

M1.(a) (i) diffusion
apply list principle 1

(ii) **A**
apply list principle 1

(b) (i) osmosis
apply list principle 1

(ii) **R**
apply list principle 1

[4]

M2. (a) (i) capillary

1

(ii) diffusion

1

(iii)

Carbon dioxide	low(er)	high(er)
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1

Oxygen	high(er)	low(er)
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1 mark for each correct row

1

(b) (i) red blood cells

1

(ii) haemoglobin

1

[6]

M3.(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]

M4.(a)	300	1
(b)	suitable scale on y-axis	1
	label y-axis	1
	4 bars drawn correctly <i>allow 1 mark for 3 correct bars</i>	2
(c)	increases from 50 to 500	1
	then decreases from 500 to 0	1
(d)	carbohydrates broken down / digested into sugars	1
	broken down by carbohydrase or amylase	1
(e)	absorption of glucose	1
	into blood	1

by active transport
allow diffusion

1
[12]

M5.(a) (i) A = nucleus 1

B = (cell) membrane 1

(ii) any **two** from:
ignore shape

- no (cell) wall
- no (large / permanent) vacuole
- no chloroplasts / chlorophyll

2

(b) because high to low oxygen / concentration or down gradient
allow 'more / a lot of oxygen molecules outside'
ignore along / across gradient

1

(c) a tissue 1

[6]

M6.(a) osmosis 1

partially permeable 1

(b) (i) any **two** from:
allow correct answers in terms of A

- vacuole is small(er)
- cytoplasm has shrunk
allow cytoplasm is smaller
- gap between cytoplasm and cell wall
- cell wall curves inwards
allow cell B is flaccid or cell A is turgid
- the (cell) membrane has moved away from the wall

2

(ii) any **one** from:

- water will move / diffuse in
- (cells) will swell
- (cells) will burst
ignore turgid

1

(c) villi give the small intestines a large surface area 1

villi have many blood capillaries 1

[7]

- M7.(a)** (i) water / H₂O
accept oxygen
allow H₂O
do not allow H^oO 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]

- M8.(a)** (i) alveoli / alveolus
allow air sacs
allow phonetic spelling 1
- (ii) any **one** from:
 • protection (of lungs / heart)
 • help you breathe / inflate lungs. 1
- (b) (i) diffusion 1
- (ii) capillaries 1
- (iii) any **two** from:
 • (have many) alveoli
allow air sacs
 • large surface / area
 • thin (exchange) surface **or** short diffusion pathway
accept only one / two cell(s) thick
 • good blood supply / many capillaries
allow (kept) ventilated or maintained concentration gradient. 2

[6]