Chemistry

Unit 1

Area of Study 2 Test Answers:

Combining elements

Section 1: Multiple choice 29% (10 marks)

Question 1

C Ionic bonding involves the transfer of electrons between two different atoms, not the sharing.

Question 2

C 2 moles of NaOH

Question 3

D X2Y3

Question 4

B 12

Question 5

B CO32–(aq), SO42–(aq), HCl(g)

End of section 1

Section 2: Short answer 71% (24 marks)

\* indicates 1 mark

Question 6

a Na2SO4

b Ca3(PO4)2

c ammonium carbonate

d diphosphorous heptoxide

(4 marks)

e

|  |  |
| --- | --- |
| PH3 |  |
| OCl2 |  |
| Ba(NO3)2 |  |

(7 marks)

Question 7

a Calcium chloride is an ionic compound consisting of a regular lattice of Ca2+ and Cl– ions, fixed in position\*.

When it is struck with a hammer, like charges align and repel\*.

This breaks apart the crystal structure, causing the lattice to shatter\*.

(3 marks)

b In the calcium chloride crystals, the ions are fixed in position\*.

Because there are no mobile charged particles, the salt does not conduct electricity\*.

(2 marks)

c In the molten state, the Ca2+ and Cl– ions are free to move past each other\*.

Because there are now mobile charged particles, the liquid conducts electricity\*.

(2 marks)

Question 8

Ice is a covalent molecular substance.

When it melts, only the weak intermolecular forces between molecules need to be broken\*.

To decompose, it is necessary to break the strong covalent bonds between hydrogen and oxygen atoms\*. This requires a greater amount of energy.

(2 marks)

Question 9

Table salt is an ionic substance and sugar is a covalent molecular substance\*.

When dissolved in water, salt crystals dissolve to form a solution containing Na+ and Cl– ions that are free to move\*.

When sugar dissolves in water, molecules separate from each other and a solution containing C6H12O6(aq) molecules is formed\*.

Salt water contains mobile charged particles and a sugar solution does not\*, therefore salt water will conduct electricity and a sugar solution will not\*.

(4 marks)

End of answers