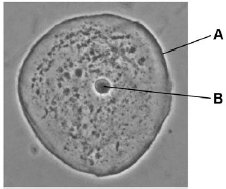
**Q1. Figure 1** shows an animal cell.

**Figure 1**

****

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(a)     What is structure **A**?

Tick **one** box

|  |  |  |
| --- | --- | --- |
|  | Cell membrane |  |
|  | Cell wall |  |
|  | Chromosome |  |
|  | Cytoplasm |  |

**(1)**

(b)     What is structure **B**?

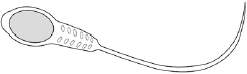
Tick **one** box.

|  |  |  |
| --- | --- | --- |
|  | Chloroplast |  |
|  | Mitochondria |  |
|  | Nucleus |  |
|  | Vacuole |  |

**(1)**

(c)     **Figure 2** shows a sperm cell.

**Figure 2**

****

Describe how a sperm cell is adapted to carry out its function.

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**(1)**

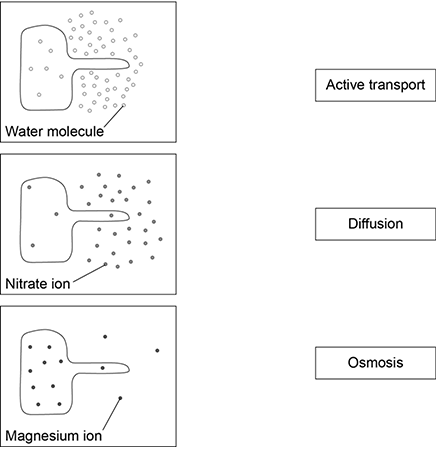
(d)     Substances can move into and out of cells by three processes.

The diagrams show the concentration of different substances inside and outside a root hair cell.

How would each substance move into the root hair cell?

Draw **one** line from each root hair cell to the correct process.

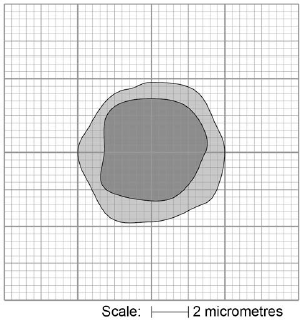
**Root hair cell**                                                          **Process**

****

**(2)**

**(Total 5 marks)**

**Q2.**The figure below shows a scale drawing of one type of cell in blood.



(a)     Use the scale to determine the width of the cell.

Give your answer to the nearest micrometre.

........................................................................................................................

........................................................................................................................

           Width of cell = .................................. micrometres (1)

(b)     Complete the table below.

|  |  |  |
| --- | --- | --- |
|  | **Part of the blood** | **Function** |
|  |  | Carries oxygen around the body |
|  |  | Protects the body against infection |
|  | Plasma |  |

**(3)**

(c)     Platelets are fragments of cells.

Platelets help the blood to clot.

Suggest what might happen if the blood did **not** clot.

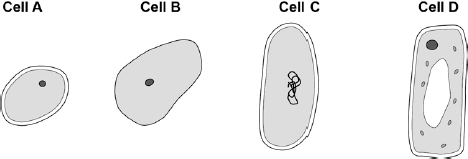
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**(1)**

**(Total 5 marks)**

**Q3.**The figure below shows four different types of cell.



(a)     Which cell is a plant cell?

Give **one** reason for your answer.

Cell ..................

Reason ..........................................................................................................

**(2)**

(b)     Which cell is an animal cell?

Give **one** reason for your answer.

Cell ..................

Reason ..........................................................................................................

**(2)**

(c)     Which cell is a prokaryotic cell?

Give **one** reason for your answer.

Cell ..................

Reason ..........................................................................................................

**(2)**

(d)     A scientist observed a cell using an electron microscope.

The size of the image was 25 mm. The magnification was × 100 000

Calculate the real size of the cell.

Use the equation: 

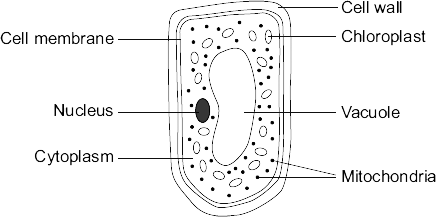
Give your answer in micrometres.

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........................................................................................................................(3)         Real size = .................................... micrometres ( Total 9 Marks )

**Q4.**          The diagram shows a cell from a plant leaf.



(a)     Name the part of this cell that:

(i)      controls the passage of substances in and out of the cell

...............................................................................................................

