

## Advance Information for Summer 2022

### A Level

### Design and Technology

### H406

## Principles of Product Design/Problem Solving in Product Design

We have produced this advance information to support teachers and students with revision for the Summer 2022 examinations.

#### Information

- This notice covers Components 01 and 02 only.
- This notice does **not** cover non-examined assessment (NEA) components.
- There are no restrictions on who can use this notice.
- The format/structure of the paper remains unchanged.
- You are **not** permitted to take this notice into the exam.
- This document has **5** pages.

#### Advice

- Students and teachers can discuss this advance information.
- It is advised that teaching and learning should still cover the entire subject content in the specification.

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## **H406/01 Principles of Product Design**

- This list shows the topics that will be mainly, although not exclusively, tested through the higher tariff questions.
- The topics listed are taken from the specification content that is set out through an enquiry approach. These are not examination questions.
- Students and teachers should consider how to focus their revision of other parts of the specification which may be tested in other questions.

### **1. Identifying requirements**

1.3 How can usability be considered when designing prototypes?

### **2. Learning from existing products and practice**

2.1 Why is it important to analyse and evaluate products as part of the design and manufacturing process?

2.3 Why is it important to understand both past and present developments in product design?

- a. Recognise how past and present product designers, technologies and design thinking have influenced the style and function of products.

### **3. Implications of wider issues**

3.1 What factors need to be considered whilst investigating design possibilities?

3.2 What factors need to be considered when developing design solutions for manufacture?

### **5. Material and component considerations**

5.1 What factors influence the selection of materials that are used in products?

### **6. Technical understanding**

6.1 What considerations need to be made about the structural integrity of a design solution?

6.2 How can products be designed to function effectively within their surroundings?

### **7. Manufacturing processes and techniques**

7.4 How is manufacturing organised and managed for different scales of production?

- a. Understand how and why different production methods are used when manufacturing products dependent on market demand.

7.5 How is the quality of products controlled through manufacture?

### **8. Viability of design solutions**

8.1 How can designers assess whether a design solution meets its stakeholder requirements?

## **H406/02 Problem Solving in Product Design**

- This list shows the topics that will be mainly, although not exclusively, tested through the higher tariff questions.
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- Students and teachers should consider how to focus their revision of other parts of the specification which may be tested in other questions.

### **3. Implications of wider issues**

- 3.2 What factors need to be considered when developing design solutions for manufacture?
- a. Awareness of the responsibilities and principles of designing for manufacture (DFM).

3.3 What factors need to be considered when manufacturing products?

### **4. Design thinking and communication**

- 4.1 How do product designers use annotated 2D and 3D sketching and digital tools to graphically communicate ideas?

### **5. Material and component considerations**

5.1 What factors influence the selection of materials that are used in products?

5.2 What materials should be selected when designing and manufacturing products and prototypes in product design?

5.3 Why is it important to consider the properties/characteristics of materials when designing and manufacturing products?

### **6. Technical understanding**

6.2 How can products be designed to function effectively within their surroundings?

### **7. Manufacturing processes and techniques**

7.2 How can materials and processes be used to make final prototypes?

7.3 How can materials and processes be used to make commercial products?

7.4 How is manufacturing organised and managed for different scales of production?

- a. Understand how and why different production methods are used when manufacturing products dependent on market demand.

### **8. Viability of design solutions**

8.2 How can product designers and manufacturers assess whether a design solution meets the criteria of technical specifications?

- a. Demonstrate an understanding of the methods and importance of undertaken physical testing on a product to ensure it meets the criteria it is meant to fulfil.

## END OF ADVANCE INFORMATION



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