



EXAM PAPERS PRACTICE

Boost your performance and confidence with these topic-based exam questions

Practice questions created by actual examiners and assessment experts

Detailed mark scheme

Suitable for all boards

Designed to test your ability and thoroughly prepare you

Level: IGCSE Oxford AQA Biology (9201)

Subject: Biology

Topic: IGCSE AQA Biology

Type: Mark Schemes

2002



1583

To be used by all students preparing for IGCSE Oxford AQA Biology (9201)
Students of other Boards may also find this useful

Biology

IGCSE AQA

Key skills



Mark schemes

1.

(a) 86

allow this answer only

do not accept 85.7

if no answer given, check for answer in the table

1

(b) as salt concentration increases, percentage of open stomata (in field of view) decreases (above 0.1 mol / dm³)

or

allow percentage of open stomata stays the same between 0.0 and 0.1 (mol / dm³ then decreases as salt concentration increases)

ignore references to number of open stomata

allow converse

allow idea that mean concentration (of salt) in guard cells is between 0.3 and 0.4 mol per dm³

1

(c) use concentrations between 0.3 (mol / dm³) and 0.4 (mol / dm³)

or

draw a graph of the data and read off the value at 50% (open stomata)

allow a list of appropriate concentrations i.e. 0.32 mol / dm³, 0.34 (mol / dm³), 0.36 (mol / dm³) etc.

1

(d) $(\pi \times 0.1875^2) = 0.11$ (mm²)

an answer of 36 scores 3 marks

1

$$\frac{4}{0.11}$$

1

36 (per mm²)

allow 36.22 / 36.23 or 36.2

if answer is incorrect allow for 2 marks for sight of number of open stomata = 9 per mm² (diameter used instead of radius)

if no other marks awarded allow for 1 mark any one from:

- sight of area = 0.44(mm²) (diameter used instead of radius)*
- sight of number of open stomata = 9.1 / 9.05 / 9.06 per mm² (diameter used instead of radius and no rounding)*

1



(e) (potassium) ions increase the concentration of the solution (inside guard cells)

or

(potassium) ions make cell more concentrated / less dilute

allow (potassium) ions decrease concentration of water / water

potential (of guard cells)

1

water moves into the (guard) cell by osmosis

1

cell swells unevenly (so stoma opens)

1

as inner wall is less flexible than outer wall or thick part of the wall is less flexible than the thin part (of the wall)

1

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[10]



2.

(a) (i) 5.0

1

(5 × 0.8) or 4

allow ecf from distance

1

0.4

allow ecf from 10-min volume

1

(ii) increased (rate of uptake)

1

more transpiration / evaporation

1

(b) correct scales

allow reversed axes

1

correctly labelled axes with units

1

correct points

one plot error = max 1 mark

2

curved line of best fit

allow correct straight line

1

(c) leaves wilt 1

because plants lose too much water (by evaporation)

1

through the stomata

or

because cells become plasmolysed

or



stomata close

controlled by guard cells to prevent wilting

1

[13]

3.

- (a) (i) water / H₂O
accept oxygen
allow H₂O
do not allow H²O or H2O

1

- (ii) the mineral ions are absorbed by active transport
the absorption of mineral ions needs energy

1

1

- (iii) have (many root) hairs
(which) give a large surface area (for absorption)

1

1

- (b) carbon dioxide in
or
oxygen out
or
control water loss

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- 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]

4.

- (a) (i) xylem

1

- (ii) water

1

minerals / ions / named example(s)
ignore nutrients

1

- (b) (i) movement of (dissolved) sugar

*allow additional substances, eg amino acids / correct named sugar
(allow sucrose / glucose)*

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*allow nutrients / substances / food molecules if sufficiently qualified
ignore food alone*

1

- (ii) sugars are made in the leaves

1

so they need to be moved to other parts of the plant for respiration / growth /
storage

1

- (c) (i) mitochondria

1

- (ii) for movement of minerals / ions

Do not accept 'water'

1

against their concentration gradient

1

[9]



5.

(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]