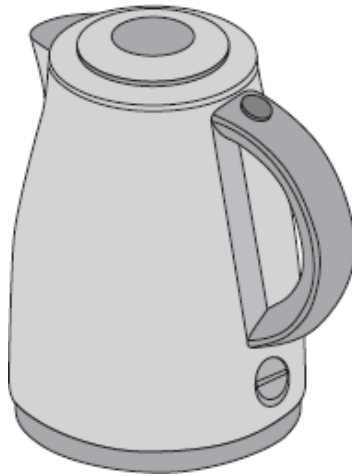


**Q1.**

This question is about product marketing.



For each of the following types of user describe a feature of a kettle that would make it desirable.

(i) Energy conscious

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

**(2)**

(ii) Style conscious

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

**(2)**  
**(Total 4 marks)**

**Q2.**

Smart phones are a recent development in mobile phone technology.



Discuss to what extent mobile phones have developed because of market pull or technology push.

.....

.....

.....

.....

.....

.....

.....

.....

**(Total 4 marks)**

**Q3.**

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 		
Soup carton		

		
<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)

**Q4.** Packaging must have the following design features.  
Explain each feature.

Sustainable

.....

.....

.....

(2)

Educational

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

(2)

Ergonomic

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

(2)  
**(Total 6 marks)**

**Q5.**

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)**

**Q6.**

(i) What is meant by the term *ergonomics*?

.....

.....

**(2)**

- (ii) Explain how the designer considered *ergonomics* in the design of the hair dryer shown below.



.....

.....

.....

.....

.....

.....

.....

.....

(4)  
(Total 6 marks)

**Q7.**

This question is about human factors and product labelling.

- (i) What is meant by the term *anthropometrics*?

.....

.....

(2)

(ii) Explain how *anthropometrics* was used in the design of the hair dryer shown below.



.....

.....

.....

.....

.....

.....

.....

.....

(4)  
(Total 6 marks)

**Q8.**

Knock down fittings are used to assemble flat pack products.

(i) Give **two** advantages to the user of assembling furniture with knock down fittings.

1 .....

2 .....

(2)

(ii) Give **two** advantages to the manufacturer of knock down fittings.

1 .....

2 .....

(2)  
(Total 4 marks)



**Q9.**

This question is about how products have changed over time.

A leading retailer of home products sells many *Flat Pack* items.



Explain the meaning of *Flat Pack*.

.....

.....

.....

.....

**(Total 2 marks)**

**Q10.**

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)**

**M1.**

- (i) Energy conscious:  
Sustainable design – recyclable materials  
Energy efficient – able to boil small amounts / cupful of water at a time  
Window / measure so can see how much water inside  
A rated  
Audible / visual alarm to show when boiled  
Long lasting / durable

One design feature fully explained or two in brief, must be appropriate to user.

**2 marks**

Brief / single word answer, must be appropriate to user.

**1 mark**

2

- (ii) Style conscious:  
High quality / expensive materials  
Sophisticated features – e.g. water may be lit by led blue (cold) to red (hot) to show when ready  
Long-lasting / durable  
Looks good  
Price suggests exclusivity  
Aesthetics – coloured to match interior design / chrome finish etc.

One design feature fully explained or two in brief, must be appropriate to user.

**2 marks**

Brief / single word answer, must be appropriate to user.

**1 mark**

2

**[4]**

**M2.**

Concise and detailed answer which shows a good understanding of how technology push / market pull have both contributed to the development of mobile phones and the market expansion. Response may include product examples or examples of specific technology / improved features.

**4 marks**

Sound and fairly detailed answer which shows a good grasp of how technology push / market pull have both contributed to the development of mobile phones and the market expansion. Response may include product examples or examples of specific technology / improved features.

**3 marks**

Reasonable response which may not fully understand how technology push / market pull have both contributed to the development of mobile phones and the market.

**2 marks**

Limited, superficial or largely incorrect response.

**1 mark**

No credit for consumable products such as disposable razors or batteries

**[4]**

**M3.**

(i) Best three responses in each column.

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

**M4.**

**Sustainable** - Reference to recycling, recyclable materials, packaging could be reused for another purpose, washed etc., durability, use of renewable materials.  
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

Max 1 mark for generic response not linked to specific design feature.

