

Surname						Other Names					
Centre Number						Candidate Number					
Candidate Signature											

For Examiner's Use

General Certificate of Secondary Education
June 2007

**DESIGN AND TECHNOLOGY
(GRAPHIC PRODUCTS)
Written Paper
Higher Tier**

**3543/H
H**



Tuesday 5 June 2007 1.30 pm to 3.30 pm

For this paper you must have:

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

You may also use marker pens and 45/60 degree set squares.

For Examiner's Use			
Question	Mark	Question	Mark
1		5	
2		6	
3		7	
4		8	
Total (Column 1)		→	
Total (Column 2)		→	
TOTAL			
Examiner's Initials			

Time allowed: 2 hours

Instructions

- Use blue or black ink or ball-point pen.
- 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.
- Detach the blue sheet from the back of this examination paper to use in between the sheets to prevent ink bleeding through to the next sheet.
- Do **not** hand in the blue sheet at the end of the examination.

Information

- The maximum mark for this paper is 125.
- The marks for questions are shown in brackets.
- All dimensions are given in millimetres unless otherwise stated.
- You are reminded of the need for good English and clear presentation in your answers.

Advice

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

This question is about marketing and product analysis and is worth 11 marks.

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

1 AQA is to market a range of low cost *disposable* mobile phones which can be *used in an emergency*.

They will have a limited range of functions including calling home, calling a friend and contacting the emergency services.





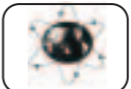





The phones' main users will be teenagers who are at school, university students, or young people living away from home.

Several mobile phones were investigated and analysed.

The results are presented in the table below.

Complete **Table 1** by adding your comments in the appropriate spaces.

Table 1


Mobile phones	Typical user / buyer	An aesthetic feature of the phone	Function symbols on box
<div>A <i>value</i> phone</div> <div></div>	<div>The user of this <i>value</i> phone is likely to be . . .</div> <div><i>An elderly person</i></div>	<div>This phone has the following aesthetic feature:</div> <div><i>A silver metallic finish</i></div>	<div><div>TXT</div>(a)</div> <div><div></div>(b)</div>
<div>A <i>fashion</i> phone</div> <div></div>	<div>The user of this <i>fashion</i> phone is likely to be . . .</div> <div><i>A girl or young woman</i></div>	<div>This phone has the following aesthetic feature:</div> <div>.....</div> <div>.....</div> <div>.....</div>	<div><div></div>(c)</div> <div><div></div><i>Access to the internet</i></div>
<div>A <i>smart</i> phone</div> <div></div>	<div>The user of this <i>smart</i> phone is likely to be . . .</div> <div><i>A business person</i></div>	<div>This phone has the following aesthetic feature:</div> <div>.....</div> <div>.....</div> <div>.....</div>	<div><div></div>(d)</div> <div><div></div>(e)</div>
<div>A <i>disposable</i> phone</div> <div></div>	<div>The user of this <i>disposable</i> phone is likely to be . . .</div> <div>.....</div>	<div>This phone has the following aesthetic feature:</div> <div>.....</div> <div>.....</div> <div>.....</div>	<div><div>999</div>(f)</div> <div><div></div>(g)</div>

(11 marks)

This question is about lighting effects and Computer Aided Design (CAD) and is worth 16 marks.

