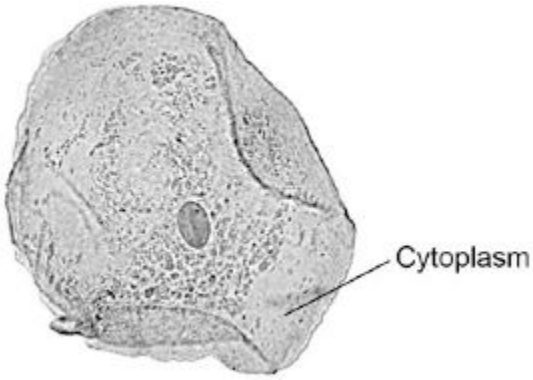
**1** **Figure 1** shows a human cheek cell viewed under a light microscope.

**Figure 1**






(a) Label the nucleus **and** cell membrane on **Figure 1**.

**(2)**

(b) Cheek cells are a type of body cell.

Body cells grow through cell division.

What is the name of this type of cell division?

Tick **one** box.

Differentiation ☐

Mitosis ☐

Specialisation ☐

**(1)**

(c) Ribosomes and mitochondria are **not** shown in **Figure 1**.

What type of microscope is needed to see ribosomes and mitochondria?

.....

**(1)**

(d) What is the advantage of using the type of microscope you named in part **(c)**?

Tick **one** box.

Cheaper ☐

Higher magnification ☐

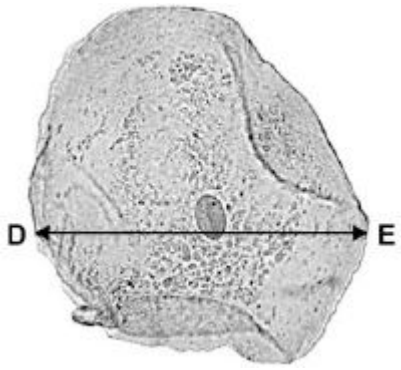
Lower resolution ☐

**(1)**

(e) The cheek cell in **Figure 2** is magnified 250 times.

The width of the cell is shown by the line **D** to **E**.

**Figure 2**




Calculate the width of the cheek cell in micrometres (µm).

Complete the following steps.

Measure the width of the cell using a ruler ..... mm

Use the equation to work out the real width of the cell in mm:

$$\textbf{real size} = \frac{\textbf{image size}}{\textbf{magnification}}$$ ..... mm

Convert mm to µm ..... µm

**(3)**

(f) A red blood cell is 8 µm in diameter.

A bacterial cell is 40 times smaller.

Calculate the diameter of the bacterial cell.

Tick **one** box.

0.02 µm ☐

0.2 µm ☐

2.0 µm ☐

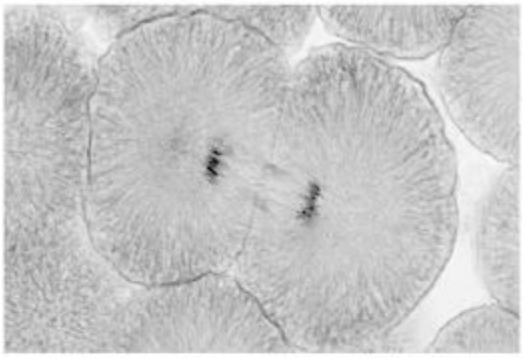
20.0 µm ☐

**(1)**
**(Total 9 marks)**

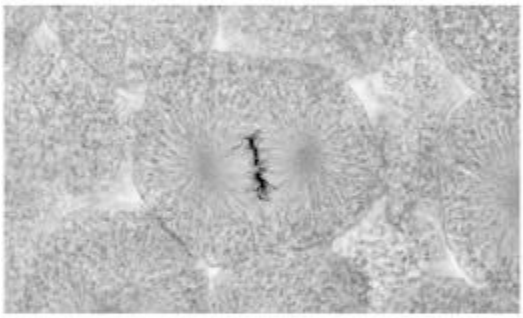
**2** **Figure 1** shows photographs of some animal cells at different stages during the cell cycle.

**Figure 1**

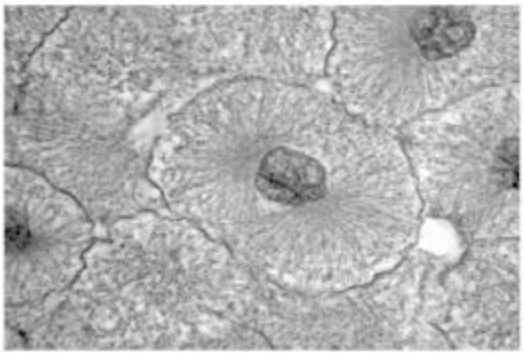
A



B



C



A © Ed Reschke/Photolibrary/Getty Images
B © Ed Reschke/Oxford Scientific/Getty Images
C © Ed Reschke/Photolibrary/Getty Images

(a) Which photograph in **Figure 1** shows a cell that is **not** going through mitosis?

Tick **one** box.

**A** ☐ **B** ☐ **C** ☐

**(1)**

(b) Describe what is happening in photograph **A**.

.....

.....

.....

.....

.....

**(2)**

(c) A student wanted to find out more about the cell cycle.

The student made a slide of an onion root tip.

She counted the number of cells in each stage of the cell cycle in one field of view.

The table below shows the results.

| | | **Stages in the cell cycle** | | | | |
|---|---|---|---|---|---|---|
| | **Non-dividing cells** | **Stage 1** | **Stage 2** | **Stage 3** | **Stage 4** | **Total** |
| **Number of cells** | 20 | 9 | 4 | 2 | 1 | 36 |

Each stage of the cell cycle takes a different amount of time.

Which stage is the fastest in the cell cycle?

Give a reason for your answer.

Stage .....

Reason .....

.....

**(2)**

(d) The cell cycle in an onion root tip cell takes 16 hours.

Calculate the length of time **Stage 2** lasts in a typical cell.

Give your answer to 2 significant figures.

.....

.....

.....

.....

