**Design & Technology**

**AQA GCSE** Logo

Description automatically generated with low confidence

**Composite materials**

**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.** Which one of the following is a composite material?

**A** Carbonfibre reinforced plastic (CRP)

**B** Graphene

**C** Titanium

**Q2.** GRP is a combination of which materials??

**A** Glass fibre and resin

**B** Wood fibre and resin

**C** Carbon fibre and resin

**Q3.** What is a suitable composite material for the body of a Formula 1 car?

**A** GRP

**B** GRC

**C** Lightweight ceramic

**Q4.** What is the primary purpose of combining materials in composites like carbon fibre reinforced plastic (CRP)?

**A** To reduce production costs

**B** To create a material that combines the best properties of each component

**C** To make the material biodegradable

**Q5.** Explain the meaning of ‘composite material’ **(2 marks)**

**Q6.** Explain how composite materials like glass reinforced plastic (GRP) are produced, and describe one advantage and one limitation of using composites **(4 marks)**

**Answers**

**Q1**. A

**Q2**. A

**Q3**. A

**Q4**. B

**Q5.**

* A mix of two of more materials (1)
* To produce a material with enhanced properties (1)

**Q6.**

**Production Method (2 marks):**

* A **matrix material** (e.g., plastic/resin) is combined with a **reinforcement material** (e.g., glass/carbon fibres).
* The fibres provide **strength/stiffness**, while the matrix **binds them together** and transfers loads.

**Advantage (1 mark):**

* **High strength-to-weight ratio** (lighter than metals but just as strong)
* **Corrosion resistance** (unlike metals)
* **Customisable properties** (by varying fibre orientation/materials)

**Limitation (1 mark):**

* **Expensive production** (vs traditional materials like steel)
* **Difficult to recycle** (mixed materials hard to separate)
* **Complex manufacturing** (requires skilled labour/special equipment)