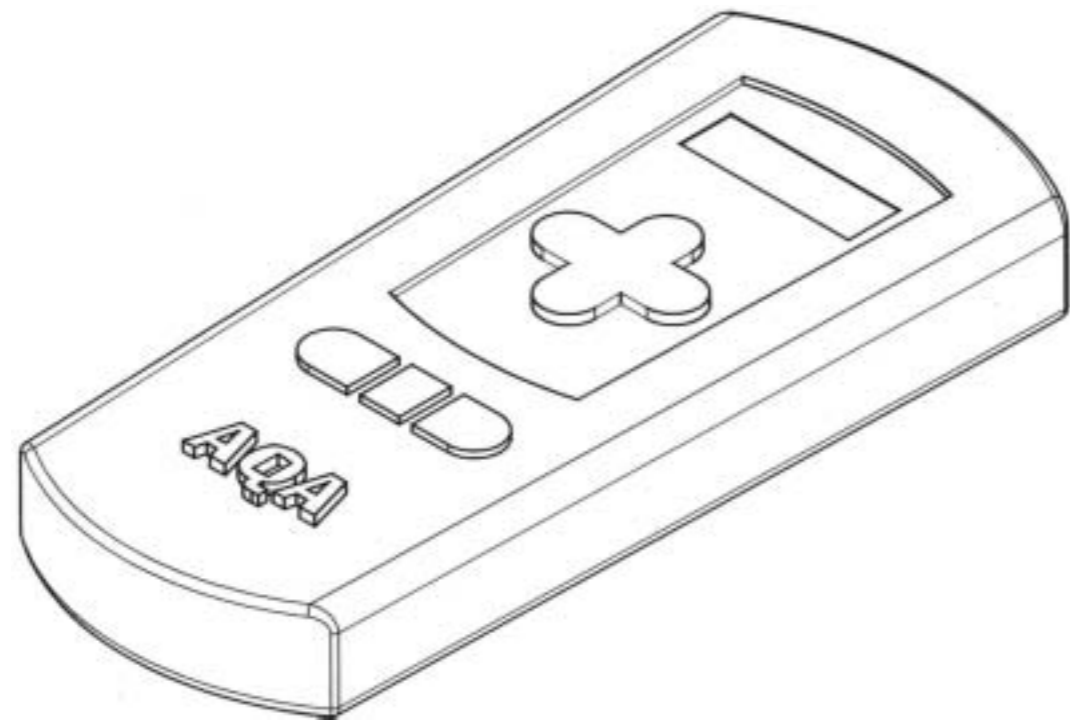
You are advised to spend about 15 minutes on this question.

2 A pictorial drawing of a mobile phone is given in **Figure 1**.

- (a) (i) Use the following symbol  to represent a light source, indicating where you would place the light source when rendering the pictorial drawing of the mobile phone in **Figure 1**. (1 mark)
- (ii) Render the pictorial drawing of the mobile phone (**Figure 1**) taking into account the position of *your* light source. (6 marks)

Do **not** add extra text or other details.

Figure 1




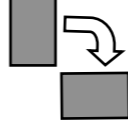

(b) The mobile phone could be rendered using a CAD software package.

Drawing programs use symbols or icons to represent drawing and colouring tools.

Three icons are shown in **Table 2**.

- (i) Give the meanings of icons 2 and 3 and explain their use. (6 marks)
- Icon number 1 has been completed for you.
- (ii) For number 4, design an icon that represents the *print* command. (3 marks)
- Use the sketching space to develop a suitable design.

Table 2

Number	Icon	Meaning	Use
1		Zoom in	To magnify part of the screen image or drawing
2	
3	
4		Print	When selected, sends the screen image to the printer

Sketching space

This question is about letter styles and is worth 13 marks.

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

3 (a) AQA have decided to package the mobile phone in a box.

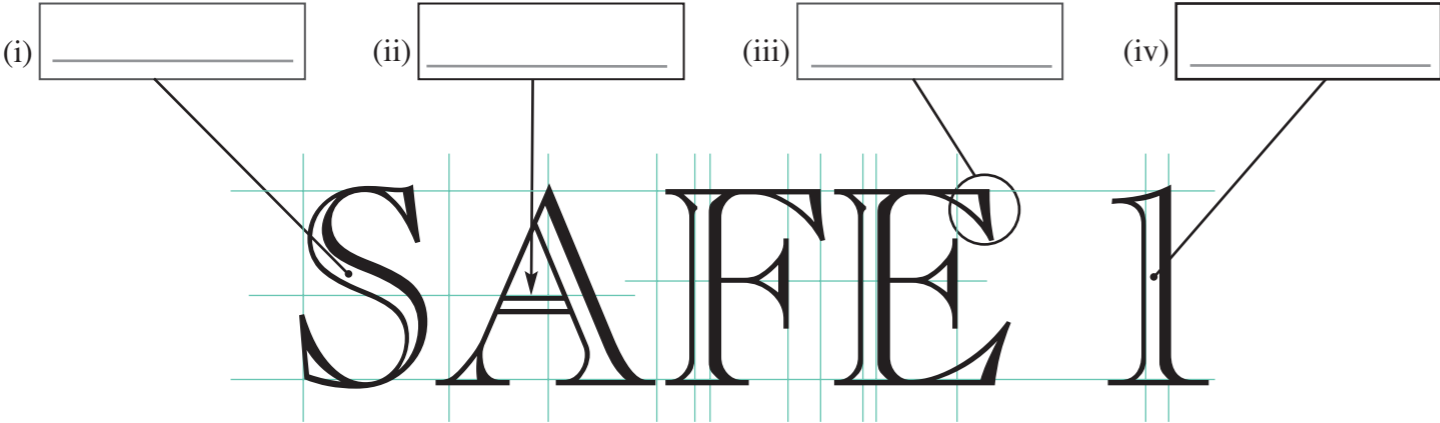
The name of the phone is SAFE 1.

