

## Multiple Choice Answers

Q4: C

|          |                                                                                                                                                 |         |   |   |        |    |   |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------|---|---|--------|----|---|
| 1(a)     | <table><tr><td>neutron</td><td>0</td><td>1</td></tr><tr><td>proton</td><td>+1</td><td>1</td></tr></table>                                       | neutron | 0 | 1 | proton | +1 | 1 |
| neutron  | 0                                                                                                                                               | 1       |   |   |        |    |   |
| proton   | +1                                                                                                                                              | 1       |   |   |        |    |   |
| 1(b)     | <p><b>M1</b> 18</p> <p><b>M2</b> 10</p> <p><b>M3</b> 17 above 8 to the left of the symbol</p> <p><b>M4</b> O</p> <p><b>M5</b> 2- / -2 / – –</p> |         |   |   |        |    |   |
| 1(c)(i)  | $^{12}\text{C}$ / carbon-12                                                                                                                     |         |   |   |        |    |   |
| 1(c)(ii) | 85 (%)                                                                                                                                          |         |   |   |        |    |   |

|      |                                                        |
|------|--------------------------------------------------------|
| 1(a) | silicon(IV) oxide                                      |
| 1(b) | propene                                                |
| 1(c) | aluminium oxide                                        |
| 1(d) | graphite                                               |
| 1(e) | propene<br><b>OR</b><br>ethanol                        |
| 1(f) | <b>M1</b> silicon(IV) oxide<br><b>M2</b> calcium oxide |
| 1(g) | propane                                                |
| 1(h) | ethanol                                                |
| 1(i) | nitrogen                                               |

|           |                                                                                                                                                                                    |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4(a)(i)   | $4\text{FeS}_2 + 11\text{O}_2 \rightarrow 8\text{SO}_2 + 2\text{Fe}_2\text{O}_3$                                                                                                   |
| 4(a)(ii)  | <b>M1</b> double bond of 2 dots and 2 crosses<br><b>M2</b> 2 non-bonding pairs of dots on one oxygen atom <b>and</b> 2 non-bonding pairs of crosses on the other oxygen atom       |
| 4(b)(i)   | <b>M1</b> (temperature)<br>450 <b>and</b> °C<br><br><b>M2</b> (pressure)<br>2 <b>and</b> atm<br><b>OR</b><br>200 <b>and</b> kPa<br><br><b>M3</b> vanadium(V) oxide <b>catalyst</b> |
| 4(b)(ii)  | $2\text{SO}_2 + \text{O}_2 \rightleftharpoons 2\text{SO}_3$                                                                                                                        |
| 4(b)(iii) | $\text{SO}_3 + \text{H}_2\text{SO}_4 \rightarrow \text{H}_2\text{S}_2\text{O}_7$                                                                                                   |
| 4(c)      | <b>M1</b> zero<br><b>M2</b> + 4                                                                                                                                                    |

|      |                                                                   |
|------|-------------------------------------------------------------------|
| 4(d) | <b>M1</b> mol $\text{NaHCO}_3 = 4.20 / 84 = \mathbf{0.05(00)}$    |
|      | <b>M2</b> mol $\text{CO}_2 = \mathbf{0.05(00)}$                   |
|      | <b>M3</b> vol $\text{CO}_2 = 0.05 \times 24\,000 = \mathbf{1200}$ |