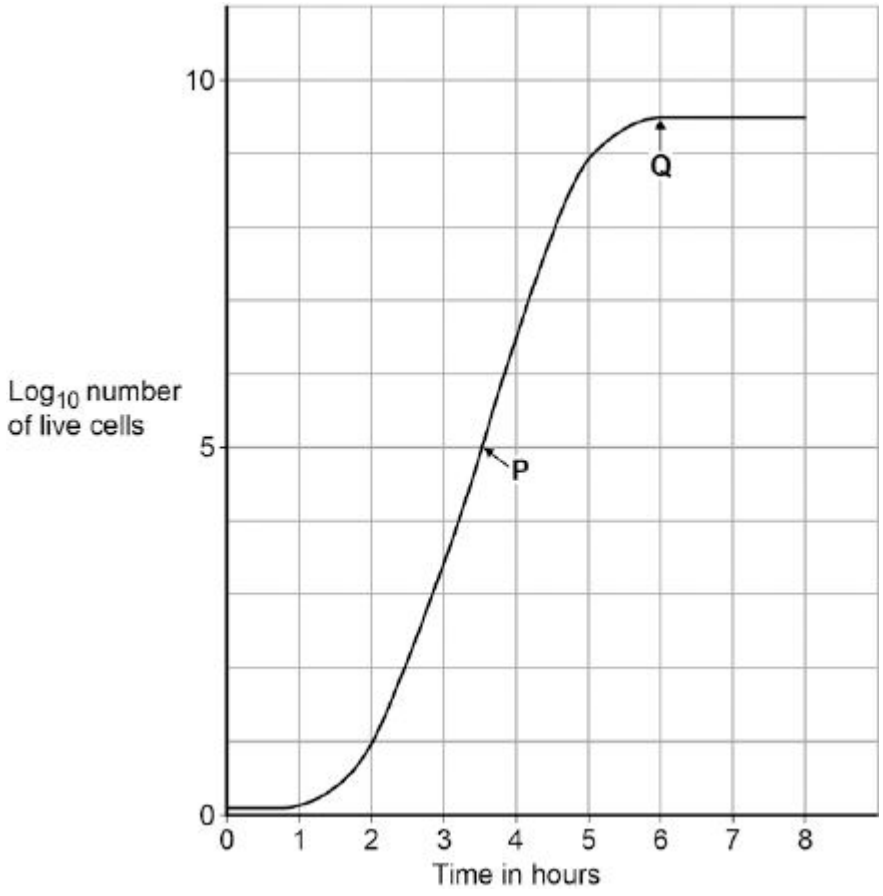
Time in **Stage 2** = ..... minutes

**(3)**

(e) Bacteria such as *Escherichia coli* undergo cell division similar to mitosis.

**Figure 2** shows a growth curve for *E. coli* grown in a nutrient broth.

**Figure 2**




What type of cell division causes the change in number of *E. coli* cells at **P**?

.....

**(1)**

(f) Suggest why the number of cells levels out at **Q**.

.....

.....

.....

.....

.....

.....

**(2)**
**(Total 11 marks)**

**3** Explain how the human circulatory system is adapted to:

- supply oxygen to the tissues
- remove waste products from tissues.

.....

.....

.....

.....

.....

.....

.....

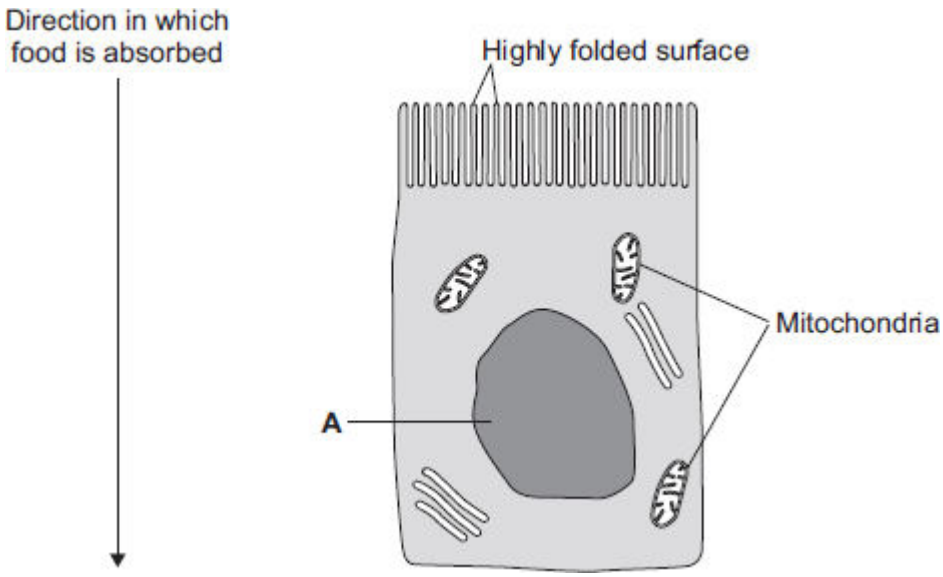
.....

.....

.....

**(Total 6 marks)**

**4** 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**?

.....

**(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?

.....

.....

**(1)**

(ii) Suggest why epithelial cells have many mitochondria.

.....

.....

.....

.....

