

Design & Technology (Product Design)

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OCR A-Level

Influence of Designers and Technologies on Product Style & Function (2.3a)

Materials required for questions

- Pencil
- Rubber
- Calculator

Instructions

- Use black ink or ball-point pen
- Try answer all questions
- Use the space provided to answer questions
- Calculators can be used if necessary
- For the multiple choice questions, circle your answer

Advice

- Marks for each question are in brackets
- Read each question fully
- Try to answer every question
- Don't spend too much time on one question

Good luck!

Q1. Why is understanding past and present developments valuable in product design?

- A** To ensure products remain unchanged over time
- B** To limit design options to historical methods only
- C** Because past innovations reveal how design thinking evolves and help predict future directions

Q2. When analysing historic design approaches, the greatest benefit to modern designers is that it:

- A** Simplifies the selection of aesthetic styles
- B** Reveals how constraint, such as limited materials, tools, and cultural expectations forced designers to innovate within boundaries
- C** Guarantees universal solutions for all modern markets

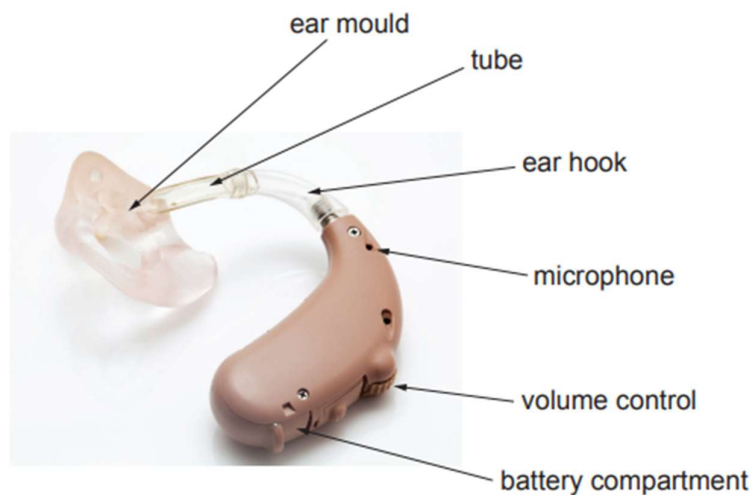
Q3. Understanding the evolution of manufacturing technologies is crucial because it:

- A** Allows designers to predict the exact needs of future factories
- B** Automatically reduces production costs
- C** Shows how shifts in enterprise, such as automation, globalisation and digital workflows, alter viable design strategies

Q4. Studying how sustainability expectations evolved over time helps designers:

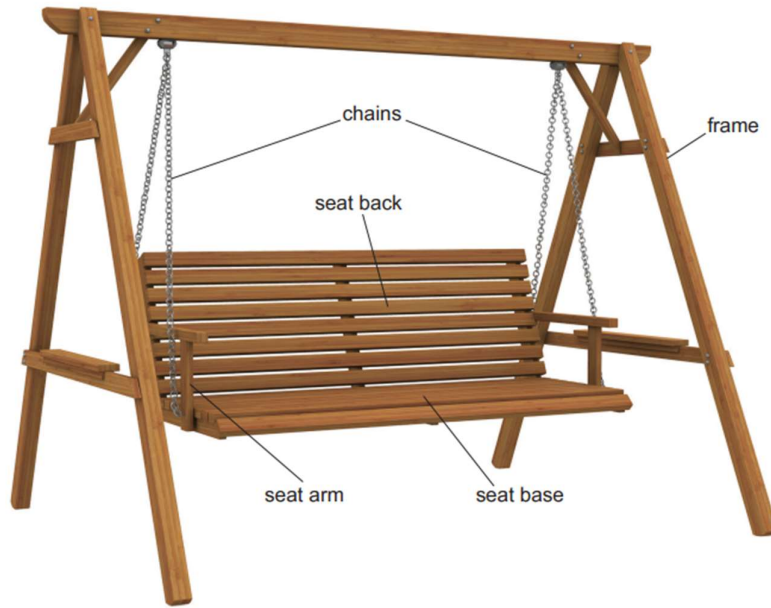
- A** Develop products that balance durability, resource efficiency, and user needs in line with long-term environmental pressures
- B** Avoid using modern materials entirely
- C** Ignore the life expectancy of products

Q5. The image below shows a hearing aid.



Explain how the hearing aid components could have been designed for disposal and end of product life. **(3 marks)**

Q6. The image below shows a swing seat.



Discuss the sustainability issues that would need to be considered in the design and manufacture of the swing seat.

Refer to specific examples from the swing seat in your answer. **(6 marks)**

Answers

Q1. C

Q2. B

Q3. C

Q4. A

Q5.

Possible explanations may include:

They could have been designed for disassembly with the labelling of materials on the casing parts for the ease of separating components (1) and joined with semi-permanent standardised fixings like screws(1) so they could be sorted and re-used, recycled etc. (1)

The parts of the hearing aid (tubing/ speaker/ microphone) could be use of standardised components that can be re-used on other products (1) The use of a neutral colour so other users could use the same casing (1) They could have optimised the materials so that there is less material wasted at the end of life (1)

Other possible references could include the use of biodegradable materials, Resin Identification Codes and snap fittings.

Any other valid suggestion.

Q6.

The designer of the swing seat needs an awareness of sustainability issues relating to industrial manufacture.

Indicate content:

Materials:

- Source of material. Candidates could discuss the use of sustainability sources timber from FSC approved forests, or the use of locally sourced materials. They could consider the impact of using more suitable outdoor timbers that are less sustainable to produce a product that is more hardwearing or naturally weatherproof.

- End of life: The use of natural materials and ease of disassembly and separation of parts means could be considered to ensure users could dispose of the products.

Manufacturing

- Efficiency: Candidates could discuss the efficiency of production lines and use of Design for manufacture principles to maximise sustainability.
- Transport and packaging. Ability to be transported without damage with minimal packaging and waste material.

Design

- Reducing material, optimising design. Candidates could discuss the advantage of making the design from separate parts that could extend the useful life, as parts could be replaced or updated when needed/ wanted.
- Replacement parts/ ease of repair. The use of standardised parts could be considered to ensure that the life of the product will exceed the life of the company. Enabling users to fix or replace parts locally.

Any other suitable response