



Oxford Cambridge and RSA

**Tuesday 21 June 2016 – Afternoon**

**GCSE DESIGN AND TECHNOLOGY Graphics**

**A535/01 Sustainability and Technical Aspects of Designing and Making**



Candidates answer on the Question Paper.

**OCR supplied materials:**

None

**Other materials required:**

None

**Duration:** 1 hour 30 minutes



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.
- 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. If additional space is required, you should use the lined pages at the end of this booklet. The question number(s) must be clearly shown.
- Answer **all** the questions in Section A **and** Section 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 **80**.
- Your quality of written communication is assessed in questions marked with an asterisk (\*).
- This document consists of **20** pages. Any blank pages are indicated.

**SECTION A**

Answer **all** questions.

You are advised to spend 40 minutes on this section.

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

- 1** Built-in obsolescence means that a product is designed to:
- (a) Be disassembled
  - (b) Be recycled
  - (c) Last for a set amount of time
  - (d) Have parts that can be easily fitted
- [1]**
- 2** The Ethical Trading Initiative (ETI):
- (a) Supports workers' rights
  - (b) Manufactures paper and card
  - (c) Promotes the depletion of natural resources
  - (d) Is a waste collection service
- [1]**
- 3** To repair a product means to:
- (a) Throw it away
  - (b) Re-design it
  - (c) Recycle it
  - (d) Mend it
- [1]**
- 4** The symbol shown means recycled:
- (a) Aluminium
  - (b) Glass
  - (c) Paper
  - (d) Steel
- [1]**



- 5 Carbon offsetting is when carbon emissions are:
- (a) Buried underground
  - (b) Disposed of safely
  - (c) Released into the atmosphere
  - (d) Balanced or cancelled out
- [1]

- 6 State the missing 6R.
- |                |               |               |     |
|----------------|---------------|---------------|-----|
| <b>Recycle</b> | <b>Repair</b> | <b>Reuse</b>  |     |
| <b>Rethink</b> | <b>Reduce</b> | <b>R.....</b> | [1] |

- 7 Name **one** type of printing ink that is environmentally friendly.
- ..... [1]

- 8 Name the smart material that glows in the dark.
- ..... [1]

- 9 Give the full name for CO<sup>2</sup>.
- ..... [1]

- 10 Give the term that means products are made and sold worldwide.
- ..... [1]

4

Decide whether the statements below are **True** or **False**.

Tick (✓) the box to show your answer.

	<b>True</b>	<b>False</b>	
<b>11</b> Manufacturers have a duty to ensure the safety of consumers when using products.	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>
<b>12</b> Designers should only design products that are expensive to buy.	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>
<b>13</b> Anthropometrics is the study of human body measurements.	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>
<b>14</b> Almost all glass bottles and jars can be recycled.	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>
<b>15</b> Foamboard is easy to recycle.	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>

5  
**BLANK PAGE**

**PLEASE DO NOT WRITE ON THIS PAGE**

16 Fig. 1 shows an activity pack for children.



Activity pack containing:  
Press-out card models of dinosaurs  
Colouring book  
Crayons

Fig. 1

(a) Give **two** reasons why the activity pack in Fig. 1 would appeal to children.

- 1 .....
  - 2 .....
- [2]**

(b) Give **four** eco-design requirements to be considered when designing and manufacturing the activity pack.

- 1 .....
  - .....
  - 2 .....
  - .....
  - 3 .....
  - .....
  - 4 .....
  - .....
- [4]**

- (c) Fig. 2 shows the press-out card models that are included in the activity pack. The press-out pieces slot together to form the three-dimensional (3D) dinosaurs.