**(2)**

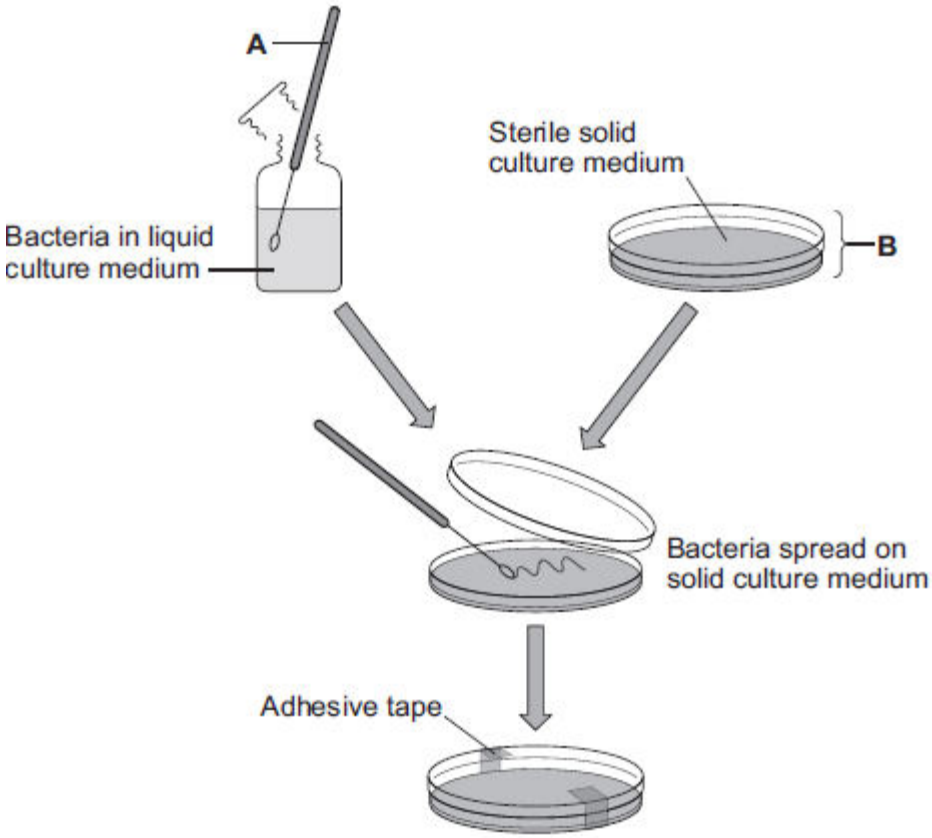
(d) Some plants also carry out active transport.

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

.....

**(1)**
**(Total 8 marks)**

**5** The diagram shows a method used to grow pure cultures of a bacterium.




(a) Name apparatus **A** and apparatus **B**.

Apparatus **A** .....

Apparatus **B** .....

**(2)**

(b) (i) Why should apparatus **A** and apparatus **B** be sterilised before they are used?

.....

.....

**(1)**

(ii) How should apparatus **A** be sterilised?

Tick (✓) **one** box.

Using enzymes ☐

Using a flame ☐

In an incubator ☐

**(1)**

(iii) Adhesive tape is used to secure the lid on apparatus **B**.

Give **one** reason why the lid of apparatus **B** should be securely taped in place.

.....

.....

**(1)**

(c) What is the maximum temperature that should be used **in schools** to grow the bacteria in apparatus **B**?

Draw a ring around the correct answer.

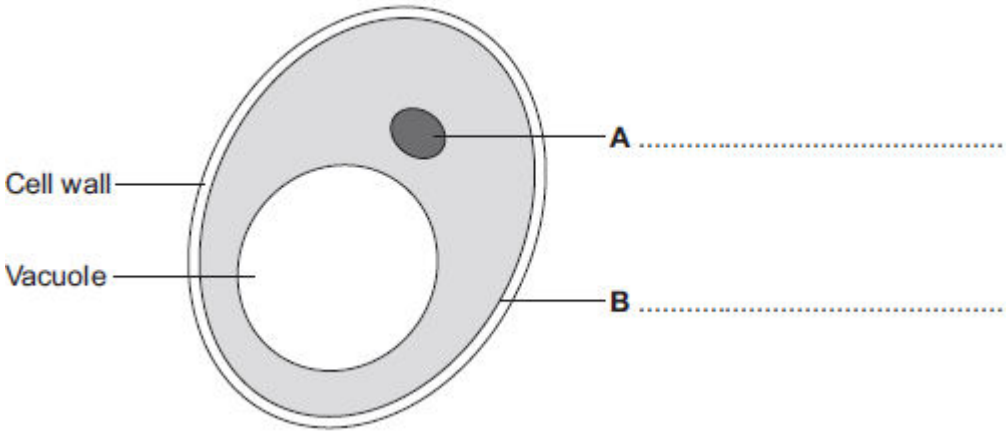
**10 °C** **25 °C** **50 °C**

**(1)**

**(Total 6 marks)**

**6** Human cells and yeast cells have some parts that are the same.

(a) The diagram shows a yeast cell.




Parts **A** and **B** are found in human cells and in yeast cells. On the diagram, label parts **A** and **B**.

**(2)**

(b) Many types of cell can divide to form new cells.

Some cells in human skin can divide to make new skin cells.

Why do human skin cells need to divide?

.....

.....

**(1)**

(c) Human stem cells can develop into many different types of human cell.

(i) Use the correct answer from the box to complete the sentence.

| | | |
|---|---|---|
| **embryos** | **hair** | **nerve cells** |

Human stem cells may come from

.....

**(1)**

(ii) Use the correct answer from the box to complete the sentence.

| | | |
|---|---|---|
| **cystic fibrosis** | **paralysis** | **polydactyly** |

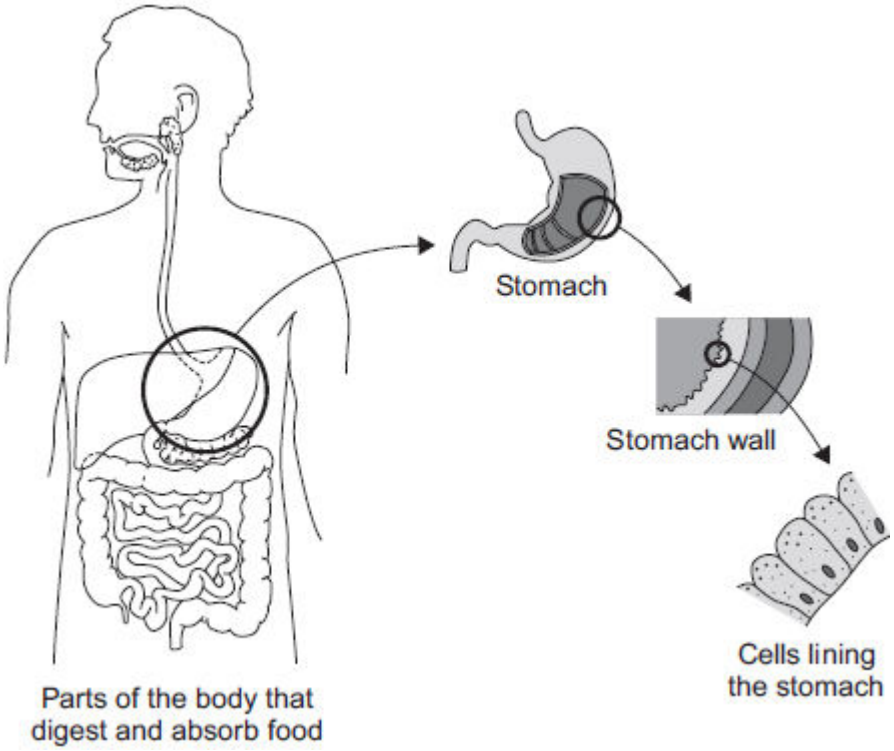
Human stem cells can be used to treat

.....

