

Modified Enlarged 24pt
OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Friday 14 June 2019 – Morning

**A Level in Design and Technology:
Product Design**

**H406/02 Problem Solving in Product
Design**

**Time allowed: 1 hour 45 minutes
plus your additional time allowance**

YOU MUST HAVE:
Resource Booklet

YOU MAY USE:
a scientific calculator
a ruler
geometrical instruments

Please write clearly in black ink.

Centre number

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Candidate number

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First name(s) _____

Last name _____

READ INSTRUCTIONS OVERLEAF



INSTRUCTIONS

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

Answer ALL the questions.

The recommended reading time for the Resource Booklet is 35 MINUTES plus your additional time allowance.

Write your answer to each question in the space provided. Additional paper may be used if required but you must clearly show your candidate number, centre number and question number(s).

Where appropriate, your answers should be supported with working. Marks may be given for a correct method even if the answer is incorrect.

INFORMATION

The total mark for this paper is 70.

The marks for each question are shown in brackets [].

Quality of extended responses will be assessed in the questions marked with an asterisk (*).

Answer ALL the questions.

Before responding to the questions in this paper you must spend time reading and familiarising yourself with the Resource Booklet.

- 1 A range of products is available to care for small caged pets such as guinea pigs. Before determining new design opportunities the designer undertakes initial research into these animals and the current products that are available on the market to house them.**

The designer knows pet owners are one of the key stakeholder groups that use the current products on the market.

Critically examine the design requirements that would have been taken into account when designing the Skyline Maxi Small Pet Cage to meet the needs of this key stakeholder group.

Refer to information on PAGES 4 to 6 of the Resource Booklet. Do not refer to the bought accessories in your response. [8]

2* As identified on PAGE 4 of the Resource Booklet, there is a lack of products and automated solutions on the market to dispense food automatically to small caged pets when owners go away on holiday. A method of delivering a measured amount of food to the small caged pet is required.

The designer working for ‘Pets4You’ needs to consider the viability of existing solutions in order to develop a successful product that will earn market share.

Compare and contrast the suitability of the existing products shown in FIG. 3 and FIG. 4 of the Resource Booklet for dispensing food to a small caged pet.

In your response you should refer to the list of the owners’ requirements listed on PAGE 8 of the Resource Booklet. [12]

[illegible]

[illegible]

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- 3 The designer takes forward the gravity feed method (FIG. 3) and develops a concept design shown in FIG. 5 of the Resource Booklet.**

Use sketches and/or notes to outline suitable methods of manufacture and assembly for the features of the concept design.

You must focus on all parts of the concept design including the lid, tank (including label) and base.

In your response you must include details of:

materials;

manufacturing processes;

finishes;

assembly methods. [16]

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- 4 Pets4You has teamed up with a supplier of pet food. It wants to encourage consumers to purchase pre-packaged tanks of pet food with a re-fill service.**

Using the data in FIG. 6 of the Resource Booklet, calculate the amount of food in grams (g) needed for an average guinea pig for three months and identify which food product would therefore secure best value. Show your working.

Assume that one month is 31 days. [6]

Amount of food needed

_____ **g**

Best value product

5 Pets4You is looking to diversify its product range.

A designer has been working on a concept named ‘Chewy’ as shown in FIG. 7 of the Resource Booklet.

In order to more thoroughly evaluate the commercial viability of the Chewy product, Pets4You has agreed with a popular retail chain to sell a trial batch of 4000 Chewys through its pet stores.

Use sketches and/or notes to show how the trial batch of 4000 Chewys could be manufactured.

