

**Q1.**

This question is about materials.






(i) Complete the table below for **three** products.





For each product you have chosen you should:

- name a specific main material or ingredient
- choose the correct finishing technique from the list.

An example is given for you.

Finishing techniques			
Self finish applied in mould	Hand painted	Wax coating applied	Glazed
Transfer image applied	Embossed	Zinc plated	Piped
Stain resistance coating applied	Oiled	Browned using high temperature	Screen printed

Product	Material / ingredient	Finishing technique
Drinks can 	<i>Aluminium</i>	<i>Screen printed</i>
Cottage Pie 		
Helmet 		
Tie 		
Screws 		

<p>Soup carton</p> 		
<p>Cup and saucer</p> 		
<p>Garden bench</p> 		
<p>Wedding invitation</p> 		

(6)

(ii) Explain why finishes are applied to materials.

.....

.....

.....

.....

(2)  
(Total 8 marks)

**Q2.**

This question is about designing packaging for children's lunch products.

A national supermarket wants to market a complete packed lunch product for children.

The product will contain these items:

Sandwich



Yogurt



Apple



Drink



Snack bar



The table below gives some of the functions of the packaging of the packed lunch product. Explain why each function is necessary.

An example is completed for you.

Function	Explanation
Contain	<i>The packaging will contain 5 items. It will need to keep the items together and prevent any falling out.</i>
Protect	<p>.....</p> <p>.....</p> <p>.....</p>
Display	<p>.....</p> <p>.....</p> <p>.....</p>
Inform	<p>.....</p> <p>.....</p> <p>.....</p>

3×2  
**(Total 6 marks)**


**Q3.**

This question is about materials and sustainability.

 Cutlery	 Spatula	 Vase	 Greetings card	 Bread
 Oven glove	 Food packaging	 Sketchbook	 Wine goblet	 Jeans

- (i) Choose **two** products from those shown above.  
For **each** product you have chosen, complete the table below.

An example is given for you.

Product	Main material	Source of material	Renewable? ✓ or ✗
 Drink can	<i>Aluminium</i>	<i>Bauxite ore</i>	✗

(6)

 Cutlery	 Spatula	 Vase	 Greetings card	 Bread
 Oven glove	 Food packaging	 Sketchbook	 Wine goblet	 Jeans

- (ii) Choose **one** product from those shown above.  
Name the main material and give **two** of its properties.  
Explain why these properties make the material suitable for the product.

Product .....

Material .....

Property 1 .....

(1)

Explanation .....

.....

(2)

Property 2 .....

(1)

Explanation .....

.....

(2)

(Total 12 marks)

**Q4.**

This question is about designing a packaging solution for a fragrance bottle.

The fragrance bottle below needs to be packaged.



The table below gives one function of packaging for the fragrance bottle above. Give **two** more functions and in each case explain your answer.

<b>Function</b>	<b>Explanation</b>
<i>Transport</i>	<i>The packaging will allow lots of fragrance bottles to be stacked together for transportation to the shop and reduce space needed for storage.</i>
.....	..... ..... ..... .....
.....	..... ..... ..... .....

**(Total 6 marks)**





**Q5.**

This question is about environmental issues.

It is important to consider sustainability when designing products.

Explain the meaning of each of the symbols shown below.

Give an example of a product which would have the symbol on it.

Symbol	Meaning	Product
		
		
		
		

(Total 8 marks)

**Q6.**

This question is about materials.

Complete the table below.

You should:

- identify a specific material which comes from each of the sources
- tick whether the material is renewable or non-renewable
- name a product made from the material.

An example is given for you.

<b>Source</b>	<b>Specific material</b>	<b>Renewable</b>	<b>Non-renewable</b>	<b>Product</b>
<i>The Earth and rocks</i>	<i>Aluminium</i>		✓	<i>Ladder</i>
Oil				
Plants and trees				
Animals				

(Total 9 marks)



**Q7.**

Designers often get inspiration for new products from design movements or the work of other designers.

In this question you will consider how the Memphis design movement could influence the design of new products.

You are going to create a design for a product for a child in the **under-seven age range**. This product must be based on the Memphis style.

Name the product you are going to design.

.....

In the table below give **three different** design criteria which will make your product suitable for the user.

Give **one** reason for each design criteria.

An example is given for you.

Example Design Criteria	Reason
<i>Should be hard wearing.</i>	<i>So that it stands up to everyday use and does not break easily.</i>

Your Design Criteria	Reason
1 .....	..... ..... ..... .....
2 .....	..... ..... ..... .....
3 .....	..... ..... ..... .....