**(1)**
**(Total 5 marks)**

**7** The diagram below shows the parts of the body that digest and absorb food.

It also shows some details about the structure of the stomach.




(a) Complete the table to show whether each structure is an organ, an organ system or a tissue.

For each structure, tick (✓) **one** box.

| **Structure** | **Organ** | **Organ system** | **Tissue** |
|---|---|---|---|
| Stomach | | | |
| Cells lining the stomach | | | |
| Mouth, oesophagus, stomach, liver, pancreas, small and large intestine | | | |

**(2)**

(b) (i) The blood going to the stomach has a high concentration of oxygen.
The cells lining the stomach have a low concentration of oxygen.

Complete the following sentence.

Oxygen moves from the blood to the cells lining the stomach by

the process of ..... .

**(1)**

(ii) What other substance must move from the blood to the cells lining the stomach so that respiration can take place?

Draw a ring around the correct answer.

**glucose** **protein** **starch**

**(1)**

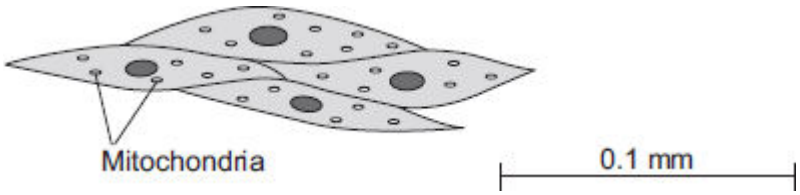
(iii) In which part of a cell does aerobic respiration take place?

Draw a ring around the correct answer.

**cell membrane** **mitochondria** **nucleus**

**(1)**
**(Total 5 marks)**

**8** The image below shows some muscle cells from the wall of the stomach, as seen through a light microscope.




(a) Describe the function of muscle cells in the wall of the stomach.

.....

.....

.....

.....

**(2)**

(b) **Figure above** is highly magnified.

The scale bar in **Figure above** represents 0.1 mm.

Use a ruler to measure the length of the scale bar and then calculate the magnification of **Figure above**.

.....

.....

.....

.....

Magnification = ..... times

**(2)**

(c) The muscle cells in **Figure above** contain many mitochondria.

What is the function of mitochondria?

.....

.....

.....

.....

**(2)**

(d) The muscle cells also contain many ribosomes. The ribosomes cannot be seen in **Figure above**.

(i) What is the function of a ribosome?

.....

.....

**(1)**

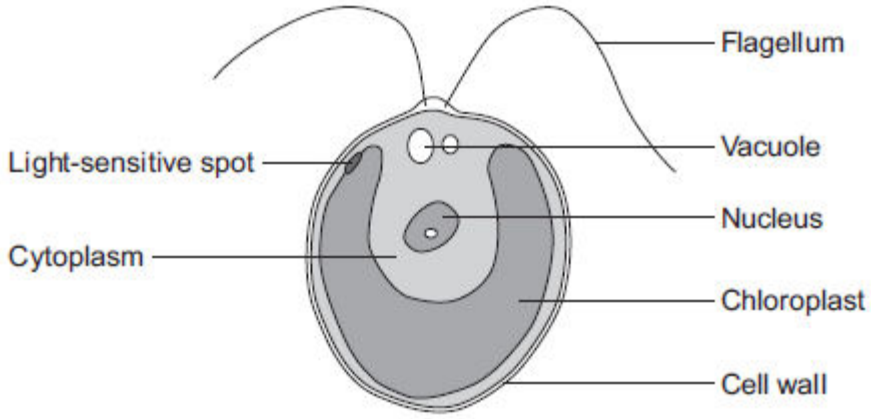
(ii) Suggest why the ribosomes **cannot** be seen through a light microscope.

.....

.....

**(1)**
**(Total 8 marks)**

**9** 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.

.....

.....

.....

.....

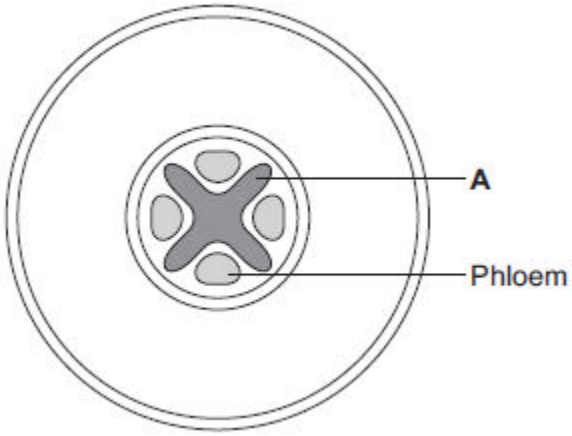
.....

.....

**(3)**

**(Total 11 marks)**

**10** 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?

.....

.....

.....

**(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.

.....

.....

.....

.....

.....

.....

**(2)**
**(Total 9 marks)**

**11** Some infections are caused by bacteria.

(a) The genetic material is arranged differently in the cells of bacteria compared with animal and plant cells.

Describe **two** differences.

.....

.....

.....

.....

**(2)**

(b) Tuberculosis (TB) is an infection caused by bacteria.

The table below shows the number of cases of TB in different regions of southern England from 2000–2011.

