

| | | | | | | | | | | |
|---------------------|--|--|--|--|--|------------------|--|--|--|--|
| Centre Number | | | | | | Candidate Number | | | | |
| Surname | | | | | | | | | | |
| Other Names | | | | | | | | | | |
| Candidate Signature | | | | | | | | | | |



General Certificate of Secondary Education
Specimen Paper

Design and Technology: XXXX/W Resistant materials

Date: Time

You will need no other materials.

- a pen, a pencil, a ruler, an eraser, a pencil sharpener and coloured pencils.

Time allowed:

- 2 hours

Instructions

- Use black ink or black ball-point pen. Use pencil and coloured pencils only for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- Show the working of your calculations.

Information

- The maximum mark for this paper is 120.
- The marks for questions are shown in brackets.
- The questions in Section A relate to the context referred to in the preparation sheet that was previously issued.
- All dimensions are given in millimetres unless otherwise stated.
- You are reminded of the need for good English and clear presentation in your answers. Quality of written communication will be assessed in question 10.

Advice

- You are advised to answer the questions in the order in which they are written.

| | |
|---------------------|------|
| For Examiner's Use | |
| Examiner's Initials | |
| Question | Mark |
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| TOTAL | |

XXXX/W

There are no questions printed on this page

**DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED**



Barcode

SECTION A

Context: Train Nursery Lights

Design Brief

You have been asked by a company that designs and manufactures lighting to help them extend their range of products by producing a new design of ‘night light’ that is suitable for use in a baby’s bedroom.

Question 1 is about the design specification.

You are advised to spend about 5 minutes on this question.

- 1 Analyse the design brief shown above and evaluate what specific issues relating to the design should be considered when designing a night light that is suitable for use in a baby’s bedroom.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(6 marks)



Turn over ►

Question 2 is about design ideas.

You are advised to spend about 10 minutes on this question.

- 2** Study the information given in the design brief and your design specification (page 2).

Use this information to help you sketch five different ideas for a night light that is suitable for use in a baby's bedroom.

Marks will be awarded for creativity, originality and diversity.

(5 x 2 marks)



Question 3 is about evaluation.

You are advised to spend about 5 minutes on this question.

3 Identify your best idea from Question 2.

Best idea:

Evaluate your best idea against your original specification (page 2).

.....
.....
.....
.....
.....
.....
.....

(3 marks)

Turn over for the next question



Question 4 is about developing an idea.

You are advised to spend about 15 minutes on this question.

- 4 Use notes and sketches to develop your chosen idea.
Show details of materials, sizes and the method(s) of construction.

| | | |
|----------------------------|--------------------------|------------------|
| Marks will be awarded for: | ● quality of sketching | <i>(4 marks)</i> |
| | ● quality of notes | <i>(2 marks)</i> |
| | ● specific materials | <i>(3 marks)</i> |
| | ● important sizes | <i>(2 marks)</i> |
| | ● constructional details | <i>(4 marks)</i> |

SECTION B



You should answer all questions in this section.

Question 5 is about tools, equipment and safety.

You are advised to spend about 15 minutes on this question.

5(a) Name each of the following tools.

Give specific details of a process where you would use each one.



Name
(1 mark)

Process
.....
.....
(1 mark)



Name
(1 mark)

Process
.....
.....
(1 mark)



Name
(1 mark)

Process
.....
.....
(1 mark)



Study the picture of the pillar drill shown opposite.

5(b) Complete the risk assessment table for the pillar drill.

An example has been given.



| Hazard | Precaution |
|--|--|
| <i>The workpiece could spin off the drill.</i> | <i>Ensure that the workpiece is firmly clamped down.</i> |
| | |
| | |
| | |
| | |

(10 marks)



Question 6 is about making.

You are advised to spend about 20 minutes on this question.

6 Two designs for a note pad holder are shown below.

Both of them could be made in a school workshop.

Choose **one** of the note pad holders.

Chosen note pad holder:

6 (a) Name **one** suitable specific material you could use to make your chosen note pad holder.

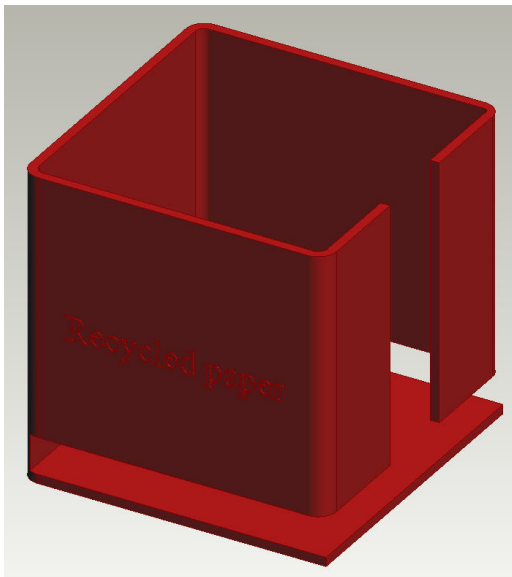
Give **one** reason for your choice.