This name will be printed on the lid of the box.

Name the **four** parts of the letters indicated in **Figure 2**. Choose from the following list.

Bar	Continuous curve	Curve	Serif	Stem
-----	------------------	-------	-------	------

Figure 2



(4 marks)

(b) The name ‘SAFE 1’ will be printed on the lid of the box.

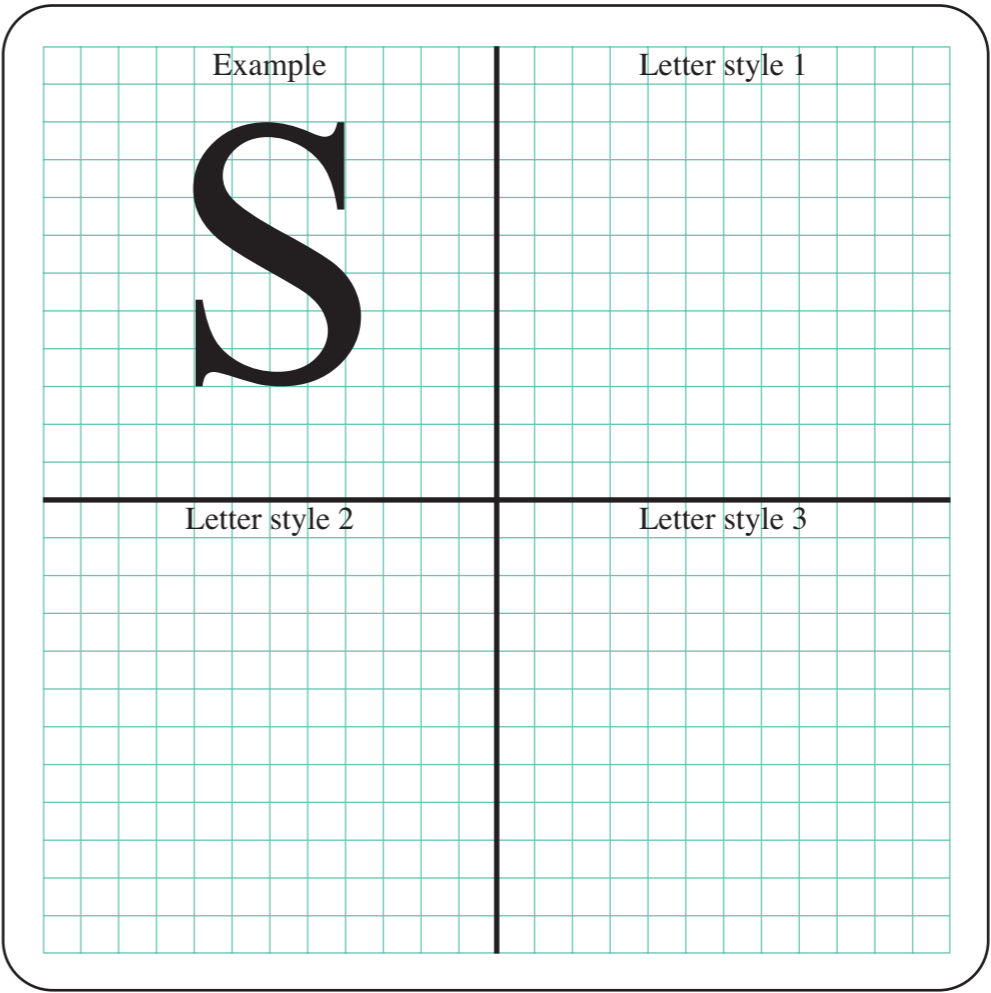
A typical letter style is shown in **Figure 3**.