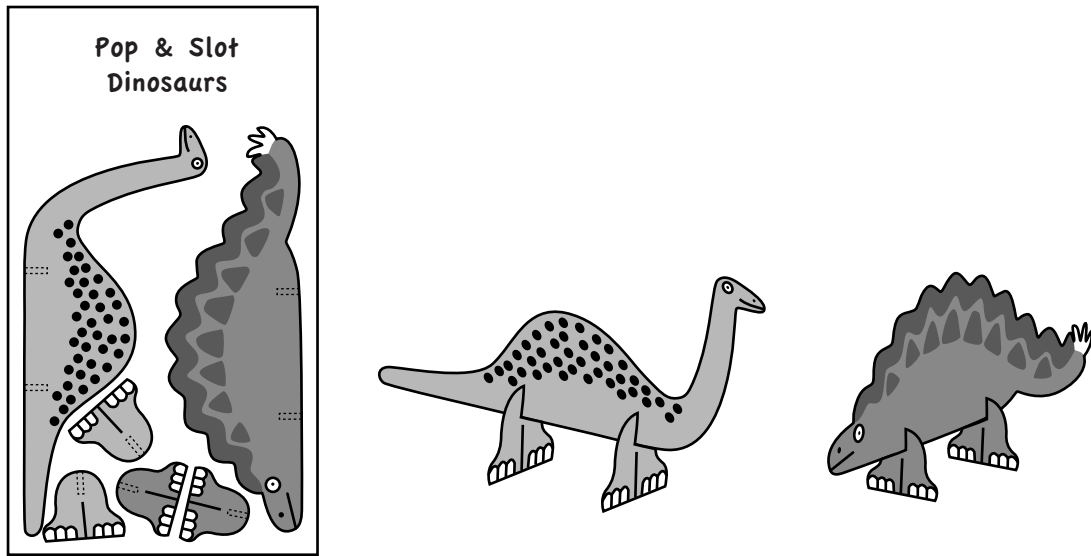


Fig. 2

Give **one** benefit of using slots to assemble the dinosaurs.

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

- (d) (i) Name the process that allows the dinosaur pieces to be pressed-out from the backing card.

..... [1]

- (ii) Explain why this process is appropriate for the activity pack.

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

**8**

- (e) The outer box of the activity pack will be designed so it can be reassembled into a 3D background scene for the dinosaur models.

Use sketches and notes to show **one** design for the background scene.  
The design must:

- reassemble into a 3D scene,
- have a dinosaur related theme,
- show how it fits together.

[4]





10  
SECTION B

Answer **all** questions.

You are advised to spend 50 minutes on this section.

17 Fig. 3 shows a shoe box for a pair of trainers.

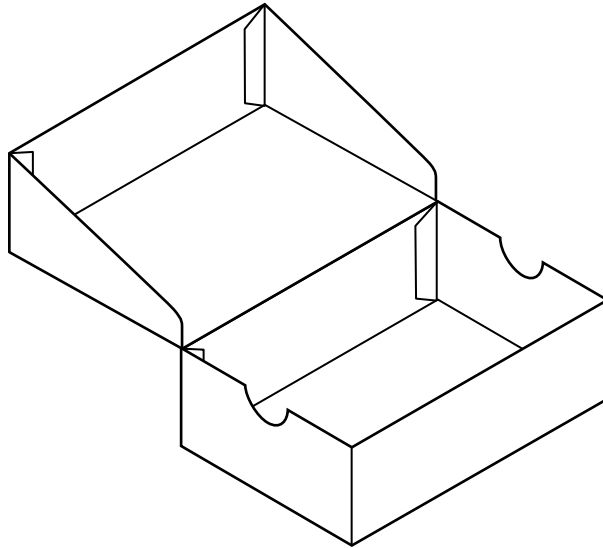
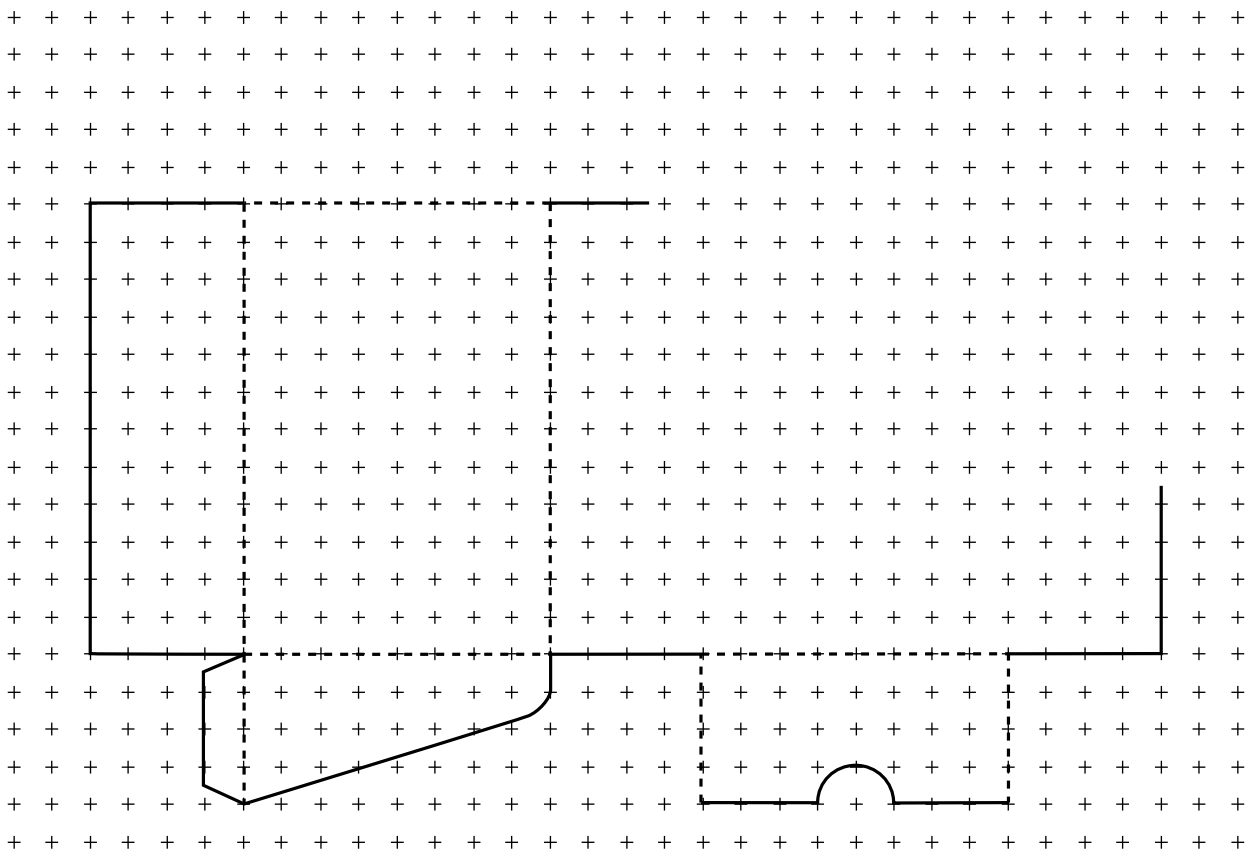


