

Mark schemes

Q1.

- | | | |
|-----|--|---|
| (a) | percentage of nitrogen increases | 1 |
| | until 2.3 billion years | |
| | <i>allow a value in the range 2.1 to 2.4 billion years</i> | |
| | <i>allow until 80%</i> | 1 |
| | then remains constant | 1 |
| (b) | the percentage of carbon dioxide decreased | 1 |
| (c) | light | 1 |
| (d) | algae | 1 |
| | plants | 1 |
| (e) | cellulose | 1 |
| | starch | 1 |
| (f) | 1.4×10^{11} | 1 |
| (g) | 70 000 000 000 | 1 |
| (h) | helix | 1 |
| (i) | 4 | 1 |

[13]

Q2.

- | | | |
|-----|---|---|
| (a) | Mars | 1 |
| (b) | 20% | 1 |
| (c) | algae and plants evolved | 1 |
| | photosynthesis took place | 1 |
| (d) | (y-axis labelled) 5, 10, 15, (20) | |
| | <i>allow (y-axis labelled) 4, 8, 12, 16, (20)</i> | |
| | <i>ignore correct intermediate values</i> | 1 |
| | oxygen bar drawn to 16% | |
| | <i>allow a tolerance of $\pm \frac{1}{2}$ a small square</i> | 1 |
| (e) | test tube A | 1 |
| (f) | a glowing splint | 1 |
| (g) | manganese dioxide is a catalyst in this reaction | 1 |

[9]

Q3.

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|-----|--|---|
| (a) | 78.09 (%) | 1 |
| (b) | ammonia | 1 |
| | methane | 1 |
| (c) | photosynthesis | 1 |
| (d) | dissolving carbon dioxide in oceans | 1 |
| | formation of sedimentary rocks | 1 |
| (e) | 1500 (millions of years ago) | 1 |
| (f) | 2500 (millions of years ago) | |
| | <i>allow a value in the range 2500 to 2700 (millions of years ago)</i> | 1 |
| (g) | plankton | 1 |
| (h) | (there is) limited evidence | |
| | <i>allow the timescale was millions / billions of years</i> | 1 |
- [10]**