(i) In **Figure 3**, sketch **three** different styles for the letter **S** in the spaces provided.

Use only upper case (capital) letters.

Your preferred letter style will be used in Question 5. (6 marks)

Figure 3



(ii) My preferred letter style is number:

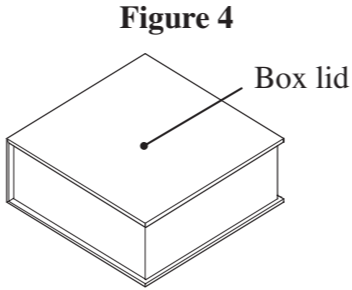
Explain why this is your preferred letter style.

(3 marks)

This question is about development of ideas and is worth 16 marks.

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

4 The mobile phone is to be packaged in a box (**Figure 4**).



The box lid is to be decorated with images on the theme of *emergency use*.

(a) Sketch a range of different images on the theme of *emergency use* in the space below (**Figure 5**).

Marks will be awarded for:

- (i) sketching a range of different images on the given theme, (3 marks)
- (ii) indicating colour, (2 marks)
- (iii) adding notes to explain your ideas. (3 marks)

Figure 5

Range of different images based on the theme *emergency use*, indicating colours used.

Add notes to explain your ideas.

(b) Develop your best image from part (a) into a final design in the space below (**Figure 6**).

Clearly show the changes and modifications you make.

Marks will be awarded for:

- (i) the image taken forward from part (a), (1 mark)
- (ii) the development of the image into a final design, (4 marks)
- (iii) evaluating the changes. (3 marks)

Figure 6

Develop your best image from part (a) into a final design.

(This final design will be required in Question 5.)

Evaluation of changes

.....

.....

.....

.....



This question is about layouts and presentation drawings and is worth 18 marks.

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

5 The mobile phone is to be packaged in a box (**Figure 7**).

- (a) Using the specification given in **Figure 8**, sketch **three** suitable layouts for a box lid design in **Figure 10**.

Use simple shapes to represent the areas covered by the features given in the specification.

Label the features of your sketches.

(6 marks)

Figure 7

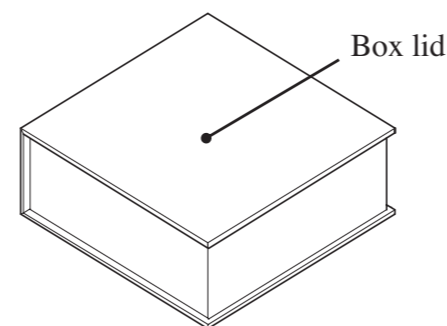


Figure 10

Sketches of layouts for box lid designs

Layout 1



Layout 2

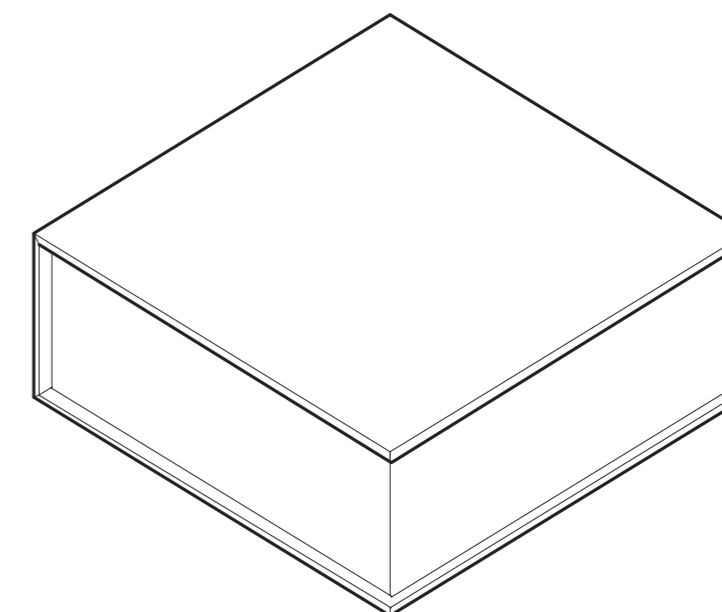


Layout 3



Best layout design

Figure 11



- (c) To further improve your box lid design, which design feature would you change, and why?

