OXFORD

INTERNATIONAL AQA EXAMINATIONS

Topic Test: OxfordAQA International GCSE Biology 9201

Organisation

Name: _____

Class: _____

Date: _____

Time: **55 minutes**

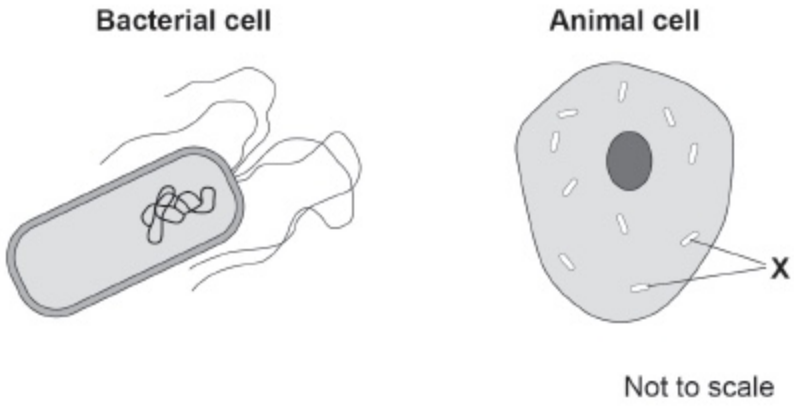
Marks: **55 marks**

Comments:

1 Organisms are made from cells.

Figure 1 shows two types of cell.

Figure 1



(a) Complete the table.

Use information from **Figure 1**.

Tick each box if the cell has that part.

Cell part	Bacterial cell	Animal cell
Cell wall		
Nucleus		
Cell membrane		
Cytoplasm		

(4)

(b) The structures labelled **X** in Figure 1 are where most of the energy is released in respiration.

What is the name of **X**?

Tick **one** box.

- Chloroplasts ☐
- Mitochondria ☐
- Plasmids ☐
- Ribosomes ☐

(1)

(c) Name **one** structure that is in a plant cell but **not** in an animal cell.

_____

(1)

(d) Give the function of the structure you named in question (c).

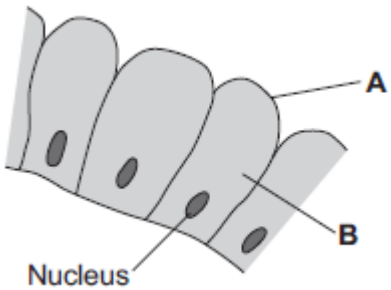
_____

_____

(1)

(Total 7 marks)

2 The image below shows some cells in the lining of the stomach.



(a) (i) Use words from the box to name structures **A** and **B**.

cell membrane	**chloroplast**	**cytoplasm**	**vacuole**

A _____

B _____

(2)

(ii) What is the function of the nucleus?

Tick (✓) **one** box.

To control the activities of the cell ☐

To control movement of substances into and out of the cell ☐

To release energy in respiration ☐

(1)

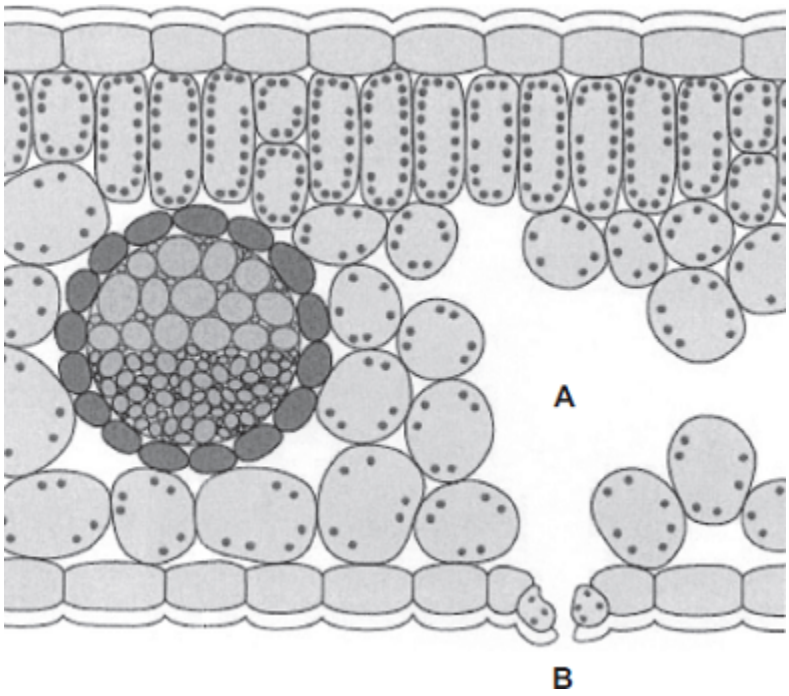
(b) Draw **one** line from each part of the human body to its correct scientific name.