**(1)**

(ii)     is filled with cell sap.

............................................................................................................... (1)

(b)     Give the names of **two** parts of the leaf cell that would **not** be found in a human liver cell.

.................................................. and ..................................................

**(2)**

(c)     The chloroplasts produce oxygen.

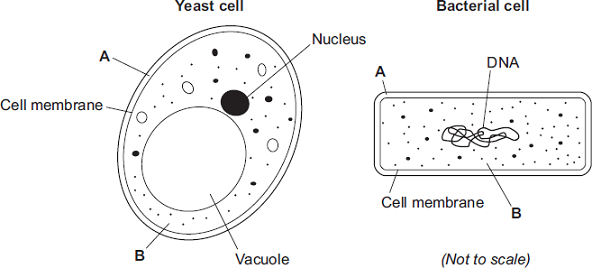
Draw a ring around the correct answer to complete the sentence.

|  |  |
| --- | --- |
|  | diffusion. |
| The oxygen produced by the chloroplasts passes out of the cell by | digestion. |
|  | respiration. |

**(1)**

**(Total 5 marks)**

**Q5.**(a)    The diagrams show the structures of a yeast cell and a bacterial cell.



(i)      Both the yeast cell and the bacterial cell have structures **A** and **B**.

Name structures **A** and **B**.

**A** .......................................................

**B** .......................................................

**(2)**

(ii)     The yeast cell and the bacterial cell have different shapes and sizes.

Give **one** other way in which the structure of the bacterial cell is different from the   
structure of the yeast cell.

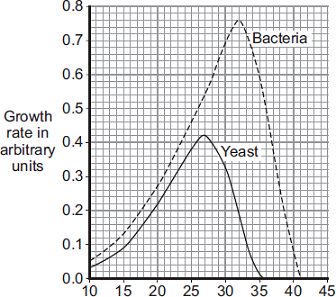
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**(1)**

(b)     Sourdough bread is light in texture and tastes slightly sour. The bread is made using  
two types of microorganism, a yeast and a bacterium. The bacterium can make acids   
such as lactic acid. The acid makes the bread taste sour.

The graph shows how the growth rates of the yeast and the bacteria change with   
temperature.



Temperature in °C

(i)      Sourdough bread rises fastest at 27°C.  
Use information from the graph to explain why.

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**(2)**

(ii)     The bread tastes most sour if it rises at 32°C.  
Use information from the graph to explain why.

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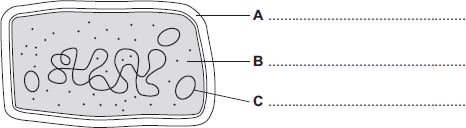
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**(2)**

**(Total 7 marks)**

**Q6.**(a)     The diagram shows the structure of a bacterial cell.



(i)      On the diagram use words from the box to label structures **A**, **B** and **C**.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **cell membrane** | **cell wall** | **chloroplast** | **cytoplasm** | **plasmid** |

**(3)**

(ii)     Give **one** difference between the structure of the bacterial cell and an animal cell.

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**(1)**

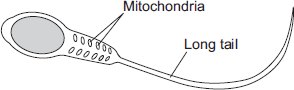
(iii)    Name **one** structure that is found in a plant cell but is **not** found in a bacterial or an animal cell.

...............................................................................................................

**(1)**

(b)     Cells can be specialised for a particular job.

The diagram shows the structure of a human sperm cell.



Describe how the long tail and the mitochondria help the sperm to do its job.

Long tail..........................................................................................................

........................................................................................................................

........................................................................................................................

Mitochondria...................................................................................................

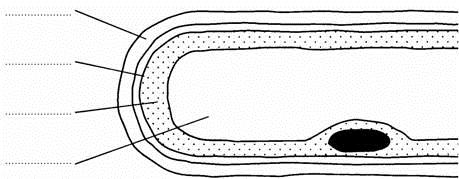
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**(4)**

**(Total 9 marks)**

**Q7.**          The drawing shows part of a root hair cell.

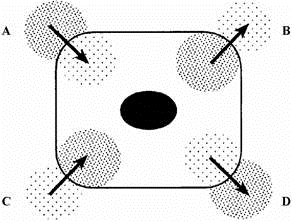


(a)     Use words from the list to label the parts of the root hair cell.

