

Design & Technology

AQA GCSE

Tolerances

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 meant by the term *tolerance* in product design and manufacture?

- A** The colour range of a material
- B** The allowed variation in a measurement
- C** The strength of a material

Q2. Why are *tolerances* important in making activities?

- A** To make designs look more artistic
- B** To ensure parts fit together correctly and function as intended
- C** To allow complete freedom in sizes

Q3. Which of the following is an example of a tolerance?

- A** “Cut exactly to 100 mm”
- B** “Cut to 100 mm $\pm$ 1 mm”
- C** “Make it as small as possible”

Q4. When cutting material with a band saw, why is it important to measure against a tolerance?

- A** So that exact measurements aren’t necessary
- B** To ensure pieces are always over-sized
- C** Because small variations are expected and must stay within acceptable limits

Q5. Explain why tolerances are important when manufacturing a prototype and describe how a designer can ensure tolerances are maintained during production. **(4 marks)**

Answers

Q1. B

Q2. B

Q3. B

Q4. C

Q5.

- Ensures parts fit together properly so the product functions as intended
- Allows for consistency and reliability in repeated or batch production
- Improves overall quality and reduces errors or product failure
- Designers can use precise measuring tools (e.g. callipers, micrometres)
- Tolerances can be written on technical drawings (e.g. ± 0.5 mm)
- Regular checking and testing during production helps maintain accuracy