**Number of cases of TB per 100 000 people**

| Year | London | South East | South West |
|---|---|---|---|
| 2000 | 37 | 5 | 3 |
| 2001 | 36 | 6 | 4 |
| 2002 | 42 | 6 | 6 |
| 2003 | 42 | 7 | 4 |
| 2004 | 42 | 7 | 5 |
| 2005 | 49 | 8 | 5 |
| 2006 | 44 | 8 | 3 |
| 2007 | 43 | 8 | 5 |
| 2008 | 44 | 8 | 5 |
| 2009 | 44 | 9 | 6 |
| 2010 | 42 | 9 | 5 |
| 2011 | 45 | 10 | 5 |

(i) How does the number of cases of TB for London compare with the rest of southern England?

.....

.....

.....

**(1)**

(ii) Describe the pattern in the data for cases of TB in the South East.

.....

.....

**(1)**

(iii) Describe the pattern in the data for cases of TB in the South West.

.....

.....

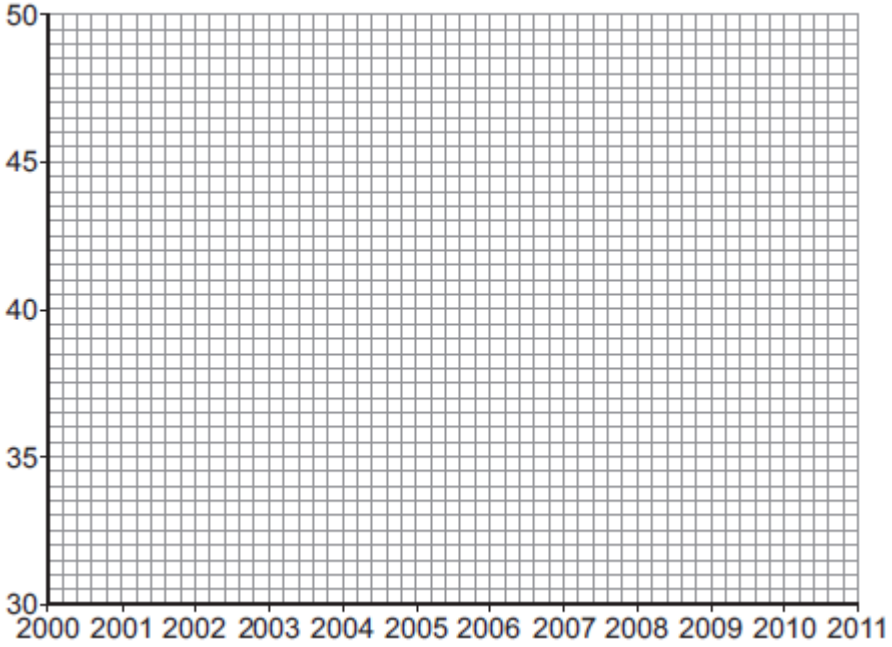
.....

.....

**(2)**

(c) (i) On the graph paper below:

- plot the number of cases of TB in **London**
- label both the axes on the graph
- draw a line of best fit.




**(4)**

(ii) Suggest why a student thought the value for 2005 in London was anomalous.

.....

.....

**(1)**

(d) People can be vaccinated against TB.

Suggest how a vaccination programme would reduce the number of people with TB.

Details of how a vaccine works are **not** required.

.....

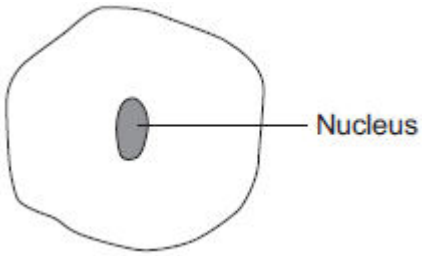
.....

.....

.....

**(2)**
**(Total 13 marks)**

**12** The diagram below shows a cell.




(a) Draw a ring around the correct answer to complete each sentence.

(i) In the nucleus of a cell, genes are part of

chromosomes.
membranes.
receptors.

**(1)**

(ii) Different genes control different

characteristics
gametes
nuclei

of an organism.

**(1)**

(iii) Studying the similarities and differences between organisms allows us to

classify
clone
grow

the organisms.

**(1)**

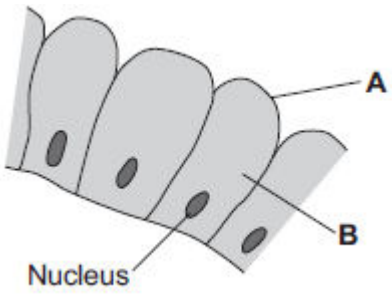
(b) Complete the following sentence.

Living things can be grouped into animals, microorganisms and ..... .

**(1)**

**(Total 4 marks)**

**13** 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)**

**14** A student is given a tube containing a liquid nutrient medium. The medium contains one type of bacterium.

(a) *In this question you will be assessed on using good English, organising information clearly and using specialist terms where appropriate.*

The student is told to grow some of the bacteria on agar jelly in a Petri dish.

Describe how the student should prepare an uncontaminated culture of the bacterium in the Petri dish.

You should explain the reasons for each of the steps you describe.

.....

.....

.....

.....

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.....

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.....

.....

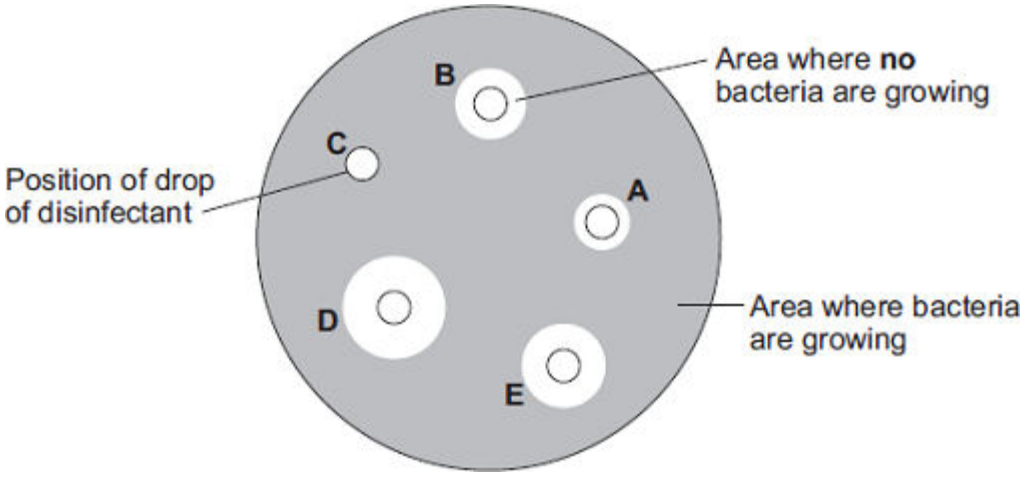
.....