The feature I would change is

.....

because

.....

.....

(3 marks)

Figure 8

Specification for box lid design

- Emergency use image (From **Question 4**)
- The letter style of the product's name, SAFE 1 (From **Question 3**)
- AQA logo (**Figure 9**)

Figure 9



Sheet 5

This question is about British Standard conventions and printing effects and is worth 15 marks.

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

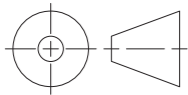
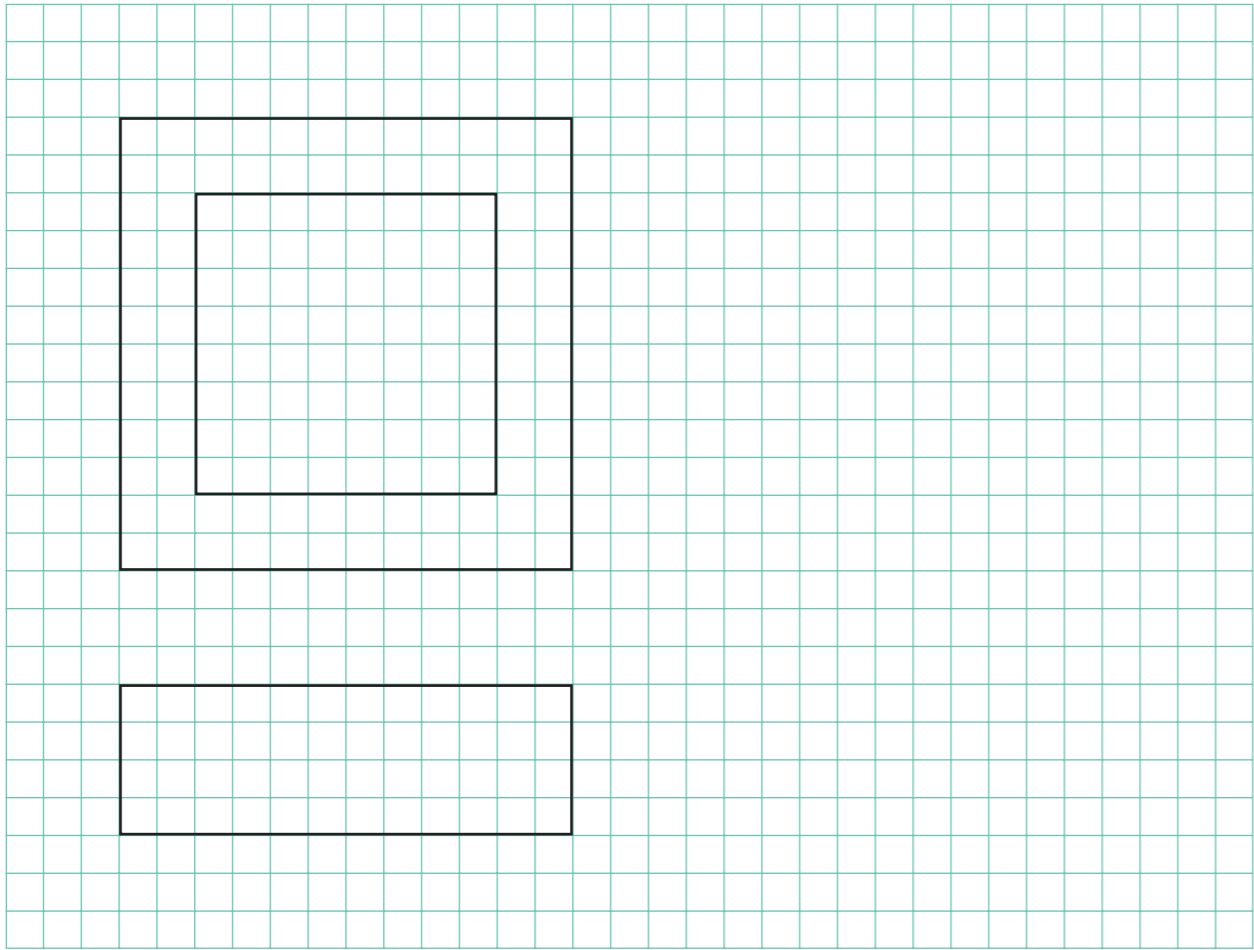
6 A pictorial drawing of a different packaging is shown in **Figure 12**. The mobile phone is stored in the recess of the packaging.