Part of human body	**Scientific name**
Layer of cells lining the stomach	An organ
Stomach	An organism
Mouth, stomach, intestines, liver and pancreas	An organ system
	A tissue

(3)

(Total 6 marks)

3 The diagram shows a section through a plant leaf.



(a) Use words from the box to name **two** tissues in the leaf that transport substances around the plant.

epidermis	**mesophyll**	**phloem**	**xylem**

_____ and _____

(1)

(b) Gases *diffuse* between the leaf and the surrounding air.

(i) What is *diffusion*?

_____

_____

_____

_____

(2)

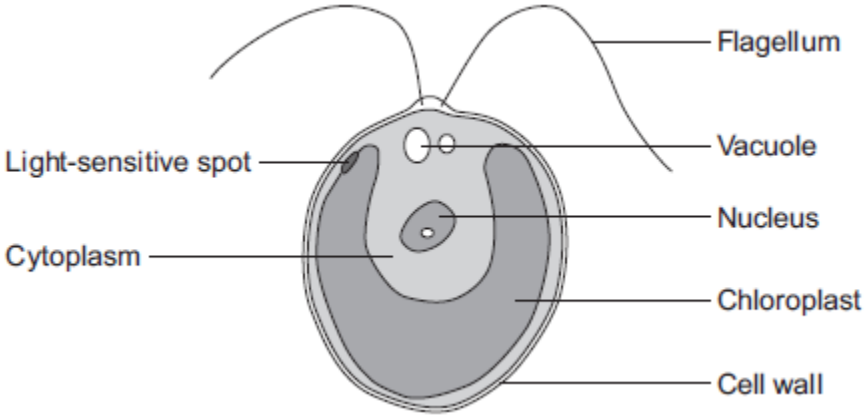
(ii) Name **one** gas that will diffuse from point **A** to point **B** on the diagram on a sunny day.

_____

(1)

(Total 4 marks)

4 The diagram below shows a single-celled alga which lives in fresh water.



(a) Which part of the cell labelled above:

(i) traps light for photosynthesis

_____

(1)

(ii) is made of cellulose?

_____

(1)

(b) In the freshwater environment water enters the algal cell.

(i) What is the name of the process by which water moves into cells?

_____

(1)

(ii) Give the reason why the algal cell does not burst.

_____

_____

(1)

(c) (i) The alga can photosynthesise.

Complete the **word** equation for photosynthesis.

water + _____ $\xrightarrow{\text{Light energy}}$ _____ + oxygen

(2)

(ii) The flagellum helps the cell to move through water. Scientists think that the flagellum and the light-sensitive spot work together to increase photosynthesis.

Suggest how this might happen.

_____

_____

_____

_____

(2)

(d) Multicellular organisms often have complex structures, such as lungs, for gas exchange.

Explain why single-celled organisms, like algae, do **not** need complex structures for gas exchange.

_____

_____

_____

_____

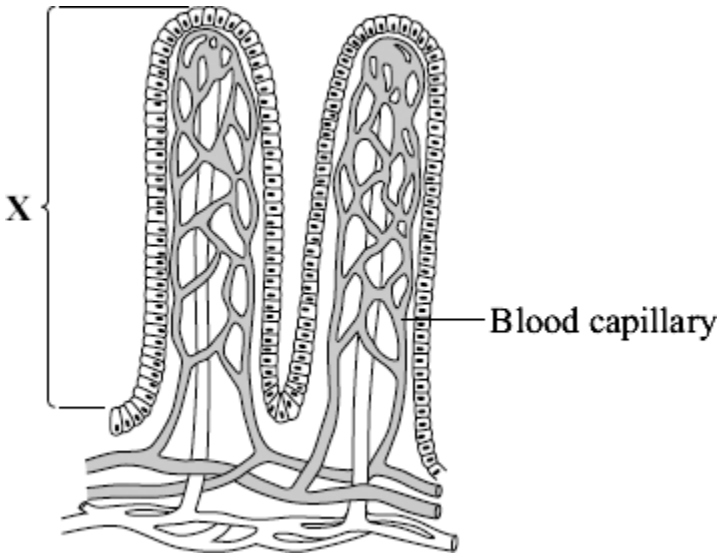
_____

_____

(3)

(Total 11 marks)

5 The diagram shows part of the lining of the small intestine.



(a) (i) Name structure **X**.

