

Summary Sheet

Topic Area 2: Design Requirements

- Design Brief: A short statement outlining the design problem and what the product must achieve.
- Specification: A detailed list of criteria that the product must meet, including dimensions, materials, cost, etc.
- Client Needs: Understanding the end-user's requirements and expectations.
- User Requirements: Functional and aesthetic needs of the user.
- Constraints: Limitations such as budget, time, materials, and environmental impact.
- Considerations: Factors like sustainability, safety, ergonomics, and legal requirements.
- Materials: Properties and suitability of different materials for specific applications.
- Manufacturing Processes: Techniques such as injection moulding, 3D printing, CNC machining, etc.

Flashcards

Q: What is a design brief?

A: A short statement outlining the design problem and goals.

Q: What is a specification?

A: A detailed list of criteria the product must meet.

Q: Name three common constraints in design.

A: Budget, time, materials.

Q: What are user requirements?

A: Functional and aesthetic needs of the user.

Q: Give an example of a manufacturing process.

A: Injection moulding, 3D printing, CNC machining.

Practice Questions

1. Define the term 'design specification' and explain its importance in engineering design.
2. List and describe four constraints that a designer might face when developing a new product.
3. Explain the difference between client needs and user requirements with examples.
4. Describe two manufacturing processes and explain when each would be used.
5. Why is it important to consider sustainability in the design process?

## Visual Aids

ACCESS FM - A tool for analysing product requirements:

A - Aesthetics

C - Cost

C - Customer

E - Environment

S - Size

S - Safety

F - Function

M - Materials

Example Specification Table:

- Function: Must hold 1 litre of liquid
- Material: Recyclable plastic
- Cost: Under £5
- Safety: No sharp edges
- Size: 200mm height, 80mm diameter