(Total 6 marks)

**Q8.**

This question is about designing.

Products are often designed with a user in mind.

Choose a target user from the list below. Circle your choice.

elderly person	teenager	young parent
toddler	male mid 20s	

Name a product you could design for the user you have chosen.

You will be asked to create a design for this product later.

Product .....

Give **three** *different* design criteria which will make your product suitable for the user.

Give **one** reason for each design criteria.

An example is given for you.

<b>Design Criteria</b>	<b>Reason</b>
<i>Should be inexpensive to buy</i>	<i>So that a young parent can afford to buy it</i>
1 .....	.....
2 .....	.....
3 .....	.....

**(Total 6 marks)**

**M1.**

(i) Best three responses in each column.

<b>Product</b>	<b>Material / ingredient</b>	<b>Finish technique</b>
<b>Drinks can</b>	<b>Aluminium</b>	<b>Screen printed</b>
<b>Cottage Pie</b>	Potato / minced meat / specific meat e.g. beef, lamb, pork or quorn, lentils or other vegetarian substitute	Potato browned using high temperature / piped
<b>Helmet</b>	HDPE / ABS / Polycarbonate / carbon fibre reinforced polymer (climbing)	Self-finish applied in mould
<b>Tie</b>	Silk / polyester / wool	Hand painted / screen printed / stain resistance coating
<b>Screws</b>	(Mild) steel, stainless steel (medical and marine applications), brass	Zinc plated
<b>Soup carton</b>	Card, cardboard, waxed card / foil lined card (composites)	Wax coating / screen printing
<b>Cup and saucer</b>	Porcelain / earthenware clay / China clay / glass / melamine	Transfer image / hand painted / embossed / glazed / self finished in mould
<b>Garden bench</b>	Teak / elm / mahogany / iroko / oak (hard woods) / recycled plastic? / Polypropylene (PP)	Oiled / waxed
<b>Wedding invitation</b>	Card or other appropriate named papers and boards, cartridge paper (insert)	Embossed / screen printed / glazed / wax coating applied

3x2 marks

6

(ii) to visually enhance the material e.g. gloss / silk / matt / metallic / hammered finish;  
to protect from deterioration, corrosion;  
to make more durable / waterproof

Sound response which makes reference to two of the ideas above in brief or one idea in detail.

2 marks

Brief / single word answer with reference to one idea only.

1 mark

2

[8]

**M2.**

<b>Function</b>	<b>Explanation</b>
Contain	The packaging will contain 5 items. It will need to keep the items together and prevent any falling out.
Protect	The packaging should protect the contents from being damaged e.g. the fruit from becoming bruised.
Display	The packaging should tell the customer what is inside and encourage the customer to buy the product. Attract / eyecatching.
Inform	Packaging should display nutritional information, ingredients to prevent allergies, consume by date etc.

No marks for function.

No marks for rewording of example.

Explanation shows good understanding of the function relative to the packed lunch packaging.

**2 marks**

Explanation is vague and lacking in understanding of the function relative to the packed lunch packaging.

**1 mark**

**3 × 2 marks**

**[6]**

**M3.**

(i) Please refer to table and answers below. One mark for each correct answer.

Product	Main material	Source	Renewable?
	Stainless steel Silver	The Earth and rocks, oil etc	X
	Beech Rubberwood	Plants and Trees	✓
	Clay	The Earth and rocks, oil etc	X
	Card	Plants and trees	✓
	Flour	Plants and trees	✓
	Cotton	Plants and trees	✓
	Polyester wadding	The Earth and rocks, oil etc	X
	PET Plastic	The Earth and rocks, oil etc	X
	Cartridge paper	Plants and trees Timber Wood pulp	✓
	Glass Polycarbonate	The Earth and rocks, oil etc	X
	Cotton Denim	Plants and trees	✓

6

(ii) A suitable property relevant to main material.

1 mark

Explanation shows good understanding of the working properties of the material.











2 marks

Explanation is vague and lacking in understanding of the properties of the materials.

1 mark

Property must match product even if material is incorrect.

Please refer to table below.

