OCR
RECOGNISING ACHIEVEMENT

GENERAL CERTIFICATE OF SECONDARY EDUCATION

DESIGN AND TECHNOLOGY

A532

Graphics

Sustainable Design

Candidates answer on the question paper.

OCR supplied materials:
None

Other materials required:
None

Friday 10 June 2011
Afternoon

Duration: 1 hour

OCE/30423

A532

Candidate forename		Candidate surname	

Centre number						Candidate number				

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. Pencil may be used for graphs and diagrams only.
- 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).
- Answer **all** the questions in sections A **and** B.
- 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**.
- Your quality of written communication is assessed in 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 Toxic materials should be:

(a) Reused

(b) Refused

(c) Recycled

(d) Reanimated

[1]

2 When designers respond to cultural needs they ensure:

(a) The manufacturing process is completed quickly

(b) That materials used are inexpensive

(c) The products marketability is considered

(d) That different values and beliefs are considered

[1]

3 Companies can pay to be allowed to exceed their carbon dioxide emission limit. This is known as:

(a) Carbon off-setting

(b) Cash capping

(c) Cash off-setting

(d) Carbon capping

[1]

4 The term solar energy means:

(a) Energy produced by motion

(b) Energy from beneath the earth's surface

(c) Energy from the sun

(d) Energy produced from wind

[1]

5 The term built in obsolescence means designing and making a product so that:

(a) It becomes outdated and must be replaced

(b) It is built cheaply

(c) It is environmentally friendly

(d) It is built quickly

[1]

6 What is Secondary Recycling?

..... **[1]**

7 Name **one** sustainable energy source.

..... **[1]**

8 What does the term LCA stand for?

..... **[1]**

9 What type of product might the symbol below appear on?

..... **[1]**

10 Name **one** benefit to a worker supported by the Ethical Trade Initiative.

..... **[1]**

Decide whether each of the following statements is **true** or **false**.
Tick (✓) the box to show your answer.

		True	False	
11	Manufacturers must protect the safety of users of products	☐	☐	**[1]**
12	Aluminium cans are not 100% recyclable	☐	☐	**[1]**
13	Recycled paper is sustainable	☐	☐	**[1]**
14	Designers must be aware of cultural differences	☐	☐	**[1]**
15	Recycling is suitable for all plastics	☐	☐	**[1]**

Total [15]

Section B

Answer **all** questions.

You are advised to spend 45 minutes on this section.

16 Fig. 1 shows a cardboard drink carton.

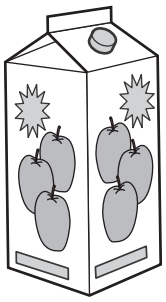

Fig. 1

(a) State **two** benefits the shape of the carton gives to the retailer.

1 .....

.....

2 .....

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

(b) Give **one** advantage to the consumer that a carton has compared to a glass bottle.

.....

..... **[1]**

(c) Cartons have a low carbon footprint.

Explain the term Carbon Footprint.

.....

.....

.....

.....

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

(d) The carton is made from a laminate of cardboard, polythene and aluminium foil.

Give **two** reasons why aluminium foil is used in the laminate.

1 .....

.....

.....

2 .....

.....

.....

[2]

(e) The table below shows three symbols often found on drinks containers.

Tick (✓) the symbol which would be likely to appear on a cardboard drinks carton.

		

[1]

(f) In the context of the 6Rs explain the meaning of the term Reuse.

.....

.....

.....

.....

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

(g) The manufacturer needs a symbol that will appear on the drink carton to encourage people to wash and squash the carton before recycling.

The cartons of drink will be sold in many different countries.

(i) Give **two** specification points for the symbol.

1 .....

.....

2 .....

.....

[2]

(ii) Use a sketch and notes to show a design for the symbol that encourages customers to wash and squash the carton.

