| Question <br> Number | Answer | Acceptable answers | Mark |
| :--- | :--- | :--- | :--- |
| $\mathbf{1 ( a ) ( i )}$ | \{water vapour / steam\} <br> condensed/ changed to liquid | Allow steam cooled | (1) |


| Question <br> Number | Answer | Acceptable answers | Mark |
| :--- | :--- | :--- | :--- |
| $\mathbf{1 ( a ) ( i i )}$ | (carbon dioxide) dissolved/ <br> absorbed / trapped | Ignore refs to plants/ rocks | (1) |


| Question <br> Number | Answer | Acceptable answers | Mark |
| :--- | :--- | :--- | :--- |
| $\mathbf{1 ( a ) ( i i i )}$ | A description including the <br> following points | (primitive) plants (produce <br> oxygen) (1) | Allow named plants |
| • (by) photosynthesis (1) | Reject answers involving <br> respiration | (2) |  |


| Question <br> Number | Answer | Acceptable answers | Mark |
| :--- | :--- | :--- | :--- |
| $\mathbf{1 ( b ) ( i )}$ | C |  | $\mathbf{( 1 )}$ |


| Question <br> Number | Answer | Acceptable answers | Mark |
| :--- | :--- | :--- | :--- |
| $\mathbf{1 ( b ) ( i i )}$ | all oxygen \{reacted / used up\} / <br> excess copper (present) | no oxygen left / insufficient <br> oxygen <br> Reject not enough time / not hot <br> enough | (1) |


| Question <br> Number | Answer | Acceptable answers | Mark |
| :--- | :--- | :--- | :--- |
| $\mathbf{1 ( b ) ( \text { iii } )}$ | volume gas used $=32-24 \quad$ (1) <br> $=8\left(\mathrm{~cm}^{3}\right)$ <br> percentage $=32-24 / 32 \times 100$ <br> $(1) \quad=25(\%)$ |  | (2) |


| Question <br> Number | Answer | Acceptable answers | Mark |
| :--- | :--- | :--- | :--- |
| $\mathbf{1 ( b ) ( i v )}$ | oxygen in air in test tube also <br> reacted /more than $32 \mathrm{~cm}^{3}$ of air <br> because of air in test tube / air in <br> test tube will react but is not <br> measured | some gases leaked out of <br> apparatus | allow another gas has reacted <br> with copper | (1) |  |
| :--- |


| Question <br> Number | Answer | Acceptable answers | Mark |
| :--- | :--- | :--- | :--- |
| 2(a) | A description including: | ( add (dilute) (hydrochloric) acid |  |
| (1) | correct formulae <br> - gas/carbon dioxide (passed <br> into/tested) with limewater (1) <br> - limewater goes milky / cloudy / <br> white ppt (1) | bubbled through limewater | dependent on use of limewater |


| Question <br> Number | Answer | Acceptable answers | Mark |
| :--- | :--- | :--- | :--- |
| $\mathbf{2 ( b )}$ | $40+[2 \times 35.5]$ | $(=111)$ | 111 alone |


| Question <br> Number | Answer | Acceptable answers | Mark |
| :--- | :--- | :--- | :--- |
| $\mathbf{2 ( c )}$ | $\bullet$$100(\mathrm{~kg})$ (calcium carbonate) <br> $(106(\mathrm{~kg})$ (sodium carbonate) <br> $(1)$ | OR alternative $106 \div 100$ <br> $40000 \div 100 / 40 \div 100$ (moles <br> approach) |  |
| $\frac{106 \times 40(1)(=42.4)}{100}$ | Only 42.4 with no working <br> worth 2 marks <br> 42400 g worth 2 marks | (2) |  |


| Question <br> Number | Answer | Acceptable answers | Mark |
| :--- | :--- | :--- | :--- |
| $\mathbf{2 ( d ) ( i )}$ | $\bullet 10.4 / 15.0$ (1) |  |  |
|  | $(10.4 / 15.0) \times 100$ (1) $(=69.3)$ | 69.3 alone worth 2 marks <br> If no/incomplete working shown <br> answer to 2 or more sf scores 2 <br> marks <br> Ignore any units | (2) |


| Question <br> Number | Answer | Acceptable answers | Mark |
| :--- | :--- | :--- | :--- |
| $\mathbf{2 ( d ) ( i i )}$ | Two suggestions from | reversible |  |
|  | •reaction incomplete (1) | impure reactants (1) <br> other unwanted/side <br> reaction(s) occur (1) <br> product lost during <br> experiment/practical (1) | ignore by-products form <br> could be an example eg some <br> ignore generic experimental <br> errors eg measuring/weighing <br> errors/human error/spillage |