.....

**(6)**

(b) After the culture had been prepared, the student added one drop of each of five disinfectants, **A**, **B**, **C**, **D** and **E**, onto the culture.

The diagram shows the appearance of the Petri dish 3 days later.




(i) There are areas on the agar jelly where **no** bacteria are growing.

Why?

.....

.....

**(1)**

(ii) The student concluded that disinfectant **D** would be the best for using around the home.

Give **one** reason why the student might be correct.

.....

.....

.....

Give **one** reason why the student might **not** be correct.

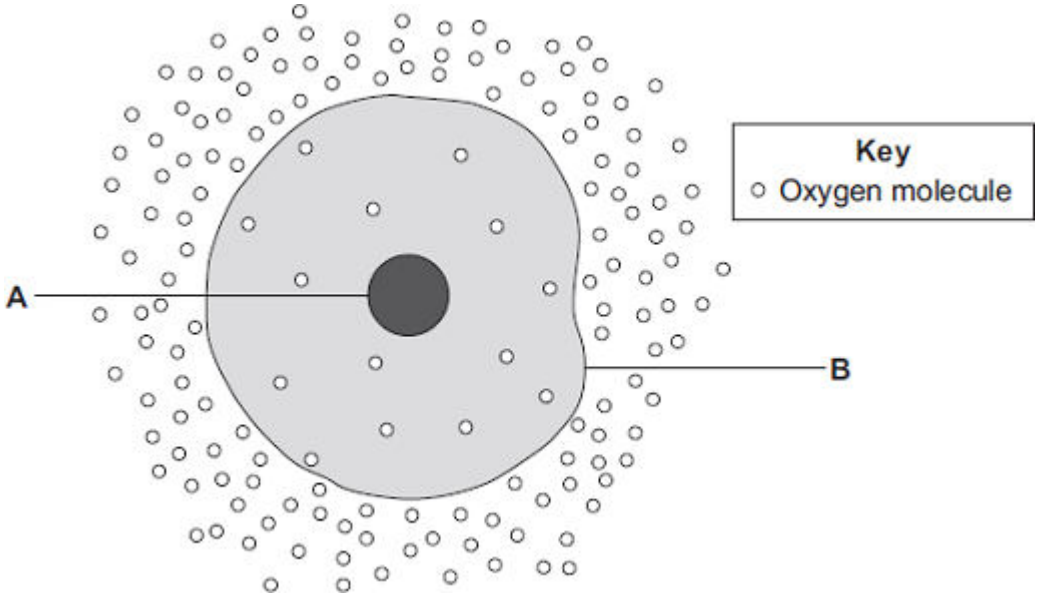
.....

.....

.....

**(2)**
**(Total 9 marks)**

**15** The diagram shows a cell.




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

| | | | |
|---|---|---|---|
| cell membrane | chloroplast | cytoplasm | nucleus |

**A** .....

**B** .....

**(2)**

(ii) The cell in the diagram is an animal cell.

How can you tell it is an animal cell and **not** a plant cell?

Give **two** reasons.

1 .....

.....

2 .....

.....

**(2)**

(b) Oxygen will diffuse into the cell in the diagram.

Why?

Use information from the diagram.

.....

.....

**(1)**

(c) The cell shown in the diagram is usually found with similar cells.

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

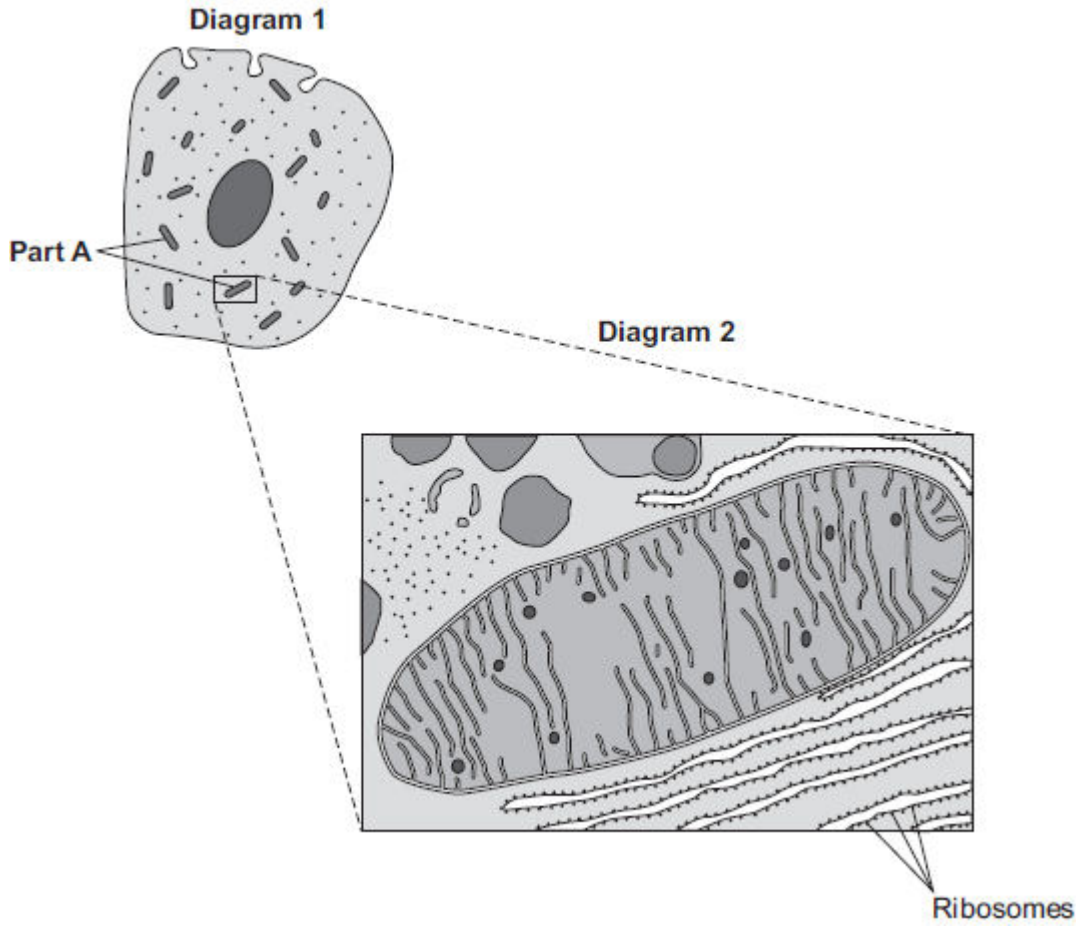
Scientists call a group of similar cells

- an organ.
- a system.
- a tissue.