[3]

Total [15]

17 Fig. 2 shows children's party accessories.

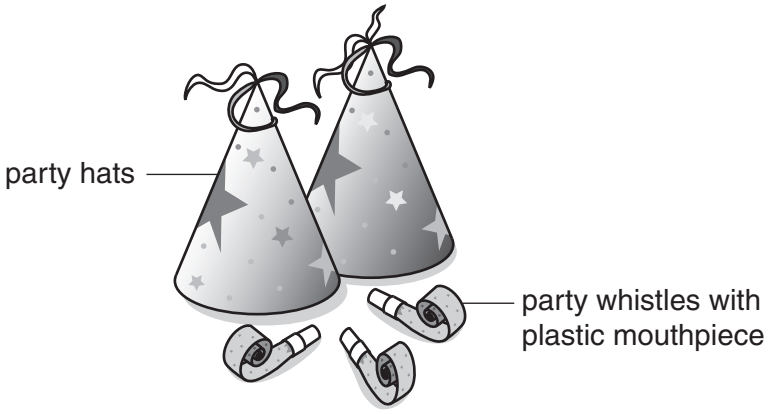

Fig.2

(a) (i) Name **one** sustainable material that could be used to make the party hats.

..... **[1]**

(ii) Explain why your named material is sustainable.

..... **[1]**

(b) Give **two** reasons why vegetable based inks will be used to print a design onto the hats.

1 .....

.....

2 .....

.....

[2]

(c) The hats will have 2 purposes: first as a container for sweets and then worn as party hats. Name the 6R this would satisfy.

..... **[1]**

(d) Fig. 3 shows a symbol that will be printed on to the hats.

Fig. 3

(i) Name the symbol shown in Fig. 3.

..... **[1]**

(ii) Explain the meaning of the symbol.

.....

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..... **[3]**

(e*) The party whistles are made from paper with a plastic mouthpiece.

Discuss the difficulties faced by recycling centres when recycling products made from multiple materials.

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..... **[6]**

Total [15]

18 Fig. 4 shows 2 different types of bags.

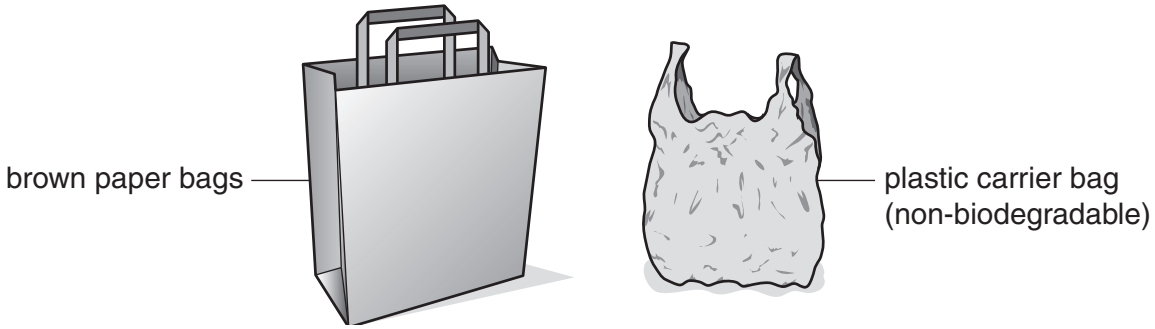

Fig. 4

(a) (i) Give **one** environmental benefit of using a brown paper bag.

.....

..... **[1]**

(ii) Explain **one** weakness of the brown paper bag when carrying shopping.

.....

.....

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

(b) Give **two** reasons why plastic carrier bags may be harmful to the environment.

1 .....

.....

.....

2 .....

.....

..... **[4]**

(c) Plastic carrier bags are often manufactured in countries such as China and Thailand before being shipped to India where the graphics are printed onto the bag. Finally the bags are shipped to the U.K.

Explain how this may affect the carbon footprint of the plastic carrier bag.

.....

.....

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

(d) The plastic carrier bag shown in Fig. 4 is non-biodegradable.

Explain what this term means.

.....

.....

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

(e) Complete the sentences below to show the process of mechanical recycling of plastic.

Recycling waste..... from kerbside or recycling collection centre

↓

Plastics ..... into different types/colours of plastic by trained staff

↓

Plastic is then heated together until it.....and then is cooled

↓

The plastic is..... and reprocessed into granules called regranulate

↓

The regranulate is processed into new plastic products

[4]

Total [15]

PLEASE DO NOT WRITE ON THIS PAGE