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Design & Technology
AQA A-Level

Jigs and fixtures

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. What is the primary purpose of a jig in manufacturing?

A To hold materials in place during assembly

B To guide tools for accurate, repeatable operations

C To decorate finished products

Q2. How do fixtures differ from jigs?

A Fixtures include cutting tools, while jigs do not

B Fixtures are only used for welding

C Fixtures hold workpieces in place but do not guide tools

Q3. Which process would most likely use a drilling jig?

A Creating identical holes in several components

B Painting multiple parts the same colour

C Sanding curved surfaces

Q4. What is a key advantage of using jigs and fixtures in mass production?

A Ensuring consistency across all products

B Reducing the need for skilled workers

C Lowering material costs

Q5. A manufacturer uses a jig when welding a bike frame together. Explain two reasons why a jig would be used **(4 marks)**

Q6. Describe two ways that a jig can be used to improve accuracy in manufacture **(4 marks)**

Answers

Q1. B
Q2. C
Q3. A
Q4. A

Q5.

- Jigs can be used to hold components in place while joining/fabrication is undertaken reducing labour costs.
- Jigs can be used to guide tools during fabrication reducing errors from slippage.
- Jigs remove the risk of components moving during fabrication, this reduces errors and improves quality control.
- Jigs increase speed of repeating a process as they aid simple line up of components.
- Jigs increase accuracy of repeat components as they remove some of the need for measurements.

Q6.

- A jig improves accuracy by removing the need for measuring and marking out to take place each time a cut is made or a hole drilled. This removes the potential for human error throughout the marking out process.
- A jig can improve the accuracy of manufacturing a particular joint, by securely holding the workpiece while also guiding the cutting tool, eg when cutting a mitre joint in timber or when drilling a hole.
- A jig can be used to ensure consistency when manufacturing a product, eg guiding a router around a particular profile ensuring consistency and accuracy where two kitchen worksurfaces may join.