

Cambridge IGCSE™

DESIGN & TECHNOLOGY

0445/13

Paper 1 Product Design

October/November 2024

1 hour 15 minutes

You must answer on the two pre-printed A3 answer sheets.

You will need: Two A3 pre-printed answer sheets (enclosed)
Standard drawing equipment
Coloured pencils

INSTRUCTIONS

- Answer **one** question.
- Use an HB pencil for any drawings and a black or dark blue pen for any writing.
- Write your name, centre number and candidate number in the space on **both** pre-printed answer sheets.
- Answer in the space provided on the answer sheets.
- Do **not** use an erasable pen, staples, paper clips, glue or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You may use standard drawing equipment, including coloured pencils.
- At the end of the examination, hand in your named A3 answer sheets. Do **not** fasten them together and do **not** punch holes in the sheets or tie with string.

INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [].
- All dimensions are in millimetres unless otherwise stated.

This document has 4 pages.

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

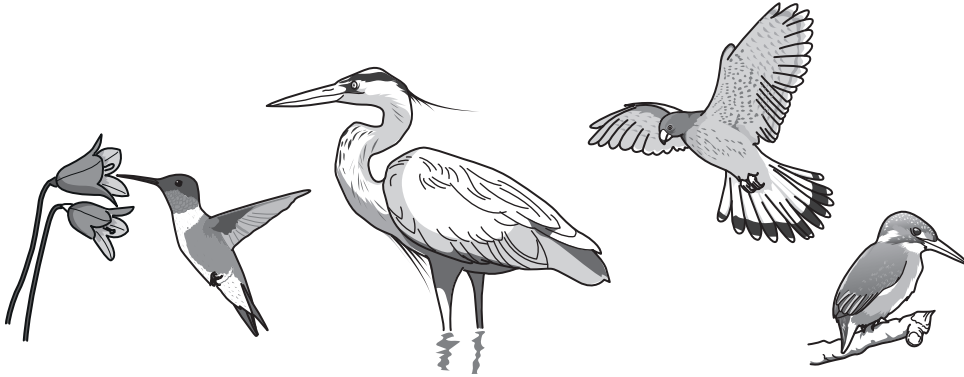
- 1 Customers often buy products to attract different birds to nest safely in their garden.



Design a product for nesting birds. The design must be suitable for different sized birds, be flat-packed for ease of manufacture and assembled without the use of tools.

- (a) List **four** additional points about the function of such a product for nesting birds that you consider to be important. [4]
- (b) Use sketches and notes to show **two** methods of joining sheet materials that do not require the use of adhesives or tools. [4]
- (c) Develop and sketch **three** separate ideas for the product for nesting birds. [12]
- (d) Evaluate your three ideas. Choose **one** idea to develop further and justify your choice. [8]
- (e) Draw, using a method of your own choice, a full solution to the design problem. Include construction details and important dimensions. [12]
- (f) Suggest **two** suitable specific materials for the solution you have drawn in part (e) and give reasons for your choice. [4]
- (g) Outline a method that could be used to manufacture **one** part of your solution drawn in part (e). Include the names of the tools used. [6]

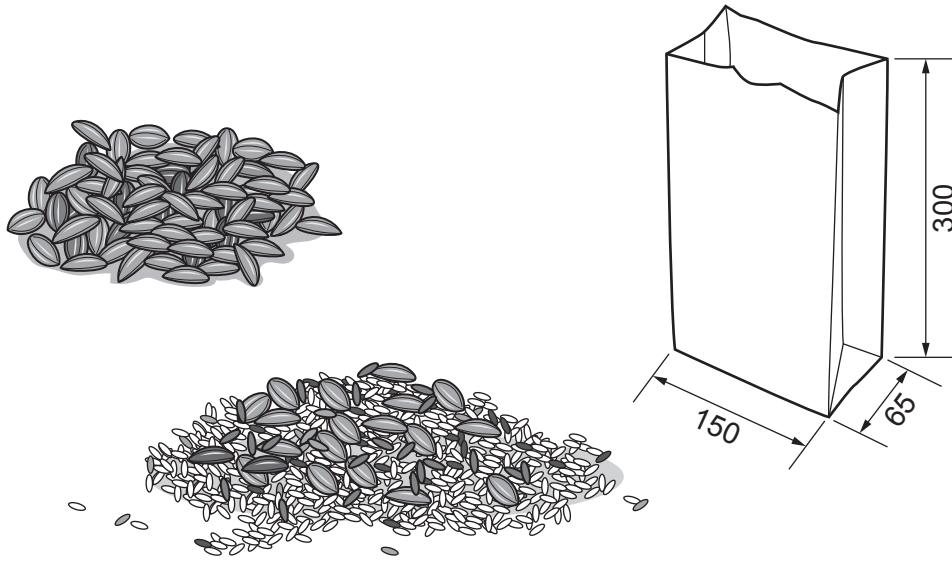
- 2 A bird conservation group wishes to introduce a range of greetings cards to sell in shops.



Design a greetings card based on the theme of birds. To generate interest, the card must incorporate movement in its design.

- (a) List **four** additional points about the function of such a greetings card that you consider important. [4]
- (b) Use sketches and notes to show **two** methods of creating movement using mechanisms made from card. [4]
- (c) Develop and sketch **three** separate ideas for the greetings card. [12]
- (d) Evaluate your three ideas. Choose **one** idea to develop further and justify your choice. [8]
- (e) Draw, using a method of your own choice, a full solution to the design problem. Include construction details and important dimensions. [12]
- (f) Suggest **two** suitable specific materials for the solution you have drawn in part (e) and give reasons for your choice. [4]
- (g) Outline a method that could be used to manufacture **one** part of your solution drawn in part (e). Include the names of the tools used. [6]

- 3 A shop sells a range of bird seed to customers.



Design an automated device that allows customers to fill paper bags with bird seed. Each time the device is used, the design must allow the release of a measured amount of seed into a paper bag.

- (a) List **four** additional points about the function of such a device that you consider to be important. [4]
- (b) Use sketches and notes to show **two** methods that will control the release of a measured amount of seed. [4]
- (c) Develop and sketch **three** separate ideas for the automated device that allows customers to fill paper bags with bird seed. [12]
- (d) Evaluate your three ideas. Choose **one** idea to develop further and justify your choice. [8]
- (e) Draw, using a method of your own choice, a full solution to the design problem. Include construction details and important dimensions. [12]
- (f) Suggest **two** suitable specific materials for the solution you have drawn in part (e) and give reasons for your choice. [4]
- (g) Outline a method that could be used to manufacture **one** part of your solution drawn in part (e). Include the names of the tools used. [6]

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