Bonding and Structure

GCSE Science • **Combined and Triple** • Grades 3–6

Name: _____ Class: _____ Total: _____ / 58

Show all your working. Marks are given for correct method as well as the final answer.

1. Name the type of bonding between a metal and a non-metal. **[1 mark]**

Answer: _____

2. Name the type of bonding between two non-metals. **[1 mark]**

Answer: _____

3. Describe what happens to the electrons when sodium reacts with chlorine. **[3 marks]**

Answer: _____

4. Write down the charges on the sodium and chloride ions. **[2 marks]**

Answer: _____

5. Write down the charge on a magnesium ion. **[1 mark]**

Answer: _____

6. Write down the charge on an oxide ion. **[1 mark]**

Answer: _____

7. Explain why ionic compounds have high melting points. **[3 marks]**

Answer: _____

8. Explain why ionic compounds conduct electricity when molten but not when solid. **[3 marks]**

Answer: _____

9. Explain why simple molecular substances have low melting points. **[3 marks]**

Answer: _____

10. Explain why simple molecular substances do not conduct electricity. **[2 marks]**

Answer: _____

11. Name the structure of diamond and graphite. **[1 mark]**

Answer: _____

12. Explain why diamond is very hard. **[3 marks]**

Answer: _____

13. Explain why graphite is soft and slippery. **[3 marks]**

Answer: _____

14. Explain why graphite conducts electricity but diamond does not. **[3 marks]**

Answer: _____

15. Describe the structure of a metal. **[3 marks]**

Answer: _____

16. Explain why metals conduct electricity. **[2 marks]**

Answer: _____

17. Explain why metals can be bent and hammered into shape. **[3 marks]**

Answer: _____

18. Explain why an alloy is harder than a pure metal. **[3 marks]**

Answer: _____

19. Sodium chloride and water have very different properties.

(a) Name the structure and bonding in each. **[2 marks]**

(b) Explain why sodium chloride melts at 801°C but water at 0°C. **[4 marks]**

Answer: _____

20. A student tests an unknown white solid. It does not conduct as a solid, does conduct when dissolved, and melts above 700°C.

(a) Name the type of bonding, with reasons. **[3 marks]**

(b) Predict whether it would dissolve in water. **[2 marks]**

Answer: _____

21. Compare diamond and graphite.

(a) State one similarity in their bonding. **[2 marks]**

(b) Explain two differences in their properties. **[4 marks]**

Answer: _____

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