## Solutions

Marking: **M1** a correct method, **A1** the correct answer, **B1** an independent mark.

Each answer shows the steps, then the **result**.

**2.1**

- weighted mean mass of an atom of the element
- compared with $\frac{1}{12}$ of the mass of an atom of carbon-12

**2.2**

- mass of an atom of an isotope compared with $\frac{1}{12}$ of the mass of a $^{12}C$ atom

**2.3**

- $CaCO_3 =$ **100**.**1**
- $Mg(OH)_2 =$ **58**.**3**

**2.4**

- ethanol **46**.**0**
- ammonium sulfate **132**.**1**

**2.5**

- it is a weighted mean of isotopes of mass 35 and 37

**2.6**

- $106.0 + 10(18.0)$
- **286**.**0**

**3.1**

- $\dfrac{24(79) + 25(10) + 26(11)}{100}$
- **24**.**3**

**3.2**

- $10x + 11(100 - x) = 1080$
- $1100 - x = 1080$
- **20**%

**3.3**

(a) $M_r(MgSO_4) = 120.4$; $n = \dfrac{2.40}{120.4} = 0.0199$; $n(H_2O) = \dfrac{2.52}{18.0} = 0.140$; $x =$ **7**

(b) to make sure all the water of crystallisation has been driven off

**3.4**

(a) $85x + 87(100 - x) = 8550$; $8700 - 2x = 8550$; **75**%

(b) **267**.**1**

(c) $85.5 + 27.0 + 2(96.1) + 12(18.0) =$ **520**.**7**

(d) $\dfrac{216.0}{520.7} \times 100 =$ **41**.**5**%

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