Material:..... (2 marks)

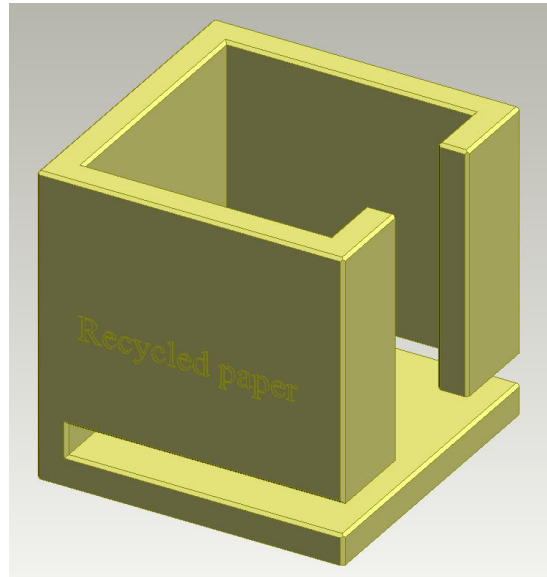
Reason:.....

..... (1 mark)

Note pad holder A



Note pad holder B



Barcode

Turn over ►

- 6 (b) Use notes and sketches to show clearly how you would make a batch of ten note pad holders in a school workshop.

At each stage, name all the tools, equipment or software.

Stage 1: Marking out **or** CAD (Computer Aided Design)

(4 marks)

Stage 2: Cutting and shaping **or** CAM (Computer Aided Manufacture)

(4 marks)



LEAVE
MARGIN
BLANK

Stage 3: Bending **or** joining

(4 marks)

Stage 4: Applying the surface finish

(2 marks)

Stage 5: Producing the 'recycled paper' text

(2 marks)



Question 7 is about materials.

You are advised to spend about 15 minutes on this question.

7 (a) Study the products shown below.

Name **one** suitable, *specific* material which has been used to make each product.

Give **one** reason for **each** choice.

Product A



Material
(2 marks)

Reason

.....

.....
(1 mark)

Product B



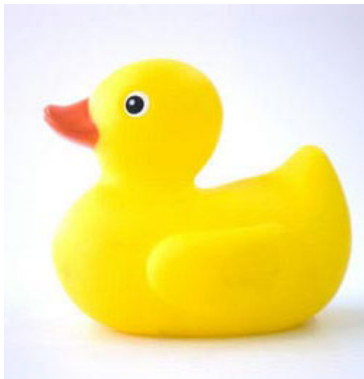
Material
(2 marks)

Reason

.....

.....
(1 mark)

Product C



Material
(2 marks)

Reason

.....

.....
(1 mark)



Product D



Material
(2 marks)

Reason

.....

.....
(1 mark)

7 (b) Briefly describe how plastic is obtained from oil.

.....
.....
.....

(2 marks)

7 (c) Explain the sustainability issues of using oil.

.....
.....
.....
.....
.....

(3 marks)



Question 8 is about product analysis.

You are advised to spend about 15 minutes on this question.

8 Study the palm sander and the cork block shown below.

Both are used for sanding materials such as wood.

Palm sander



Cork block



8 (a) Evaluate the effectiveness of each sander when sanding wood.

.....

.....

.....

.....

.....

.....

(4 marks)



LEAVE
MARGIN
BLANK

8 (b) Give **two** environmental advantages of using the cork block.
Explain each of your answers.

Advantage 1:

Explanation:

.....

(2 marks)

Advantage 2:

Explanation:

.....

(2 marks)

8 (c) Identify and explain the ergonomic features of the palm sander.

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

(6 marks)



Question 9 is about modelling.

You should spend about 10 minutes on this question.

9 Designers will often produce models of their idea to help them in their work.

9 (a) Give **two** reasons why a designer would make models of their idea during the design process.

1

.....

(1 mark)

2

.....

(1 mark)

9 (b) Discuss the use of **two** different modelling materials that a designer may use.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(6 marks)

| |
|---|
| 8 |
|---|

Question 10 is about product life cycle.



Barcode

You should spend about 10 minutes on this question.

10 (a) Explain what is meant by the term ‘product life cycle’ and give **two** examples to illustrate your answer.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(6 marks)

Question 10 continues on the next page



Barcode

Turn over ►

10 (b) Explain why it is important for designers to consider ‘ease of maintenance’ when designing products.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(6 marks)

END OF QUESTIONS



ADDITIONAL SAMPLE QUESTIONS

1 Study the product shown below.

Name **one** suitable, *specific* material which has been used to make the product.

Give **one** reason for your choice.

Product



Material
(2 marks)

Reason

.....

.....

(1 mark)

2 Question 2 is about design modelling.

You are advised to spend about 10 minutes on this question.

When making a model of the computer mouse, shown in **Figure 1**, the designer may have used a 'smart' material.

Figure 1



(a) Name a suitable 'smart' material which could be used to make a prototype of the mouse.

'Smart' material:
(1 mark)

(b) Explain the advantages of using this 'smart' material.

Advantages:
.....
.....
.....
.....
.....
(4 marks)



Barcode