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)

1

Oxygen	high(er)	low(er)

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 O_2 / O2
ignore O^2/ O
allow H_2O / H2O
ignore H^2O

1

[4]

M4.(a) 300

1

(b) suitable scale on *y*-axis

1

label *y*-axis

1

4 bars drawn correctly

*allow **1** mark for 3 correct bars*

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 <u>outside</u>'

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 / 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]

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]