

Wednesday 23 January 2013 – Afternoon

GCSE DESIGN AND TECHNOLOGY Industrial Technology

A542/01 Sustainable Design

Candidates answer on the Question Paper.

OCR supplied materials:

None

Other materials required:

None

Duration: 1 hour



Candidate forename		Candidate surname	
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Centre number							Candidate number				
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INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. 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. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.

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**.
- The quality of your written communication will be taken into account in marking your answer to the questions marked with an asterisk (*).
- This document consists of **12** pages. Any blank pages are indicated.

SECTION A

Answer **all** questions.

You are advised to spend 15 minutes on this section.

On questions 1–5 **circle** your answer.

- 1** Taking a product apart is called:
- (a) Repairing a product
 - (b) Product disassembly
 - (c) Recycling a product
 - (d) Product repair
- [1]
- 2** The 6R reduce, can be described as:
- (a) Making more products
 - (b) Making larger products
 - (c) Not using unnecessary material and parts
 - (d) Products that are not used
- [1]
- 3** Sustainable timber is:
- (a) Taken from coniferous forests that are not replanted
 - (b) Taken from unmanaged equatorial rainforests
 - (c) Cut down regularly and only used for making paper
 - (d) Taken from managed forests
- [1]
- 4** Hybrid vehicles use:
- (a) Nuclear power
 - (b) Fossil fuels only
 - (c) A combination of electricity and fossil fuels
 - (d) Alternative energy
- [1]

- 5 Assessing the possible dangers in a factory is termed:
- (a) Risk assessment
 - (b) Safety assessment
 - (c) Hazard assessment
 - (d) Health and safety assessment [1]

6 What does COSHH stand for?
C..... O..... S..... H..... H..... [1]

7 Name the symbol shown below.



..... [1]

8 State a non-sustainable method of product disposal.
..... [1]

9 Name the term used to describe products that are designed to fail after a set period of time.
..... [1]

10 Materials that respond to changes in temperature and light are known as:
..... [1]

4

Decide whether each of the following statements is **true** or **false**.

Tick (✓) the box to show your answer.

	True	False	
11 Lead based paints are not safe for children's toys	<input type="checkbox"/>	<input type="checkbox"/>	[1]
12 Ethical companies are sweatshop free	<input type="checkbox"/>	<input type="checkbox"/>	[1]
13 Disposable products benefit the environment	<input type="checkbox"/>	<input type="checkbox"/>	[1]
14 Reforestation harms the environment	<input type="checkbox"/>	<input type="checkbox"/>	[1]
15 Good design can improve the quality of life for the user	<input type="checkbox"/>	<input type="checkbox"/>	[1]
			Total [15]

SECTION B

Answer **all** questions.

You are advised to spend 45 minutes on this section.

16 Fig. 1 shows a storage system made from recycled cardboard.

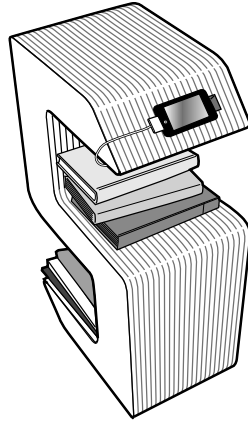


Fig. 1

(a) Name the type of recycling that describes the manufacture of the cardboard storage system in Fig. 1.

..... [1]

(b) Explain with reference to the storage system in Fig. 1, how the designer has addressed the following three issues:

Refuse

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

Sustainability

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.....

Disposal

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(c)* Discuss why it is important to consider recycling when designing products.

Marks will be awarded for the quality of written communication in your answer.

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[6]

(d) State **two** ways the manufacturer of the storage system in Fig. 1 could encourage the consumer to recycle the product at the end of its life.

1

.....

2

.....

[2]

Total [15]

17 Fig. 2 shows a portable laptop computer.

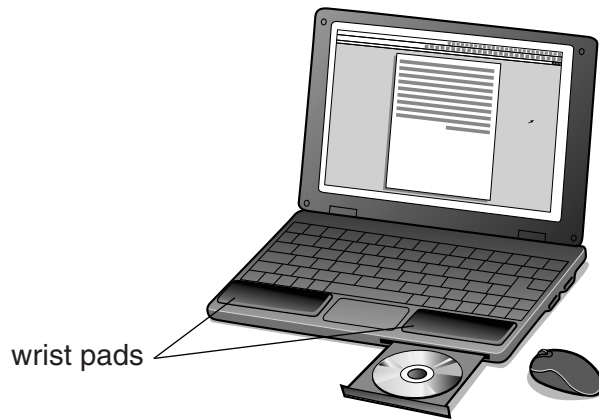


Fig. 2

(a) The laptop in Fig. 2 has a rechargeable battery. Give **two** reasons why this is better for the environment than using disposable batteries.

1

2

[2]

(b) Explain what is meant by the term 'product analysis' with reference to the laptop shown in Fig. 2.

.....

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..... [3]

(c) With reference to the laptop in Fig. 2, describe **three** features where the designer has considered ergonomics.

1

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2

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3

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[6]

(d) The outside casing of the laptop in Fig. 2 is injection moulded from polypropylene.

Give **two** environmental advantages and **two** environmental disadvantages of injection moulding.

Advantage 1

.....

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Advantage 2

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Disadvantage 1

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Disadvantage 2

.....

.....

[4]

Total [15]

18 Fig. 3 shows a large number of wind turbines.

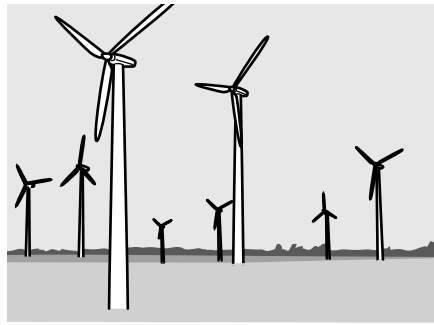


Fig. 3

(a) State the name given to a collection of wind turbines sited together.

..... [1]

(b) Describe **two** benefits of using wind turbines to generate electricity.

1

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2

.....

.....

[4]

(c) Explain **one** negative environmental impact of using wind turbines to generate electricity.

.....

.....

..... [2]

(d) Name **two** sustainable energy sources other than wind.

1

2

[2]

(e) (i) Name a suitable material for making the pylon of a wind turbine.

..... [1]

(ii) Describe the impact that the manufacture of the pylon has on the environment.

.....
.....
.....
..... [2]

(f) Explain why there is a need to greatly increase the use of sustainable energy.

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..... [3]

Total [15]

END OF QUESTION PAPER

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