**Educational** – Reference to designing products for children, inclusion of educational device such as game, discovery activity, colouring etc.  
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

Max 1 mark for response not linked to children as intended user

**Ergonomic** – reference to size, weight for children to be able to carry comfortably, open and close easily. Reference to anthropometric data used to design suitable for user.  
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

Max 1 mark for generic response not linked to specific design feature.

3×2 marks

[6]

**M5.**

Function	Explanation
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]

**M6.**

- (i) **Ergonomics** is the science of designing the workplace environment and product interface to fit the user. Proper ergonomic design is necessary to prevent repetitive strain injuries, which can develop over time and can lead to long – term disability. Ease of use, comfort.

*A sound description of ergonomics.*

2 marks

*A simplistic statement.*

1 mark

*e.g. 'when devices and equipment fit the human body'*

1 mark

2

- (ii) Use of materials and styling of handle and grip to be comfortable to use, weight of dryer so doesn't cause discomfort to user / aching arms; hair dryer body insulated so heat doesn't transfer to handle and become hot in use; non slip plastics so doesn't fall out of hand; lightweight materials.

A concise and detailed response showing a good understanding of how ergonomics is used in practice.

2 relevant points developed in detail or 4 in brief.

4 marks

A good response showing a sound understanding of how ergonomics is used in practice. 2 relevant points developed in detail and 1 in brief or 3 in brief.

3 marks

A sound response showing a basic understanding of how ergonomics is used in practice. 1 relevant point developed in detail or 2 in brief. **2 marks**

A simplistic statement which mentions one point only. **1 mark**

4

[6]

**M7.**

- (i) Anthropometrics literally means man (anthro) measurements (metric). It is the measurement of the size and proportions of the human body, as well as parameters such as reach and visual range capabilities. Anthropometrics enables us to properly size items to "fit" the user. Reference to 5<sup>th</sup>, 50<sup>th</sup> and 95<sup>th</sup> percentile.

*A sound description of anthropometrics.*

**2 marks**

Do not accept ergonomics.

*A simplistic statement.*

**1 mark**

2

- (ii) Average data for size of adult hand used to style grip, size of buttons, average reach / distance of end of nozzle from head and handle; measurements for length of cable – reach and height of user in relationship to possible positions of power socket. Average data for men and women selected to ensure fully inclusive. Reference to 5<sup>th</sup>, 50<sup>th</sup> and 95<sup>th</sup> percentile.

Do not accept ergonomics.

A concise and detailed response showing a good understanding of how anthropometrics is used in practice. 2 relevant points developed in detail or 4 in brief. **4 marks**

A good response showing a sound understanding of how anthropometrics is used in practice. 2 relevant points developed in detail and 1 in brief or 3 in brief **3 marks**

A sound response showing a basic understanding of how anthropometrics is used in practice. 1 relevant point developed in detail or 2 in brief. **2 marks**

A simplistic statement which mentions one point only. **1 mark**

4

[6]

**M8.**

- (i) Give two advantages to the user of using assembling furniture with knock down fittings.

e.g. Many products use the same fixings so easy to use time and again; Retailer / manufacturer can provide spares if one lost; fixings easy to remove so product can be disassembled and reassembled if move house. Most product assembly uses Allen key and screw driver which are simple to use by everyone and do not require any prior experience or technical knowledge. Assembly is accessible to most end users. Sense of satisfaction when completed. Can purchase 'same' base units / modules to match.

Only accept 'cheap', 'easy', if justified.

*1 mark per advantage identified (2x1 mark)*

2

- (ii) Give two advantages to the manufacturer of knock down fittings.

e.g. Components are made in large quantities by specialist manufacturers to reduce costs and to make product maintenance easier; Components are often made from different materials to the main product and require very different manufacturing systems so it would not be appropriate for one manufacturer to make everything. Some retailers such as IKEA are large enough to have their own manufacturing facility to make fixings so in its interest to use them for lots of its products. Many different products with different functions require the same components which makes the components a product themselves.

Only accept 'cheap', 'easy', if justified.

*1 mark per advantage identified (2x1 mark)*

2

[4]

**M9.**

Products which are packaged flat to use up less space and then assembled when unpacked. E.g. **Ready-to assemble furniture (RTA)**, also known as **knock-down furniture** or **flat pack furniture** is a form of furniture that is purchased in multiple pieces and requires assembly. This form of furniture generally arrives in a box and contains instructions for the buyer to follow in order to assemble it after purchase. Flat pack furniture designed and packaged to fit in the boot of car so easy to take home.

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

2 marks

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

1 mark

[2]

**M10.**

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]