(a) **Figure 13** shows a *half full size* front elevation and plan of the inner packaging, drawn in Orthographic projection.

Using British Standard conventions:

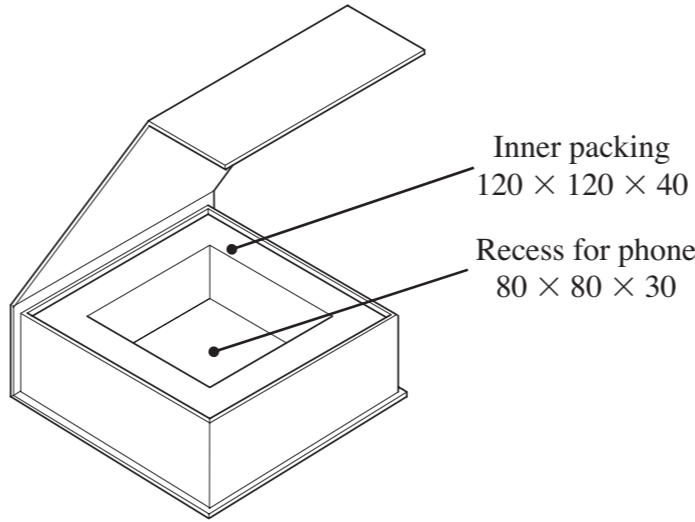
- (i) label the plan, (1 mark)
- (ii) draw the end view showing hidden detail, (5 marks)
- (iii) add two dimensions, (4 marks)
- (iv) complete the scale. (1 mark)

Figure 13



Scale :

Figure 12



(b) The package is to be U.V. varnished.

(i) State what U.V. stands for.

..... (1 mark)

(ii) Explain how ‘spot varnishing’ is used to enhance a package.

.....
.....
..... (3 marks)

