

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 8×25 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 / H₂O*
accept oxygen
allow H₂O
*do **not** allow H²O 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 O₂ / O₂
ignore O² / O
allow H₂O / H₂O
ignore H²O

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]