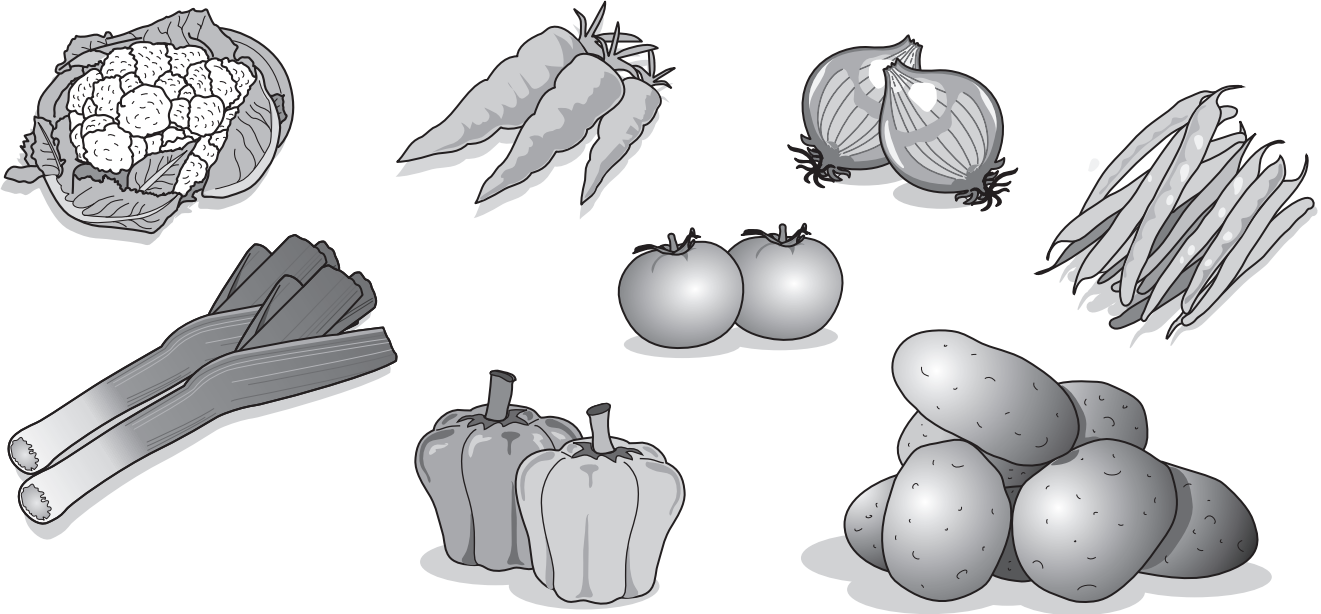
The total of the marks for this paper is 50.

This document consists of **4** printed A4 pages and **2** A3 Inserts.



Answer **ONE** question only on the A3 pre-printed answer sheets provided.

- 1 Grocers often display fresh vegetables on the pavement outside their shop.



Design a unit to store and display eight different types of vegetable. The unit should be portable to allow the grocer to move the unit back into the shop at night.

- (a) List **four** additional points about the function of such a unit that you consider to be important. [4]
- (b) Show **two** different methods which could be used to make the unit portable. [4]
- (c) Develop and sketch **three** ideas for the unit. [12]
- (d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]
- (e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and important dimensions. [12]
- (f) Suggest **two** suitable specific materials for your solution and give reasons for your choice. [4]
- (g) Outline a method used to manufacture **one** part of your solution. [6]

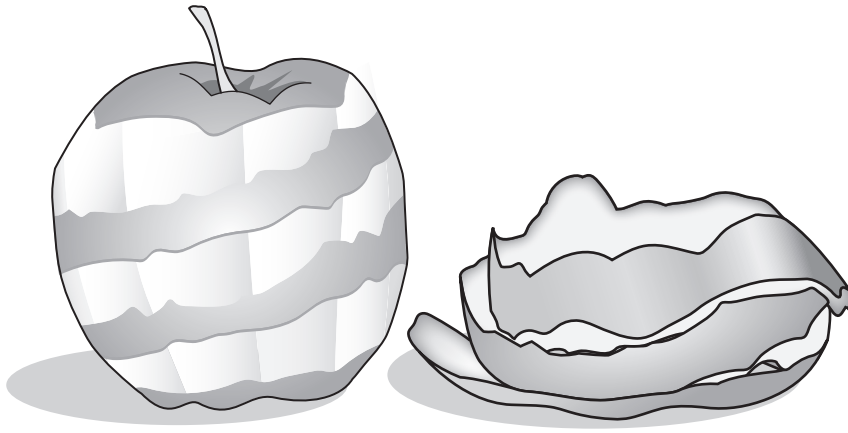
- 2 A seed company wants to promote vegetable growing to young children. The items shown below are to be included in a vegetable growing starter kit.



Design a lightweight counter top display that will hold the individual items in the kit, to promote vegetable growing starter kits.

- (a) List **four** additional points about the function of such a counter top display that you consider to be important. [4]
- (b) Use sketches and notes to show two methods that can be used to attach items to card. [4]
- (c) Develop and sketch **three** ideas for the counter top display. [12]
- (d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]
- (e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and important dimensions. [12]
- (f) Suggest **two** suitable specific materials for your solution and give reasons for your choice. [4]
- (g) Outline a method used to manufacture **one** part of your solution. [6]

- 3 A manufacturer wishes to develop a hand or electrically operated machine that will peel an apple.



Design a machine that will peel an apple.

- (a) List **four** additional points about the function of such a machine that you consider to be important. [4]
- (b) Use sketches and notes to show **two** methods that could be used to convert rotary motion to linear motion. [4]
- (c) Develop and sketch **three** ideas for the machine. [12]
- (d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]
- (e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and important dimensions. [12]
- (f) Suggest **two** suitable specific materials for your solution and give reasons for your choice. [4]
- (g) Outline a method used to manufacture **one** part of your solution. [6]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

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