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Design & Technology
AQA A-Level

Materials and their applications

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 word describes a material that can be drawn out into long thin wires?

A Malleable

B Ductile

C Brittle

Q2. Which property describes the ability of a material to withstand sudden and shock loading without fracturing?

A Toughness

B Hardness

C Malleability

Q3. A material that resists abrasive wear and indentation has which one of the following properties?

A Elasticity

B Hardness

C Plasticity

Q4. Shear strength is defined as:

A The ability of a material to return to its original shape once a deforming force is removed

B The ability of a material or joint to withstand being pulled apart

C The ability of a material to withstand being squashed

Q5. Describe two physical properties of gold **(2 marks)**

1.

2.

Q6. Define the following material properties **(2 marks)**

Thermal conductivity

Toughness

Q7. Define the following material properties **(2 marks)**

Malleability

Elasticity

Q8. Define the following material working characteristics **(1 mark)**

Hardness

Answers

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

Q5.
Gold:

- is an excellent conductor of electricity
- is an excellent conductor of heat
- is a particularly heavy metal with a high density
- has excellent resistance to corrosion

Q6.
Thermal conductivity

- A measure of how successfully heat energy can travel through a material.

Toughness

- A material's ability to absorb impact force without fracture.

Q7.
Malleability

- A material's ability to be permanently deformed or shaped by impact, rolling or pressing without cracking.

Elasticity

- A material's ability to be deformed and return to its original when the force is removed.

Q8.
Hardness

- is the ability of a material to resist abrasion/ scratching/indentation.