

OCR Cambridge Nationals Engineering Design R038

Topic Area 3: Communicating Design Outcomes

Summary Sheet

This topic focuses on how engineers communicate design outcomes effectively. Key areas include:

- Engineering drawings: orthographic, isometric, exploded views
- Drawing conventions: dimensions, tolerances, scales, symbols
- Annotation techniques: notes, labels, callouts
- CAD tools: 2D and 3D modelling software
- Prototypes and models: physical and digital representations

Flashcards

Orthographic Drawing: A 2D representation showing multiple views of an object.

Isometric Drawing: A 3D representation where all axes are equally spaced at 120 degrees.

Tolerance: The permissible limit of variation in a physical dimension.

CAD: Computer-Aided Design software used to create precise drawings and models.

Prototype: An early sample or model built to test a concept or process.

Practice Questions

1. Explain the difference between orthographic and isometric drawings.

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2. What is the purpose of using tolerances in engineering drawings?
3. Describe how CAD software helps in communicating design outcomes.
4. Why are annotations important in technical drawings?
5. What are the advantages of using prototypes in the design process?

Visual Aids

Common Drawing Types:

- Orthographic: Front, top, and side views
- Isometric: 3D angled view
- Exploded: Shows components separated

Drawing Symbols:

- Ø: Diameter
- \pm : Tolerance range
- mm: Millimetres