

**M1. (a) (i) wind** **1**

temperature  
*answers in either order*  
*ignore weather* **1**

(ii) different plants have different sizes / different numbers of leaves / different sizes of leaves / different plants take up different amounts of water  
*ignore reference to validity*  
*allow different plants need different amounts of water* **1**

(b) in table, in sequence:

C  
*all 3 correct = 2 marks*

B

A  
*all 3 correct = 2 marks*  
*2 correct = 1 mark*  
*0 or 1 correct = 0 mark* **2**

(c) transpiration **1**

**[6]**

- M2. (a) (i) root hairs  
*if clear which word then allow* 1
- (ii) xylem  
*if clear which word then allow* 1
- (iii) stomata  
*if clear which word then allow* 1
- (iv) storage organs  
*in this order* 1
- phloem 1
- (b) (i) 23.2 1
- (ii) loss of water (from flask with plant) from leaves / plant 1
- via transpiration / via evaporation  
*if no other marks allow used in photosynthesis for one mark* 1

**[8]**

M3. (a) transpiration 1

(b) increase then decrease 1

maximum rate at 36 - 38 (°C) / 540 - 560 (grams per day)  
*any figure in these ranges* 1

(c) (i) reduce water loss / prevent wilting  
*allow stops water loss* 1

(ii) 40 - 45 °C 1

[5]

**M4.** (a) transpiration

1

(b) (i) 200

*correct answer with or without working*

*if answer incorrect:*

*allow 1 mark for  $8 \times 25$  or*

*allow 1 mark for answer from candidate's count  $\times 25$*

2

(ii) **R**

*allow **P** or **Q** if candidate's answer to (b)(i) nearer to value for one of those*

*do **not** allow **R** if the answer to (b)(i) would give an answer of **P** or **Q***

*allow R if (b)(i) is blank*

1

(iii) *few stomat*

*allow no stomata on upper surface / all stomata on lower surface*

1

*little / less transpiration or little / less water (vapour) loss / enable water to be retained*

*allow no water loss from upper surface*

1

**[6]**

- M5.** (a) (i) *water / H<sub>2</sub>O*  
*accept oxygen*  
*allow H<sub>2</sub>O*  
*do **not** allow H<sup>2</sup>O or H2O* *1*
- (ii) *the mineral ions are absorbed by active transport* *1*  
*the absorption of mineral ions needs energy* *1*
- (iii) *have (many root) hairs* *1*  
*(which) give a large surface area (for absorption)* *1*
- (b) *carbon dioxide in*  
**or**  
*oxygen out*  
**or**  
*control water loss*  
*accept gas exchange*  
*ignore gases in and out*  
*ignore gain / lose water* *1*
- (c) (i) *guard cells* *1*
- (ii) *(stomata are) closed*  
*allow there is no gap / space* *1*
- (iii) *plant will wilt / droop*  
*ignore die* *1*

**[9]**

**M6.** (a) **xylem and phloem**  
either order  
allow words ringed in box  
allow mis-spelling if unambiguous

1

(b) (i) movement / spreading out of particles / molecules / ions / atoms  
ignore names of substances / 'gases'

1

from high to low concentration  
accept down concentration gradient  
ignore 'along' / 'across' gradient  
ignore 'with' gradient

1

(ii) oxygen / water (vapour)  
allow  $O_2$  /  $O_2$   
ignore  $O^2$  /  $O$   
allow  $H_2O$  /  $H_2O$   
ignore  $H^2O$

1

[4]

M7. (a) (i) wind  
answers in either order  
1

temperature  
ignore weather  
1

(ii) different plants have different sizes  
ignore reference to validity  
/ different numbers of leaves  
/ different sizes of leaves  
/ different plants take up different amounts of water  
/ different number of stomata  
/ different surface area  
allow different plants need different amounts of water  
1

(b) in table, in sequence:  
C  
B  
A  
all 3 correct = 2 marks  
2 correct = 1 mark  
0 or 1 correct = 0 marks  
max 2

(c) transpiration  
1

[6]

- M8. (a) (i) xylem** *1*
- (ii) phloem** *1*
- (iii) transpiration** *1*
- (iv) stomata** *1*
- (b) (i) any **one** from:**
- *reduce / prevent evaporation of water from flask*
  - *holds plant shoot in place*
  - *prevent damage to the plant*
- 1*
- (ii) same surface area **or** number of leaves**  
*(because if they used larger / smaller size shoots) there would be a larger / smaller surface area **or** a larger/ smaller number of leaves*  
*allow same number of stomata* *1*
- from which (the same amount of) water evaporates (and therefore) more / less water would escape*  
*allow from which water escapes* *1*
- (iii) 4.5**  
*look for answer written in table* *1*
- (iv) increasing temperature / heat increases (rate of) water loss / evaporation** *1*



(v) *having moving air / a fan increases (rate of) water loss / evaporation*

*1*

(c) (i) *0.3 g*

*1*

(ii) *plastic bag reduces air flow across leaves*

**or**

*air is humid around the leaves*

*allow plastic bag stops water (vapour) leaving*

*allow air (in plastic bag) becomes saturated (with water)*

*1*

**[12]**