# AQA GCSE Science Combined Foundation

## Practice answers

| Question | Answers | Extra information | Mark | AO / Specification reference |
|---|---|---|---|---|
| **01.1** | to compare with no petroleum jelly | | 1 | AO2<br>4.2.3.2 |
| **01.2** | balance | do not accept scales | 1 | AO2<br>4.2.3.2 |
| **01.3** | 2.8 – 0.7 = 2.1 g | | 1 | AO2<br>MS3a<br>4.2.3.2 |
| **01.4** | more water is lost from the lower surface than the upper surface<br>water is lost from both surfaces | | 1<br>1 | AO3<br>4.2.3.2 |
| **01.5** | (more) stomata are found on the lower surface | | 1 | AO3<br>4.2.3.2 |
| **02.1** | plant<br>leaf / flower<br>spongy mesophyll | | 1<br>1<br>1 | AO2<br>4.2.3.1 |
| **02.2** | meristem tissue – contains rapidly dividing cells for growth<br>xylem – transports water around the plant<br>phloem – carries dissolved food around the plant | one mark for one or two correct<br>two marks for all correct | 2 | AO1<br>4.2.3.1 |
| **02.3** | chloroplasts | | 1 | AO1<br>4.2.3.1 |

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| **02.4** | it contains different types of tissues (working together) / named tissues | | 1 | AO2<br>4.2.3.1 |
| **03.1** | palisade mesophyll | | 1 | AO2<br>4.2.3.2 |
| **03.2** | contains chloroplasts | | 1 | AO1<br>4.1.1.3<br>4.2.3.2 |
| **03.3** | osmosis<br>from a region of high water potential to a region of lower water potential | | 1<br>1 | AO1<br>4.1.3.2<br>4.2.3.2 |
| **03.4** | **Level 3:** all three layers described | | 5–6 | AO1<br>4.1.1.3<br>4.2.3 |
| | **Level 2:** two layers described | | 3–4 | |
| | **Level 1:** one layer described | | 1–2 | |
| | **No Relevant content** | | 0 | |

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OXFORD Revise

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| | **Indicative content**<br>Any **six** from:<br>Top of leaf:<br>• (tightly packed) palisade cells<br>• contain many chloroplasts for photosynthesis<br>• upper cells protected by epidermis<br>• waxy surface reduces water loss from upper surface<br>Middle of leaf:<br>• spongy mesophyll cells<br>• have large air spaces / surface area to maximise gas exchange<br>• xylem supplies water for photosynthesis<br>• phloem transports dissolved sugars from photosynthesis to plant<br>Lower part of leaf:<br>• stomata open and close through action of guard cells<br>• let carbon dioxide diffuse in<br>• allow oxygen / water vapour to diffuse out | | | |
| **04.1** | Place several strips of (nail) varnish on the leaf/several leaves and allow to dry<br>Peel the varnish off the leaf and place on a microscope slide<br>Observe the strip of varnish (under a set magnification) and count stomata in the field of view | | 1<br>1<br>1 | AO2<br>2.3.2 |

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<table>
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<tr><td>04.2</td><td>(36 + 42 + 35 + 41 + 37) ÷ 5 = 38.2<br>= 38 (2 s.f.)</td><td>Calculation of mean<br>Two significant figures</td><td>1<br>1</td><td>AO2<br>2.3.2<br>MS 2a, b</td></tr>
<tr><td>04.3</td><td>Upper surface is exposed to the sun / greater heat<br>This would cause greater rate of evaporation of stomata on top side</td><td>Accept converse</td><td>1<br><br>1</td><td>AO1<br>2.3.2</td></tr>
<tr><td>05.1</td><td>sugars</td><td></td><td>1</td><td>AO1<br>4.2.3.2</td></tr>
<tr><td>05.2</td><td><table><tr><th>Feature</th><th>Found in xylem</th><th>Found in phloem</th></tr><tr><td>living cells</td><td></td><td>✓</td></tr><tr><td>sieve plates</td><td></td><td>✓</td></tr><tr><td>walls containing lignin</td><td>✓</td><td></td></tr><tr><td>supported by companion cells</td><td></td><td>✓</td></tr></table></td><td>one mark for each correct row</td><td>4</td><td>AO1<br>4.2.3.2</td></tr>
<tr><td>05.3</td><td>translocation</td><td></td><td>1</td><td>AO1<br>4.2.3.2</td></tr>
</table>

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| **06.1** | from top:<br>upper epidermis<br>palisade mesophyll<br>spongy mesophyll<br>lower epidermis | | <br>1<br>1<br>1<br>1 | AO2<br>4.2.3.1 |
| **06.2** | carries out most photosynthesis in the leaf: palisade mesophyll<br>contains the stomata: lower epidermis<br>contains air spaces: spongy mesophyll | | 1<br>1<br>1 | AO1<br>4.2.3.1 |
| **06.3** | stomata | | 1 | AO1<br>4.2.3.1 |
| **07.1** | the rate of water loss from the leaves of a plant | | 1 | AO1<br>4.2.3.2 |
| **07.2** | potometer | | 1 | AO1<br>4.2.3.2 |

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<tr><td>07.3</td><td>
<table>
<tr><th>Factor change</th><th>Increase</th><th>Decrease</th></tr>
<tr><td>increase in temperature</td><td>✓</td><td></td></tr>
<tr><td>increase in humidity</td><td></td><td>✓</td></tr>
<tr><td>increase in air speed</td><td>✓</td><td></td></tr>
<tr><td>greater light intensity</td><td>✓</td><td></td></tr>
</table>
</td><td>one mark for each correct row</td><td>4</td><td>AO1<br>4.2.3.2</td></tr>
<tr><td>08.1</td><td>large surface area available – to speed up movement of water into cell by osmosis<br>many mitochondria – to transfer energy needed for active transport into the cell</td><td></td><td>1<br>1</td><td>AO1<br>4.2.3.2</td></tr>
<tr><td>08.2</td><td>(Process) Y<br>active transport / concentration of mineral ions is usually lower in soil than in plant cells</td><td>one mark for name of process<br>one mark for explanation</td><td>1<br>1</td><td>AO2<br>4.2.3.2</td></tr>
<tr><td>08.3</td><td>xylem</td><td></td><td>1</td><td>AO1<br>4.1.1.3<br>4.2.3.2</td></tr>
<tr><td>08.4</td><td>any one from:<br>• magnesium needed for chlorophyll manufacture<br>• nitrates to produce amino acids/proteins</td><td>both mineral and use required for mark<br>accept other correctly named mineral and its use</td><td>1</td><td>AO1<br>4.2.3.2</td></tr>
<tr><td>09.1</td><td>stoma labelled (gap between cells on the lower surface of the leaf)</td><td></td><td>1</td><td>AO2<br>4.2.3.2</td></tr>
</table>

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| **09.2** | when less water is available the guard cells close<br>this reduces rate of diffusion of water vapour out of leaf / plant loses less water through transpiration | accept converse argument | 1<br>1 | AO1<br>4.2.3.2 |
| **09.3** | 39 µm | accept range 33 – 45 µm<br>(250 / (value between 5.5 and 7.5 mm)) | 1 | AO2<br>4.2.3.2<br>MS1d |