Draw a ring around **one** answer.

alveolus **thorax** **villus**

(1)

(ii) Choose **three** ways in which structure **X** is adapted to help the absorption of soluble food.

Tick (✓) **three** boxes.

It is ventilated. ☐

Its outer surface is one cell thick. ☐

It has a large surface area. ☐

It contains a layer of muscle. ☐

It has a good blood supply. ☐

Its cells contain haemoglobin. ☐

(3)

(b) Name the process by which soluble food enters the blood.

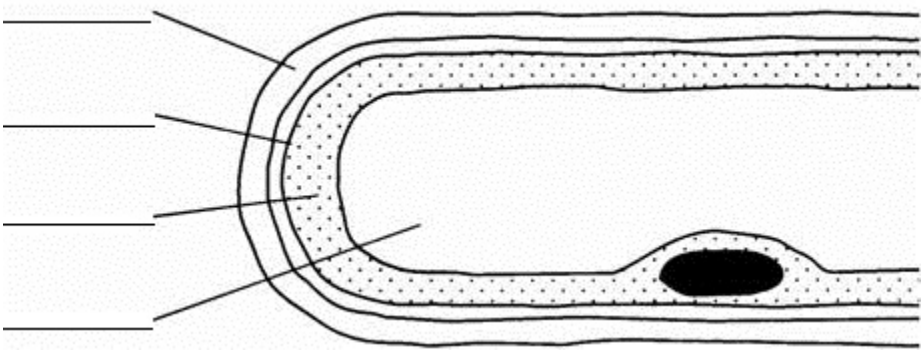
Draw a ring around **one** answer.

diffusion **fermentation** **transpiration**

(1)

(Total 5 marks)

6 The drawing shows part of a root hair cell.

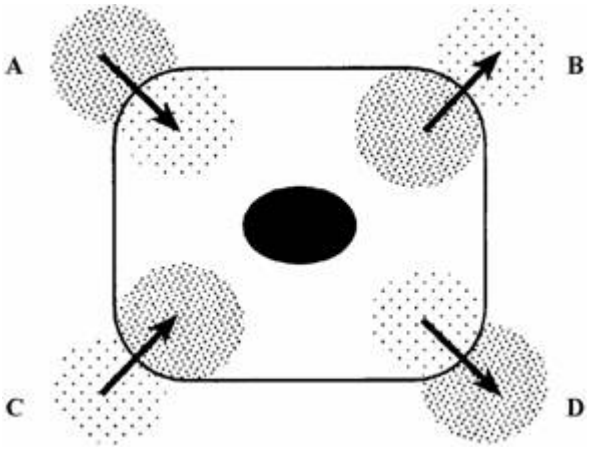


(a) Use words from the list to label the parts of the root hair cell.

cell membrane **cell wall** **cytoplasm** **nucleus** **vacuole**

(4)

(b) The diagram shows four ways in which molecules may move into and out of a cell. The dots show the concentration of molecules.



The cell is respiring aerobically.
Which arrow, **A**, **B**, **C** or **D** represents:

(i) movement of oxygen molecules; _____

(ii) movement of carbon dioxide molecules? _____

(2)

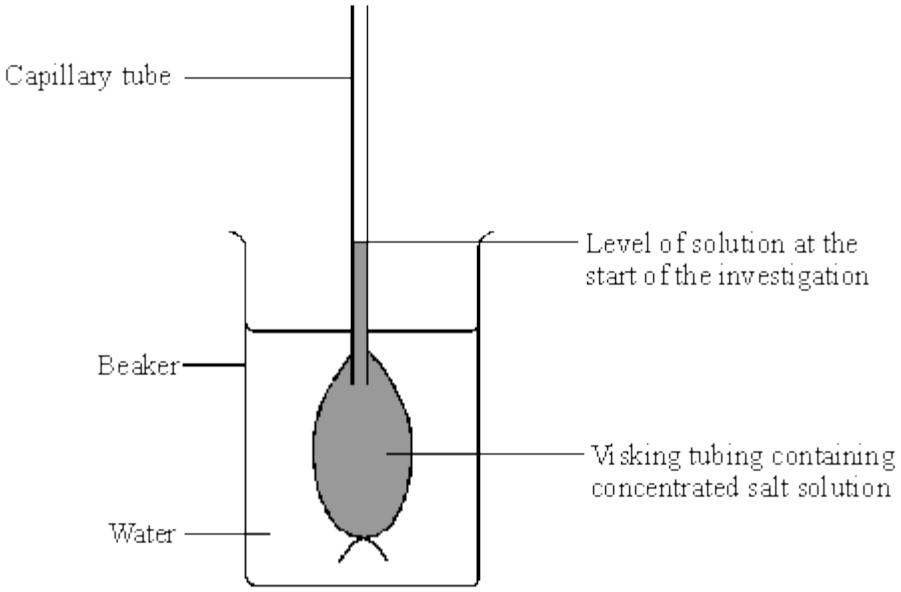
(c) Name the process by which these gases move into and out of the cell.