 <p style="text-align: center;"><b>Cutlery</b></p>	 <p style="text-align: center;"><b>Spatula</b></p>	 <p style="text-align: center;"><b>Vase</b></p>	 <p style="text-align: center;"><b>Greetings card</b></p>	 <p style="text-align: center;"><b>Bread</b></p>
<p>Stainless steel: Scratch resistant; corrosion resistant, lustrous, inert – will not react with drink - impervious to water and air;</p> <p>Silver: Lustrous, tarnishes in air</p>	<p><b>Beech:</b> Midtone colour hardwood with a fine texture. Close even grain, doesn't splinter. Available in planks / boards Can be large sections Planed and unplanned Mouldings</p> <p><b>Rubberwood:</b> soft wood, pale colour, relatively strong, used for hard board, particle board, door frames, furniture, fibre board</p>	<p>e.g. stoneware clay Accepts glaze; non porous when glazed and fired</p>	<p>White board: Strong, can be printed on, inexpensive, can be die cut or creased.</p>	<p>Flour: Provide starchy carbohydrates and fibre Good source of energy</p>
 <p style="text-align: center;"><b>Oven Glove</b></p> <p>Cotton: Lightweight; durable; washable – stains easily removable at low temperature; heat resistant Polyester wadding: Good insulator</p>	 <p style="text-align: center;"><b>Food packaging</b></p> <p>PET plastic: Clear – displays product; recyclable; vacuum formed; strong to protect food inside; inert – will not affect food; waterproof; can be incinerated to</p>	 <p style="text-align: center;"><b>Sketchbook</b></p> <p>Cartridge paper: high quality type of heavy paper used for illustration and drawing. Accepts drawing and painting media well.</p>	 <p style="text-align: center;"><b>Wine goblet</b></p> <p>Glass: Clear; lightweight when blown in thin profile; can be shaped into 3D shapes; inert – will not react with wine; displays wine; easily broken. Recyclable.</p>	 <p style="text-align: center;"><b>Jeans</b></p> <p>Cotton denim: Accepts indigo dye well; hard wearing / durable; available in different weights; can be blended with lycra to make stretch</p>

	dispose of.		Polycarbonate: Transparent, shatterproof, lightweight, cast or compression moulded.	
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2 × 3 marks

6

[12]

**M4.**

Contain, Protect, Inform, Display, Preserve. NOT transport as is the example. Any sensible reason appropriate to product selected.

*1 mark for function.*

*2 marks for explanation.*

Accept other suitable functions e.g. promote, keep secure but NOT 'safe' or product safety.





*Function must match explanation and be appropriate to product.*

[6]

**M5.**

*Please refer to table and answers below.*

(8×1 mark)

Symbol	Meaning	Product
	Recyclable material	Any acceptable product which can be recycled e.g. sandwich packaging
	Recyclable – high density polystyrene Accept recyclable plastic  Resin Identification Code to help recyclers to identify main plastic used.	Milk crates. Bottles, barrels, tanks, pipes, chemical pumps, machine parts (e.g. gear wheels). Houseware (e.g. buckets, bowls)
	Reusable – take to bottle bank	Wine bottle
	Do not throw in everyday bin	Batteries

[8]

**M6.**

Source	Specific material	Renewable	Non-renewable	Product
<i>The Earth and rocks</i>	<i>Aluminium</i>		✓	<i>ladder</i>
Oil	Any named plastics or synthetic materials; printing inks and varnishes used in packaging industries. Plastics used in packaging (almost anything with a POLY in front!)		✓	Any appropriate product which matches the named material
Plants and trees	Any named papers and boards, timber and manufactured boards, nuts, grains, seeds, fruit and vegetables, rice etc. any appropriate named food ingredients; textiles, natural plastics.	✓		
Animals	Any named natural textiles, meat, bone / horn or dairy food ingredients. Tortoise shell, mother of pearl, coral used in decorative items such as jewellery and jewellery boxes, bone glue used in cabinet making (also hide glue, fish glue, hoof glue etc) Rabbit skin glue used in book binding Casein glue is made from milk and is one of our last remaining natural glues used industrially. Laminating ply is a common use as it can be set with heat.	✓		

*Please refer to table and answers above. One mark for each correct answer.*

[9]

**M7.**

Any sensible design criteria identified appropriate for a child in the under-seven age range supported by appropriate reason such as colour to attract target user / activity; material; weight;

*Design criteria identified (1 mark)*

*A suitable reason provided and reason must match design criteria and target user (1 mark)*

*A reason that is not relevant or incorrect (0 marks)*

[6]



**M8.**

Any sensible design criteria identified appropriate to identified product and chosen target user, supported by appropriate reason such as colour to attract target user / fit with current fashion / activity; material; weight; dimensions; ergonomics; taste; texture etc.

Give credit for reason where appropriate even if design criteria incorrect and vice versa.

Design criteria identified

**1 mark**

Appropriate reason

**1 mark**

A reason that is not relevant or incorrect or inappropriate to the product or user

**0 mark**

**Max of 6 marks**

**[6]**