Fig. 3

(a) Complete the development (net) below of the shoe box shown in Fig. 3.



[5]

- (b) Fig. 4 shows a logo design that is to be printed onto the shoe box. All sides of the logo are equal in length.



Fig. 4

- (i) Name the shape of the logo.

..... [1]

- (ii) Tick (✓) the type of formatting that has been applied to the lettering to make it angled.

Bold	Italic	Justify

[1]

- (c) The manufacturer of the trainers has found an image of an athlete on the internet. He wants to print the image onto the shoe box.  
Give **two** copyright issues associated with using images downloaded from the internet.

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

- (d) The boxes are to be manufactured from corrugated card in quantities of 5000.

- (i) State **one** suitable method of printing the logo onto the box.

..... [1]

- (ii) State **two** quality control checks that would be carried out before the boxes are printed.

1 .....

2 .....

[2]

- (e) When in use, most of the shoe boxes come apart because the glue flaps are too small to hold the box together.

Tick (✓) the reason for this problem:

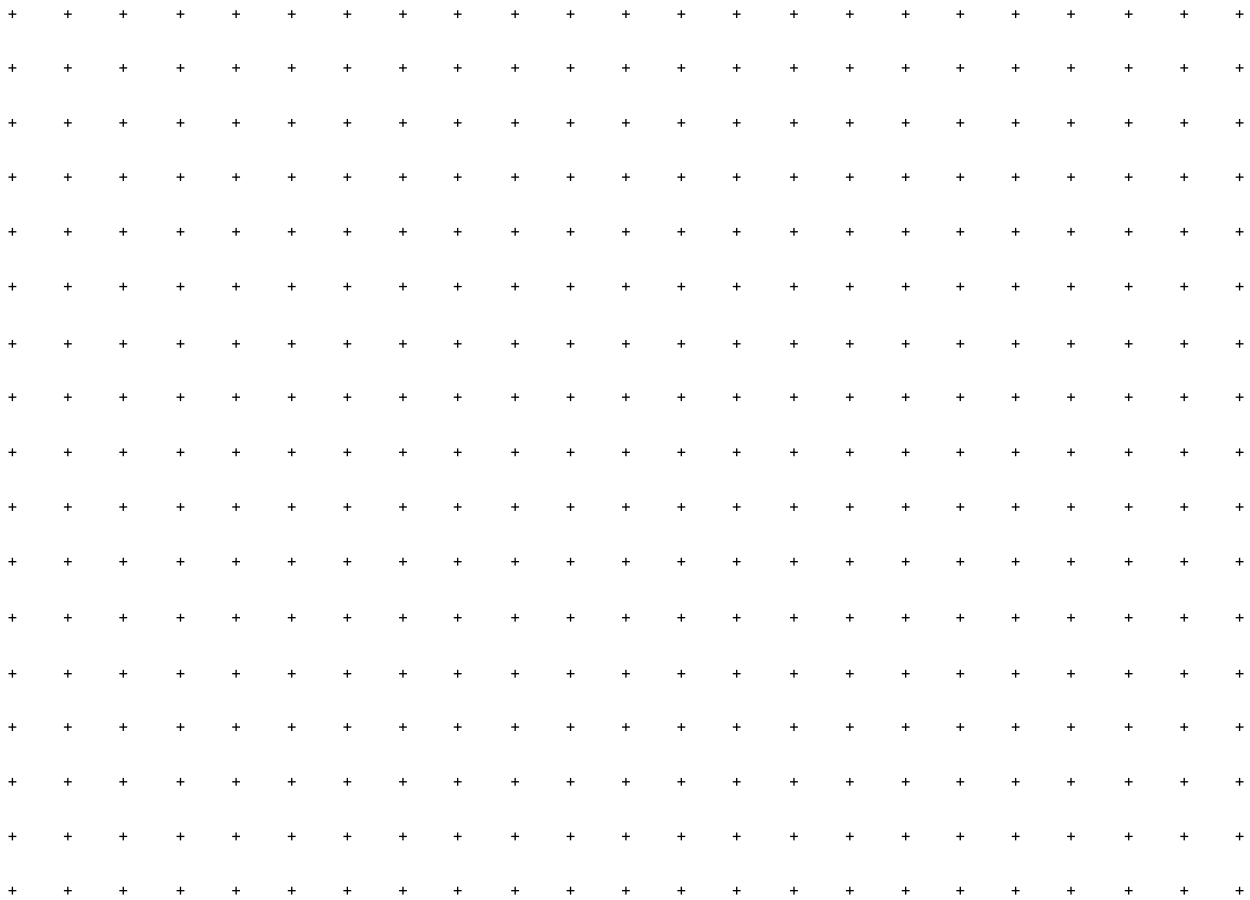
Poor quality of the materials	
Poor quality of the manufacture	
Poor quality of the design	

[1]

- (f) The table below shows the numbers of different types of trainers stocked in a shop.

Trainer type	Number in stock
Tennis	8
Running	11
Weight training	3
Basketball	6
Hockey	7

In the space below, draw a suitable graph to display the data in the table.



[2]

18 Fig. 5 shows a mechanism inside a pop-up card.

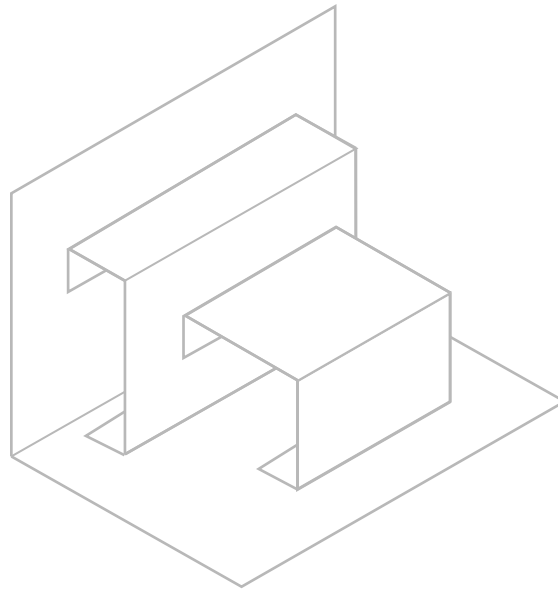
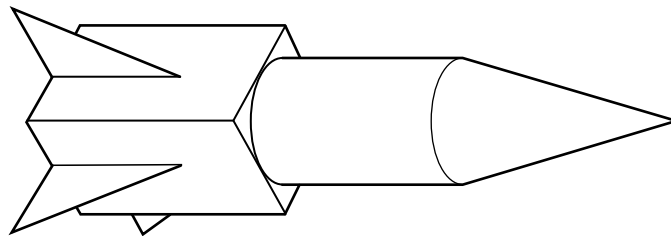


Fig. 5

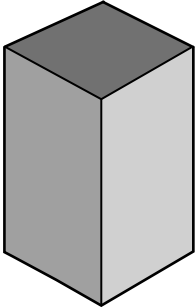
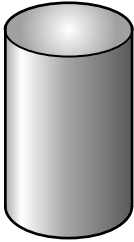
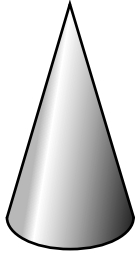
(a) Apply the thick and thin line technique to the pop-up mechanism in Fig. 5. [2]

(b) Name the type of pop-up mechanism shown in Fig. 5.  
 ..... [1]

(c) The design on the front of the pop-up card includes an image of a rocket. The rocket is made from different 3D shapes.



