

## Multiple Choice Answers

Q10: D

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| 3(a)      | <p><i>any two from:</i></p> <p>(enters) the root hair (cell) ;</p> <p>moves through the (root) cortex (cells to the xylem) ;</p> <p><b>AVP ;</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 3(b)(i)   | 5.8 (g per hour) ;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3(b)(ii)  | <p><i>any four from:</i></p> <p><b>1</b> as temperature increases, water loss / transpiration, increases ; <b>ora</b></p> <p><b>2</b> comparative data manipulation with units ;</p> <p><b>3</b> higher <u>kinetic</u> energy (of water molecules) / description of molecules having more energy to, move / collide / AW ; <b>ora</b></p> <p><b>4</b> increases (the rate of) evaporation (inside leaf) ; <b>ora</b></p> <p><b>5</b> water evaporates from the surface of mesophyll cells ;</p> <p><b>6</b> increases (the rate of) <u>diffusion</u> (of water vapour) through the <u>stomata</u> ; <b>ora</b></p> <p><b>7</b> more stomata open / stomata open wider, at high(er) temperatures ; <b>ora</b></p> |
| 3(b)(iii) | <p>increased rate of transpiration ;</p> <p>increased concentration gradient (of water vapour for diffusion through the stomata) ;</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 3(b)(iv)  | <p><b>1</b> (mineral) ions ;</p> <p><b>2</b> tube / vessel / AW ;</p> <p><b>3</b> lignin ;</p> <p><b>4</b> pull ;</p> <p><b>5</b> column / AW ;</p> <p><b>6</b> forces (of attraction) / attraction / AW ;</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 3(c)(i)   | <p><i>any three from:</i></p> <p><b>1</b> (plants / cells) exposed to, extreme heat / high temperatures ;</p> <p><b>2</b> (plants / cells have) inadequate / not enough / no, water OR dehydration ;</p> <p><b>3</b> (rate of) water uptake is less than, (rate of) water loss / transpiration ; <b>ora</b></p> <p><b>4</b> water moves out of cells (by osmosis) ;</p> <p><b>5</b> cells, become flaccid / lose turgor (pressure) / plasmolyse ;</p> <p><b>6</b> <i>ref. to</i> plants / leaves / cells, rely on (turgor) pressure of water on (inelastic) cell walls for, (structural) support / to stay firm / AW ;</p> <p><b>7</b> <b>AVP ;</b></p>                                                          |

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| 3(c)(ii) | <p><i>any one from:</i></p> <ul style="list-style-type: none"><li><b>1</b> inner surface of leaf is folded / AW ;</li><li><b>2</b> hairs / AW ;</li><li><b>3</b> sunken stomata or stomata in, pits / AW ;</li></ul> <p><i>any two from:</i></p> <ul style="list-style-type: none"><li><b>4</b> trap moist air / water vapour / reduce air, flow / movement ;</li><li><b>5</b> reduce water (vapour) diffusion gradient (out of stomata) ;</li></ul> <p><b>OR</b></p> <ul style="list-style-type: none"><li><b>6</b> curled / rolled / AW, leaf ;</li><li><b>7</b> (rolling) traps air / reduce air movement / shields leaf from heat / reduces exposed surface ;</li><li><b>8</b> reduce water (vapour) diffusion gradient (out of stomata) ;</li></ul> <p><b>OR</b></p> <ul style="list-style-type: none"><li><b>9</b> few stomata ;</li><li><b>10</b> few sites where water exits the leaf / AW ;</li></ul> <p><b>OR</b></p> <ul style="list-style-type: none"><li><b>11</b> thick (waxy) cuticle ;</li><li><b>12</b> reduces evaporation (from the leaf surface) / creates a waterproof layer ;</li></ul> |
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| 1(a)(i)   | C = 11 and W = 12 ;                                                                                                                                                                                                                                                                 |
| 1(a)(ii)  | table drawn with correct number of columns and a header line ;<br>appropriate column / row headings, with units for distance ;<br>recording of correct number of sections for both <b>C</b> and <b>W</b> ;<br>recording of correct total distances for both <b>C</b> and <b>W</b> ; |
| 1(a)(iii) | 6.5 ;<br>mm per minute ;                                                                                                                                                                                                                                                            |
| 1(a)(iv)  | the <u>higher</u> the temperature the <u>greater</u> the (rate of) dye / water movement ;                                                                                                                                                                                           |
| 1(a)(v)   | to identify, anomalous results / outliers / results that do not follow the trend ;                                                                                                                                                                                                  |
| 1(b)      | <i>any two from:</i><br>both used celery <b>OR</b> same, species / type, of plant ;<br>length of celery (stalk) ;<br>both used blue dye <b>OR</b> type / colour of dye ;<br>time to equilibrate ;<br>length of time in the dye ;<br>width of sections ;                             |
| 1(c)(i)   | <i>error from Table 1.1</i><br>temperature (of the water-bath) not controlled / AW ;<br><br><i>improvement</i><br>thermostatically controlled water–bath ;                                                                                                                          |

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| 1(c)(ii) | cut smaller / thinner sections <b>OR</b> cut the celery vertically / longitudinally ; |
| 1(d)     | 0.28 (mm <sup>3</sup> ) ;                                                             |
| 1(e)(i)  | line <b>AB</b> = 60 ±1 (mm) ;<br>2 (mm) ;;                                            |

|          |                                                                                                                                                                                                                                                                                              |                                                              |     |                                                     |
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| 1(e)(ii) | any three differences from:                                                                                                                                                                                                                                                                  |                                                              |     |                                                     |
|          |                                                                                                                                                                                                                                                                                              | leaf miner fly / Fig. 1.7                                    |     | black aphid / Fig. 1.6                              |
|          | 1                                                                                                                                                                                                                                                                                            | larger                                                       | OR  | smaller                                             |
|          | 2                                                                                                                                                                                                                                                                                            | shorter antennae / AW                                        | OR  | longer antennae / AW                                |
|          | 3                                                                                                                                                                                                                                                                                            | has wings                                                    | AND | no wings                                            |
|          | 4                                                                                                                                                                                                                                                                                            | hairs on body                                                | AND | no hairs on body                                    |
|          | 5                                                                                                                                                                                                                                                                                            | larger eye                                                   | OR  | smaller eye                                         |
|          | 6                                                                                                                                                                                                                                                                                            | lack of two projections / AW, sticking out of abdomen / back | AND | two projections / AW sticking out of abdomen / back |
|          | 7                                                                                                                                                                                                                                                                                            | shorter legs                                                 | OR  | longer legs                                         |
|          | 8                                                                                                                                                                                                                                                                                            | thicker legs                                                 | OR  | thinner legs                                        |
|          | 9                                                                                                                                                                                                                                                                                            | only three legs (visible)                                    | AND | six legs                                            |
|          | 10                                                                                                                                                                                                                                                                                           | larger head                                                  | OR  | smaller head                                        |
| ;;;      |                                                                                                                                                                                                                                                                                              |                                                              |     |                                                     |
| 1(f)     | single clear outline with no shading ;<br>drawing larger than half the available space ;<br>detail 1: deep V-shaped cleft correctly located on the upper right third of the leaf ;<br>detail 2: between three and five separate veins coming from the same level at the top of the petiole ; |                                                              |     |                                                     |