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 × 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_2O*

accept oxygen

allow H_2O

*do **not** allow H^2O 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) <u>hairs</u>

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 / O2

ignore O^2/ O

allow H_2O / H2O

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]