**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)**

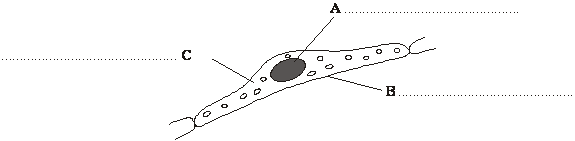
(c)     Name the process by which these gases move into and out of the cell.

.....................................................................................................................................

**(1)**

**(Total 7 marks)**

**Q8.**          The diagram shows a cell from the lining of the lung. This cell is specialised to allow gases to pass through quickly.



(a)           Use words from the box to label structures **A, B** and **C**.

|  |
| --- |
| **cell membrane**         **chloroplast**          **cytoplasm**           **mitochondria**       **nucleus** |

**(3)**

(b)     (i)      Which feature of this cell allows oxygen to pass through quickly?

Put a tick () in the box next to your choice.

|  |  |
| --- | --- |
| It is thin. |  |
| It has a large nucleus. |  |
| It has many mitochondria. |  |

**(1)**

(ii)     Complete the sentence by drawing a ring around the correct answer in the box.

|  |  |
| --- | --- |
| Oxygen passes through this cell by | diffusion  osmosis  respiration |

**(1)**

**(Total 5 marks)**

**Q9.**          (a)     The diagrams show what happens to the shape of a plant cell placed in distilled water.



(i)      Explain why the cell swells and becomes turgid. Name the process involved.

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..........................................................................................................................

**(2)**

(ii)     Give **one** feature of the cell wall which allows the cell to become turgid.

..........................................................................................................................

**(1)**

(b)     Describe the change which will occur if a piece of peeled potato is placed in a concentrated sugar solution and explain why this change occurs.

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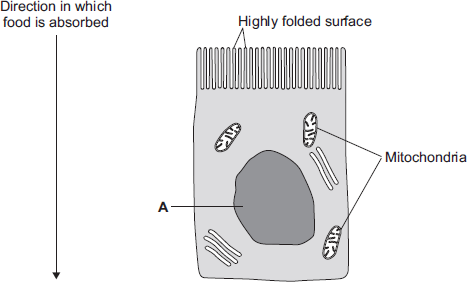
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**(3)**

**(Total 6 marks)**

**Q10.**The image below shows an epithelial cell from the lining of the small intestine.



(a)     (i)      In the image above, the part of the cell labelled **A** contains chromosomes.

What is the name of part **A**?

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**(1)**

(ii)     How are most soluble food molecules absorbed into the epithelial cells of the small intestine?

Draw a ring around the correct answer.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **diffusion** | **osmosis** | **respiration** |

**(1)**

(b)     Suggest how the highly folded cell surface helps the epithelial cell to absorb soluble food.

........................................................................................................................

........................................................................................................................ (1)

(c)     Epithelial cells also carry out active transport.

(i)      Name **one** food molecule absorbed into epithelial cells by active transport.

............................................................................................................... (1)

(ii)     Why is it necessary to absorb some food molecules by active transport?

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**(1)**

(ii)     Suggest why epithelial cells have many mitochondria.

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**(2)**

(d)     Some plants also carry out active transport.

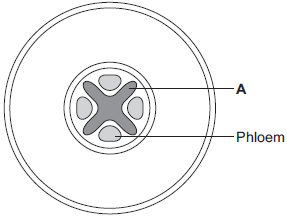
Give **one** substance that plants absorb by active transport.

........................................................................................................................

**(1)**

**(Total 8 marks)**

**Q11.**The diagram below shows a cross-section of a plant root. The transport tissues are labelled.



(a)     (i)      What is tissue **A**?

Draw a ring around the correct answer.

**cuticle                epidermis                xylem**

**(1)**

(ii)     Name **two** substances transported by tissue **A**.

1 .............................................................................................................

2 .............................................................................................................

**(2)**

(b)     Phloem is involved in a process called translocation.

(i)      What is translocation?

...............................................................................................................

...............................................................................................................

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**(1)**

(ii)     Explain why translocation is important to plants.

...............................................................................................................

...............................................................................................................

...............................................................................................................

...............................................................................................................

**(2)**

(c)     Plants must use active transport to move some substances from the soil into root hair cells.

(i)      Active transport needs energy.

Which part of the cell releases most of this energy?

Tick (✓) **one** box.

|  |  |  |
| --- | --- | --- |
|  | mitochondria |  |
|  | nucleus |  |
|  | ribosome |  |

**(1)**

(ii)     Explain why active transport is necessary in root hair cells.

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...............................................................................................................

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...............................................................................................................

...............................................................................................................

**(2)**

**(Total 9 marks)**