_____

(1)

(Total 7 marks)

7 Some students set up the equipment below to investigate osmosis.



(a) What is osmosis?

_____

_____

_____

(3)

(b) (i) What will happen to the water level in the capillary tube during the investigation because of osmosis?

_____

(1)

(ii) Use your knowledge of osmosis to explain why this happens.

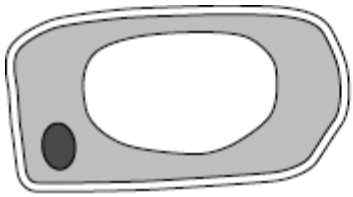
_____

(2)

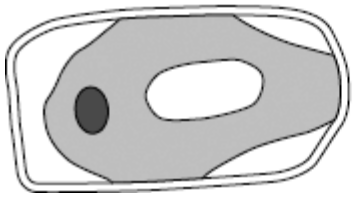
(Total 6 marks)

8 The diagram shows the same plant cell:

- after 1 hour in distilled water
- after 1 hour in strong sugar solution.



After 1 hour in distilled water



After 1 hour in strong sugar solution

(a) Describe **two** ways in which the cell in the strong sugar solution is different from the cell in distilled water.

1. _____

_____

2. _____

_____

(2)

(b) Explain how the differences between the cell in the strong sugar solution and the cell in distilled water were caused.

_____

_____

_____

_____

_____

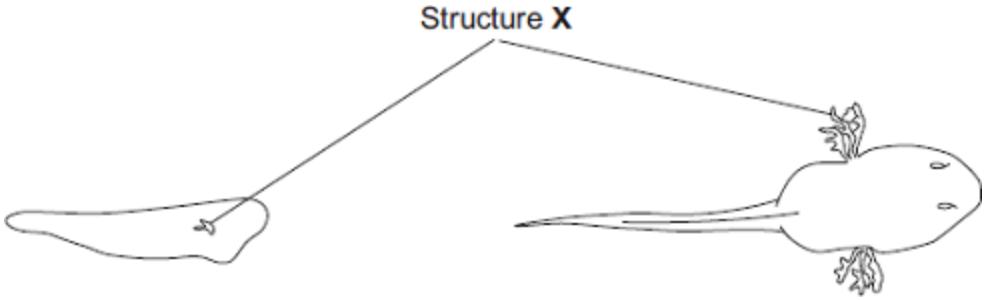
(2)

(Total 4 marks)

9 The young stages of frogs are called tadpoles. The tadpoles live in fresh water.

The drawings show a tadpole just before hatching and three days after hatching.

Structure **X** helps in the exchange of substances between the tadpole and the water.



Tadpole just before hatching

Tadpole three days after hatching

(a) Name **one** substance, other than food, that the tadpole needs to exchange with the water in order to grow.

_____

(1)

(b) Suggest how the changes in the tadpole shown in the drawings help it to survive as it grows larger.

You should **not** refer to movement in your answer.
To gain full marks you should refer to structure **X**.

_____

_____

_____

_____

_____

_____

_____

_____

(4)

(Total 5 marks)

1 (a)

	Bacterial cell	Animal cell	
Cell wall	✓		1
Nucleus		✓	1
Cell membrane	✓	✓	1
Cytoplasm	✓	✓	1

(b) mitochondria

1

(c) any **one** from:

- chloroplast

  ignore chlorophyll

- cell wall
- [permanent] vacuole

1

(d) chloroplast − to make food

or

for photosynthesis

or

to absorb light

OR

cell wall − strengthens cell (1)

*allow supports the cell **or** keeps cell turgid*

OR

[permanent] vacuole − holds cell sap (1)

1

[7]

