

Q1 (1 mark)

- A list of metals in order of reactivity

Q2 (1 mark)

- Magnesium

Q3 (1 mark)

- A compound containing a metal and oxygen

Q4 (1 mark)

- A material made from two or more materials combined

Q5 (2 marks)

Any two:

- Hard
- Brittle
- Heat resistant
- Poor conductor of electricity

Q6 (2 marks)

Any two:

- Flexible
- Lightweight
- Waterproof
- Easily moulded

Q7 (2 marks)

Any two:

- Strong
- Lightweight
- Durable
- Made from combined materials

Q8 (2 marks)

- Some metals lose electrons more easily (1)
- More reactive metals react faster (1)
- Reactivity linked to reactions with oxygen/water (1)

Q9 (3 marks)

- Carbon reacts with metal oxide (1)
- Oxygen removed from metal oxide (1)
- Metal produced (1)

Q10 (3 marks)

- Ceramics are hard (1)
- Resistant to heat (1)
- Useful for tiles/pots/buildings etc. (1)

Q11 (2 marks)

- Different materials combined (1)
- Properties improved e.g. stronger/lighter/more durable (1)

Q12 (4 marks)

- Carbon reacts with copper oxide (1)
- Oxygen removed from copper oxide (1)
- Copper produced (1)
- Carbon dioxide formed (1)

Q13 (3 marks)

- Aluminium more reactive than carbon (1)
- Carbon cannot remove oxygen from aluminium oxide (1)
- Uses electricity to extract aluminium (1)

Q14 (4 marks)

- Polymers are lightweight (1)
- Waterproof (1)
- Easily shaped/moulded (1)
- Durable/flexible (1)

Q15 (4 marks)

- Carbon fibre is a composite (1)
- Very strong (1)
- Lightweight (1)
- Useful for speed/performance (1)

Q16 (6 marks)

Level 1 (1-2 marks)

- Basic statements about metals or carbon

Level 2 (3–4 marks)

- Some explanation of reactivity or extraction

Level 3 (5–6 marks)

- Clear explanation of reactivity series and extraction

Expected content:

- Metals arranged by reactivity (1)
- More reactive metals harder to extract (1)
- Carbon used with less reactive metals (1)
- Oxygen removed from metal oxides (1)
- Metal produced (1)
- Aluminium cannot be extracted using carbon (1)

Example full-mark answer:

“The reactivity series lists metals in order of how reactive they are. Metals below carbon in the series can be extracted from their oxides using carbon. Carbon removes oxygen from the metal oxide, leaving the metal behind. For example, copper oxide reacts with carbon to produce copper and carbon dioxide. Very reactive metals such as aluminium cannot be extracted using carbon and must be extracted by electrolysis.”

Q17 (6 marks)

Level 1 (1–2 marks)

- Basic statements about materials

Level 2 (3–4 marks)

- Some properties and uses explained

Level 3 (5–6 marks)

- Clear explanation of ceramics, polymers and composites

Expected content:

- Ceramics are hard and heat resistant (1)

- Ceramics are brittle (1)
- Polymers are flexible and lightweight (1)
- Composites combine materials (1)
- Composites have improved properties (1)
- Uses linked to properties (1)

Example full-mark answer:

“Ceramics are hard and resistant to heat, making them useful for tiles and mugs, although they are brittle. Polymers are lightweight, flexible and waterproof, so they are used to make bottles and containers. Composites are made by combining materials to improve their properties. For example, carbon fibre is very strong and lightweight, making it useful in bicycles and racing cars.”