**(1)**
**(Total 6 marks)**

**16** **Diagram 1** shows a cell from the pancreas.

**Diagram 2** shows part of the cell seen under an electron microscope.




Part **A** is where most of the reactions of aerobic respiration happen.

(a) (i) Name part **A**.

.....

**(1)**

(ii) Complete the equation for aerobic respiration.

glucose + oxygen ⟶ ..... + ..... (+ energy)

**(2)**

(iii) Part **A** uses oxygen.

Explain how oxygen passes from the blood to part **A**.

.....

.....

.....

.....

.....

.....

.....

.....

**(3)**

(b) The pancreas cell makes enzymes.

Enzymes are proteins.

Describe how the ribosomes and part **A** help the cell to make enzymes.

.....

.....

.....

.....

.....

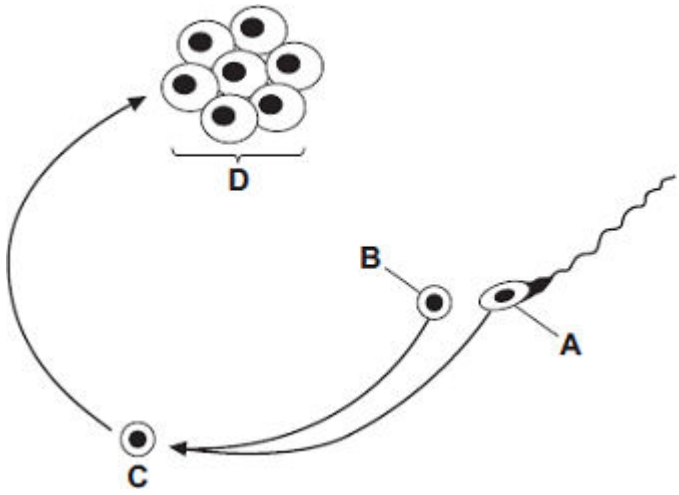
.....

.....

.....

**(3)**
**(Total 9 marks)**

**17** The diagram shows some of the stages in IVF (in vitro fertilisation).




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

| | | | | |
|---|---|---|---|---|
| **egg** | **embryo** | **fertilised egg** | **ovary** | **sperm** |

Structure **A** .....

Structure **B** .....

Structure **C** .....

Structure **D** .....

**(4)**

(b) What do doctors do next with structure **D**?

.....

.....

.....

.....

**(2)**

(c) The table gives statistics for an IVF clinic.

| | Age of women treated | | | |
|---|---|---|---|---|
| | **Below 35 years** | **35 – 37 years** | **38 – 39 years** | **40 – 42 years** |
| Number of women treated | 414 | 207 | 106 | 53 |
| Number of women who produced one baby | 90 | 43 | 17 | 1 |
| Number of women who produced twins | 24 | 8 | 4 | 1 |
| Number of women who produced triplets | 1 | 0 | 0 | 0 |

(i) About what proportion of the treated women aged 35 – 37 years produced one or more babies?

Draw a ring around your answer.

**one quarter** **one third** **half**

**(1)**

(ii) This clinic does **not** give IVF treatment to women over 42 years of age.

Use data from the table to explain why.

.....

.....

.....

.....

**(2)**

(iii) The committee which regulates IVF treatment now advises that only one embryo is used in each treatment.

Suggest **one** reason for this.

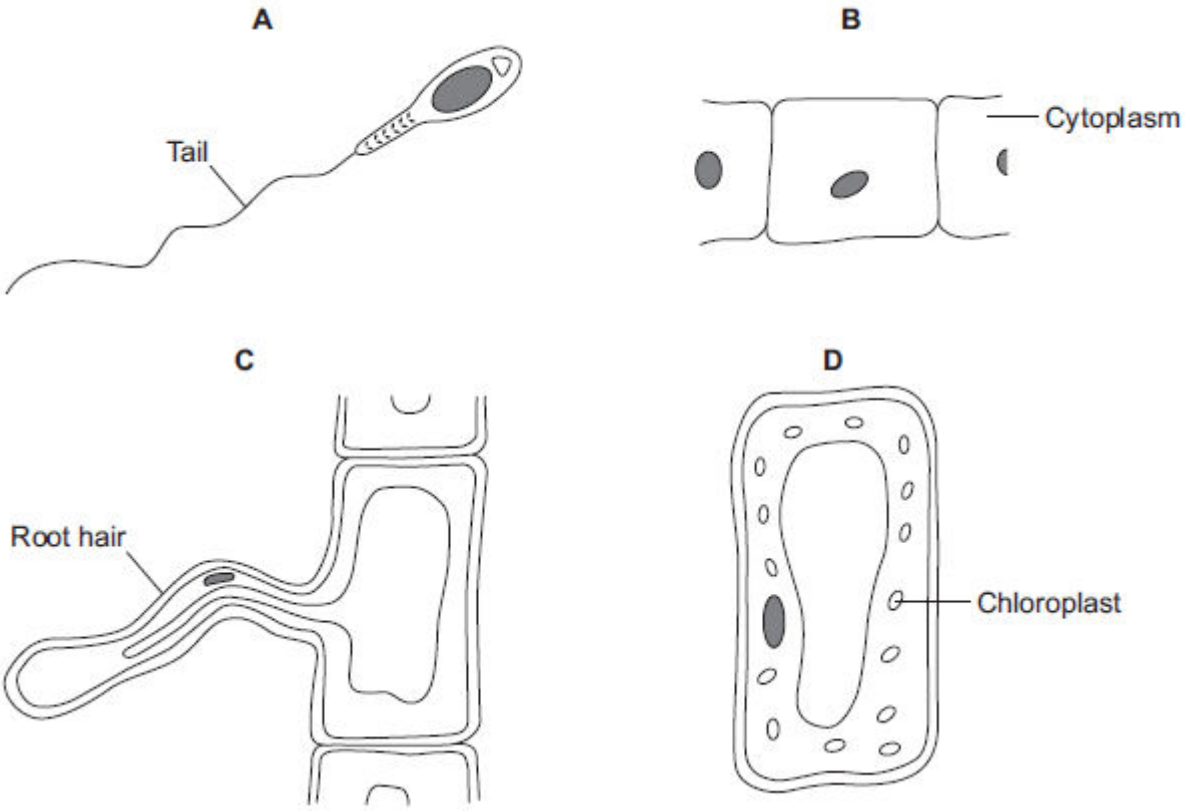
.....