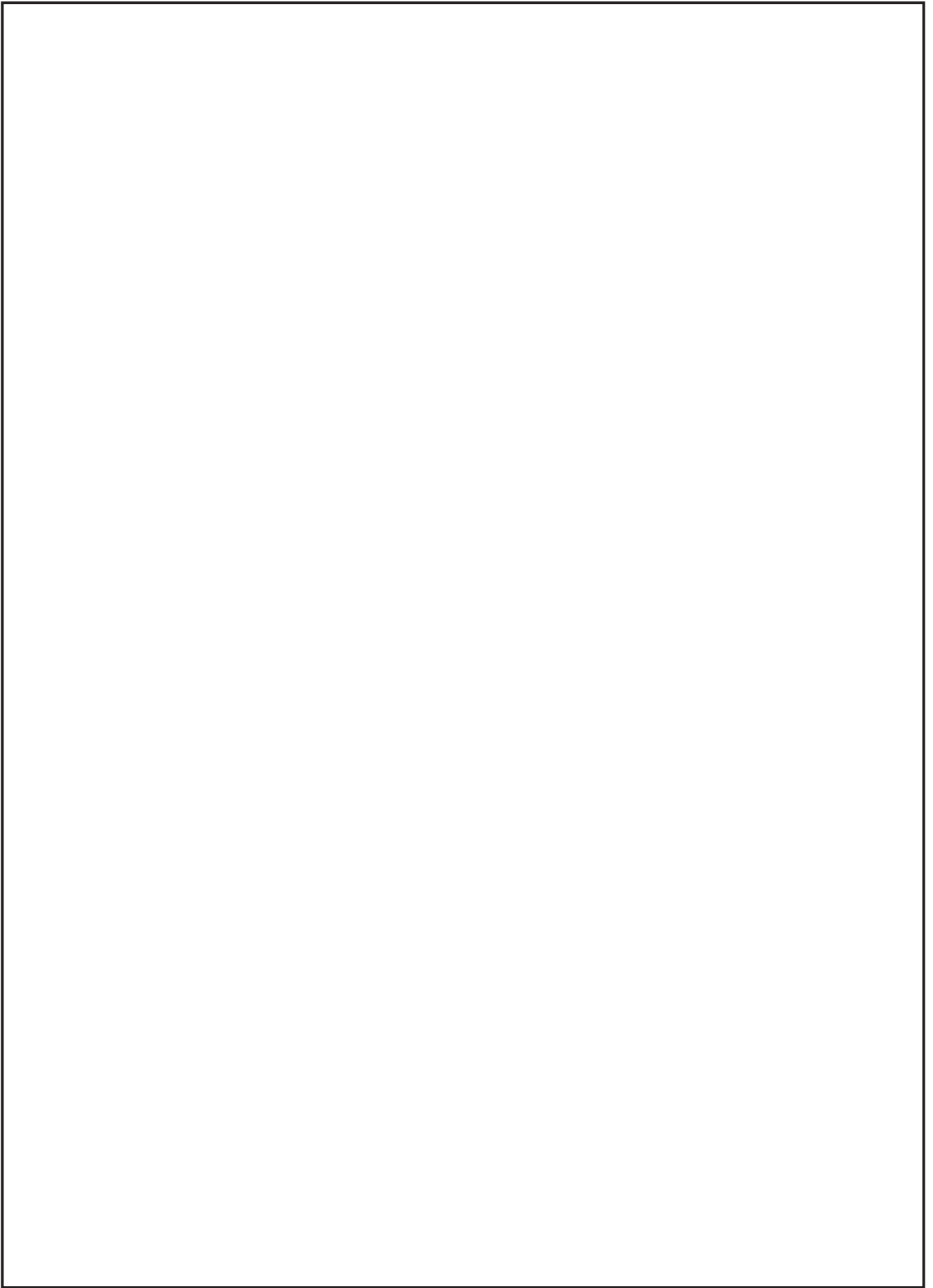
In your response you should include details of:

materials;

methods of manufacture;

how the M6 threaded component would be attached to the wooden block.

Refer to information on PAGES 14 AND 15 of the Resource Booklet. [16]



6* Pets4You feels that it has hit upon a potential best seller with the Chewy product.

It needs the initial trial batch of the Chewys as highlighted on PAGE 16 of the Resource Booklet to be successful and is therefore considering the overall marketing strategy for this product.

Critically examine the methods that could be used to create more demand for the Chewy product and maintain a longer product popularity.

In your response you should make reference to the following stakeholders and their needs:

customers;

Petzone (retailer);

Pets4You (manufacturer). [12]

[illegible]

[illegible]

END OF QUESTION PAPER



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