Complete the table below by naming the 3D shapes used to make the rocket.

		
Cuboid		

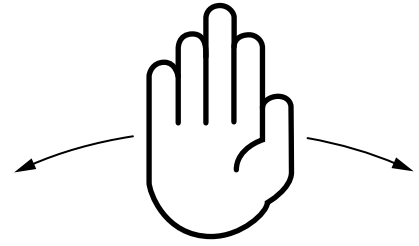
[2]



(e) A greetings card manufacturer wants a design for a leaving card.

Use sketches and notes to show **one** idea for the card.  
The card must:

- incorporate a waving hand in the design,
- use a mechanical linkage to make the hand wave,
- be operated by a simple push-pull tab,
- include an appropriate graphic design.



[6]

19 Fig. 7 shows a menu holder made from thin plastic sheet.

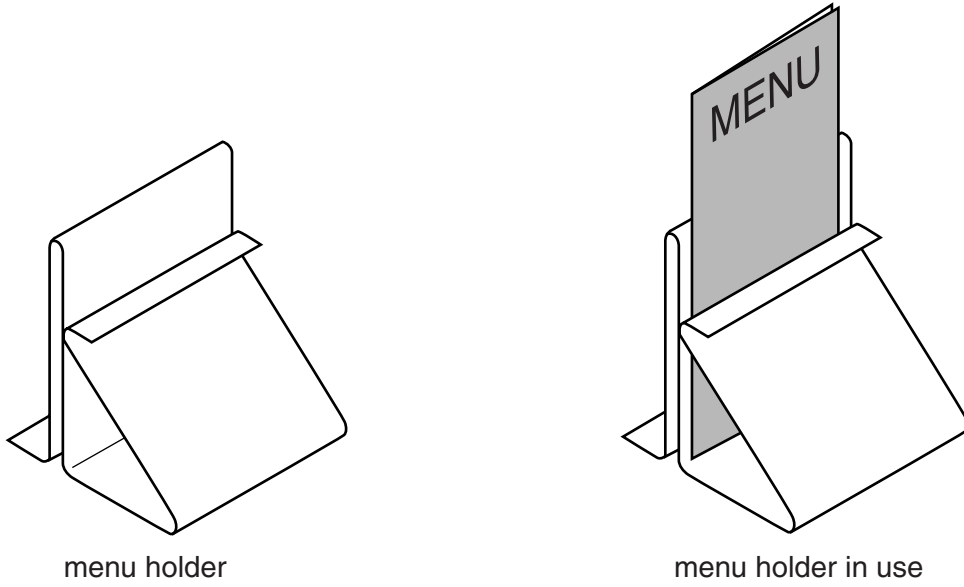


Fig. 7

(a) Complete the orthographic view below of the menu holder shown in Fig. 7.

Orthographic drawing grid with the following views:

- PLAN:** A top-down view showing a circle with a horizontal centerline and a trapezoidal shape to its right. The trapezoid has a vertical right edge and a horizontal top edge. A dashed line indicates the hidden part of the centerline.
- END VIEW:** A side view showing a vertical line on the left, a horizontal line at the top, a diagonal line sloping down to the right, and a horizontal line at the bottom. The top-left corner is rounded.
- FRONT VIEW:** A front view showing a vertical line on the left, a horizontal line at the top, a horizontal line at the bottom, and a vertical line on the right. The top-left corner is rounded.



- (b) The plastic sheet is easy to bend to shape.  
Give **one** other reason why thin plastic sheet would be used for the menu holder.

..... [1]

- (c) The table below shows the processes used to manufacture the menu holder.  
Complete the table by stating **one** tool / item of equipment for each process.

Process	Tool / item of equipment
Cutting the plastic sheet to size	
Bending the plastic sheet to shape	

[2]

- (d) A risk assessment of the making process for the menu holder is needed.

- (i) Identify a possible risk when bending the plastic sheet to shape.

..... [1]

- (ii) State how this risk could be minimised.

..... [1]



**ADDITIONAL ANSWER SPACE**

If additional answer space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margins.

This section of the page is a large, empty area of lined paper. It features a vertical solid line on the left side, creating a margin. The rest of the page is filled with horizontal dotted lines, providing space for writing answers. The lines are evenly spaced and extend across the width of the page.

A large area of the page is reserved for writing, featuring a vertical margin line on the left and horizontal dotted lines for ruling.



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