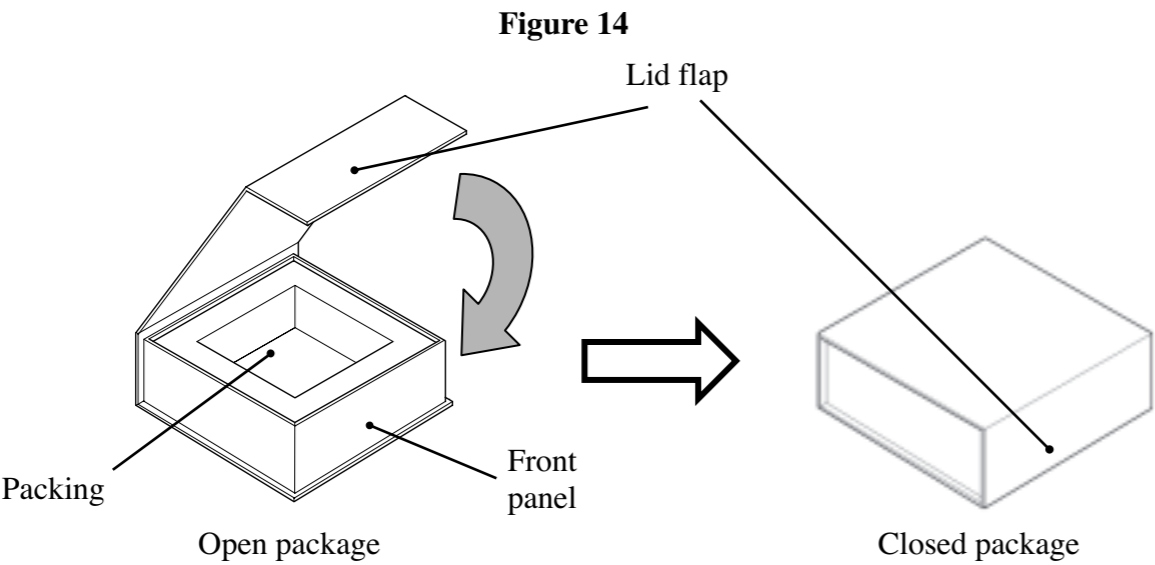
Turn over for the next question

This question is about materials and components and is worth 15 marks.

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

7 The package for the mobile phone is shown in **Figure 14**.

It is designed to be re-used.



(a) When closed, the lid flap has to be firmly held against the front panel of the package.

With notes and sketches, show how the lid flap can be held closed when required. (6 marks)

Blank area for notes and sketches to show how the lid flap can be held closed when required.

(b) The packing which holds the phone in the box could be made from several different materials. Some of these are shown in **Table 3**.

Complete the table.
(One material has been completed for you.)

Table 3

Material	Manufacturing Process	Biodegradable	Source	Useful Property
White board (card)	Die cut	Yes	Wood, rags, clay	Good strength to weight ratio
PVC		No		A thermoplastic, strong, rigid
Expanded polystyrene	Moulding		Oil	
Pulp paper	Compression moulding			
Vegetable protein board	Compression moulding	Yes		

(9 marks)

This question is about Cultural, Social and Environmental Issues and is worth 21 marks.

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

8 Most mobile phones are powered by rechargeable batteries.

(a) Information about the disposal of batteries can be given in the form of signs and symbols.

Complete **Table 4** by giving the meaning of each sign or symbol and explain the environmental reason for it.

Table 4

Sign or Symbol	Meaning	Environmental Reason
Red triangle with jagged arrow inside.	<i>Warning, danger of electric shock</i>	<i>Device contains electrical energy that could injure if touched</i>
Wheelie bin with red cross through.
Black flame with red cross through.

Due to copyright issues, the three symbols above have been removed for electronic publication. (8 marks)

(b) **Figure 15** shows the European Union Eco-label, which can be awarded to businesses that market products and services that are kinder to the environment.

(i) How is it identified as a European Union symbol?

.....
.....
(2 marks)

(ii) Why is a flower design used?

.....
.....
(2 marks)

(iii) Why are the colours appropriate?

.....
.....
(2 marks)



(c) **Figure 16** is a photograph of a hand-cranked dynamo charger for electronic items powered by rechargeable batteries. The crank handle is turned by hand.

Design a symbol in the style of those in **Table 4** to show a ‘wind-up’ action. Use **Figure 17** to sketch designs before drawing your final symbol. (7 marks)

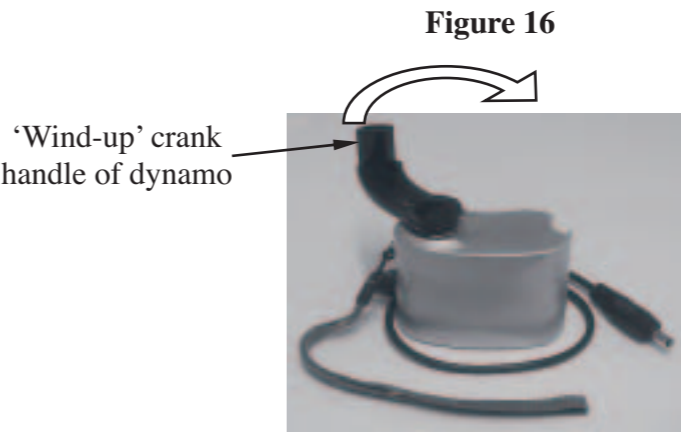


Figure 17

Designing space

‘Wind-up’ Symbol

END OF QUESTIONS