2 (a) (i) A = (cell) membrane

1

B = cytoplasm

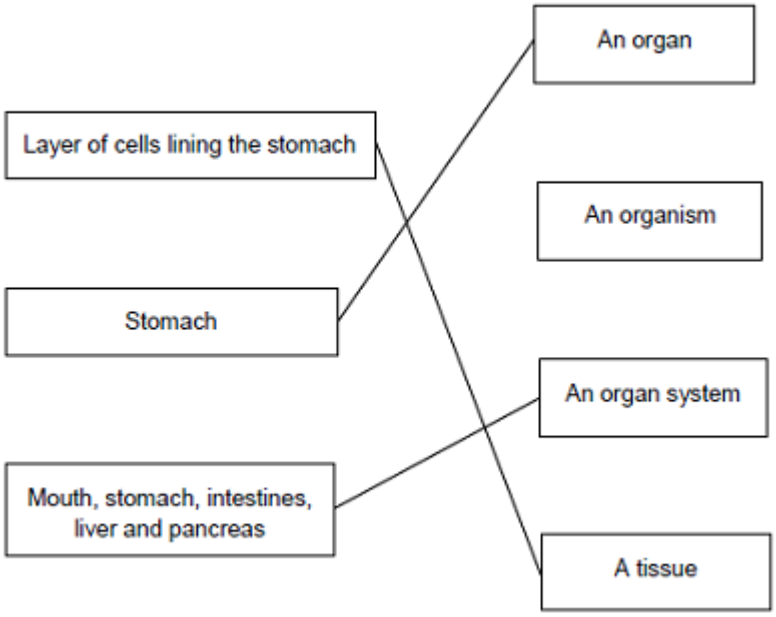
*do **not** accept cytoplast*

1

(ii) To control the activities of the cell

1

(b)



extra lines cancel

3

[6]

3

(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]

4

(a) (i) chloroplast

1

(ii) cell wall

1

(b) (i) osmosis

accept diffusion

1

(ii) cell wall (prevents bursting)

1

(c) (i) carbon dioxide

allow correct formula

1

glucose

allow sugar / starch

1

(ii) any **two** from:

- light sensitive spot detects light
- tells flagellum to move towards light
- more light = more photosynthesis

2

(d) (cell has) larger SA:volume ratio

1

short (diffusion) distance

allow correct description

1

(diffusion) via cell membrane is sufficient / good enough

or

flow of water maintains concentration gradient

1

[11]

5 (a) (i) villus

1

(ii) its outer surface is one cell thick

*cancel **1** mark for each extra box ticked*

1

it has a large surface area

1

it has good blood supply

1

(b) diffusion

1

[5]

6

(a) (cell) wall
(cell) membrane
cytoplasm
vacuole

for 1 mark each

4

(b) (i) A

(ii) B

for 1 mark each

2

(c) diffusion (*reject* osmosis)

for 1 mark

1

[7]

7

(a) movement of water [1]

from high concentration (of water) to low concentration (of water)
or
from (an area of) dilute solution to an area of concentrated solution [1]

through a differentially **or** partially **or** selectively **or** semi permeable membrane [1]

3

(b) (i) it will rise

1

(ii) water enters visking tubing [1]

because the concentration of water outside is greater than the concentration inside
or
because the concentration of salt **or** solute is greater inside the tubing than outside [1]
or
to equalise concentration water has to enter visking tubing [2]

2

[6]

8 (a) *correct names of cell components are required*
it = cell in sugar solution

any **two** from:

accept reverse only if clearly stated answer refers to cell in distilled water

- smaller vacuole
- smaller / less cytoplasm

  allow protoplasm for cytoplasm
- cell membrane / cytoplasm not (fully) against cell wall

  accept plasmolysed / flaccid / less turgid

  or

  cell membrane / cytoplasm (partly) pulled away from cell wall

  ignore reference to nucleus / water

  ignore explanations

  or

  space / liquid / sugar solution between cell membrane / cytoplasm and cell wall

2

(b) water passed / moved out (of cell) by osmosis / diffusion

accept reverse answer if clearly refers to cell in distilled water

1

more concentrated (solution) outside

assume reference to concentration refers to solute concentration unless answer refers to water concentration

or

less concentrated (solution) inside

or

lower <u>water</u> concentration outside

*accept references to hypertonic / hypotonic solutions **or** water potential*

or

higher <u>water</u> concentration inside

1

[4]

9 (a) oxygen / O_2

allow O_2

do not accept O^2

or

carbon dioxide / CO_2

allow CO2

do not accept CO^2

1

(b) any **four** from:

ignore references to tail used for locomotion

ignore reference to nostrils

- because structure X / gills has threads / filaments **or** is thin **or** tadpole has longer tail
- there is an increased surface area
- there is a shorter diffusion pathway
- therefore an increase in exchange

  ignore food
- eyes (now visible in older tadpole)
- so that food / danger etc can be seen

  accept reference to a good blood supply

  accept increased water flow over gills / tail will increase diffusion of gases

4

[5]