.....

**(1)**

**(Total 10 marks)**

**18** The diagrams show four types of cell, **A**, **B**, **C** and **D**.
Two of the cells are plant cells and two are animal cells.




(a) (i) Which **two** of the cells are plant cells?

Tick (✓) **one** box.

**A** and **B** ☐

**A** and **D** ☐

**C** and **D** ☐

**(1)**

(ii) Give **one** reason for your answer.

.....

.....

**(1)**

(b) (i) Which cell, **A**, **B**, **C** or **D**, is adapted for swimming? ☐

**(1)**

(ii) Which cell, **A**, **B**, **C** or **D**, can produce glucose by photosynthesis? ☐

**(1)**

(c) Cells **A**, **B**, **C** and **D** all use oxygen.

For what process do cells use oxygen?

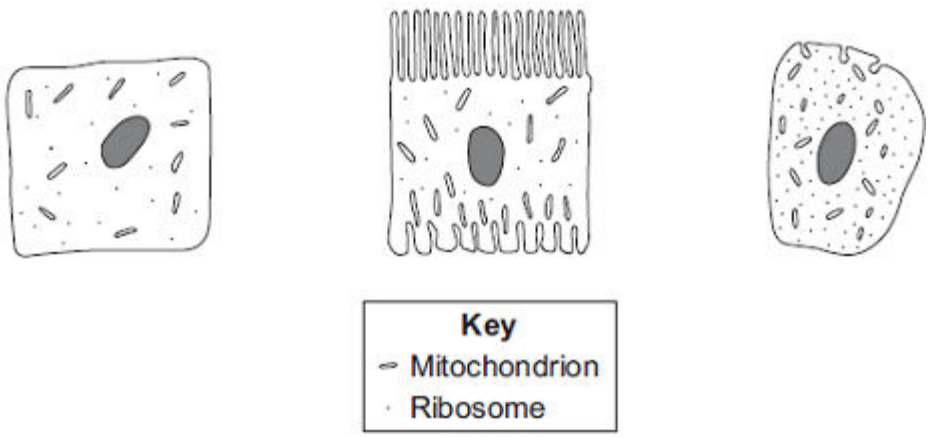
Draw a ring around **one** answer.

**osmosis** **photosynthesis** **respiration**

**(1)**
**(Total 5 marks)**

**19** Diagrams **A**, **B** and **C** show cells from different parts of the human body, all drawn to the same scale.

**A** **B** **C**




(a) Which cell, **A**, **B** or **C**, appears to be best adapted to increase diffusion into or out of the cell? ☐

Give **one** reason for your choice.

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**(1)**

(b) (i) Cell **C** is found in the salivary glands.

Name the enzyme produced by the salivary glands.

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**(1)**

(ii) Use information from the diagram to explain how cell **C** is adapted for producing this enzyme.

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**(2)**
**(Total 4 marks)**

**20** (a) Mr and Mrs Smith both have a history of cystic fibrosis in their families.
Neither of them has cystic fibrosis.
Mr and Mrs Smith are concerned that they may have a child with cystic fibrosis.

Use a genetic diagram to show how they could have a child with cystic fibrosis.

Use the symbol **A** for the dominant allele and the symbol **a** for the recessive allele.

**(3)**

(b) Mr and Mrs Smith decided to visit a genetic counsellor who discussed embryo screening.

Read the information which they received from the genetic counsellor.

- Five eggs will be removed from Mrs Smith's ovary while she is under an anaesthetic.
- The eggs will be fertilised in a dish using Mr Smith's sperm cells.
- The embryos will be grown in the dish until each embryo has about thirty cells.
- One cell will be removed from each embryo and tested for cystic fibrosis.
- A suitable embryo will be placed into Mrs Smith's uterus and she may become pregnant.
- Any unsuitable embryos will be destroyed.

(i) Suggest why it is helpful to take five eggs from the ovary and not just one egg.

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.....

**(1)**

(ii) Evaluate the use of embryo screening in this case.

Remember to give a conclusion to your evaluation.

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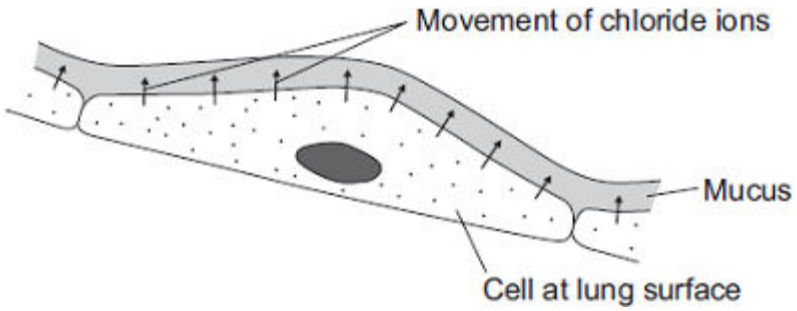
**(4)**

(c) In someone who has cystic fibrosis the person's mucus becomes thick.

The diagram shows how, in a healthy person, cells at the lung surface move chloride ions into the mucus surrounding the air passages.




The movement of chloride ions causes water to pass out of the cells into the mucus.

Explain why.

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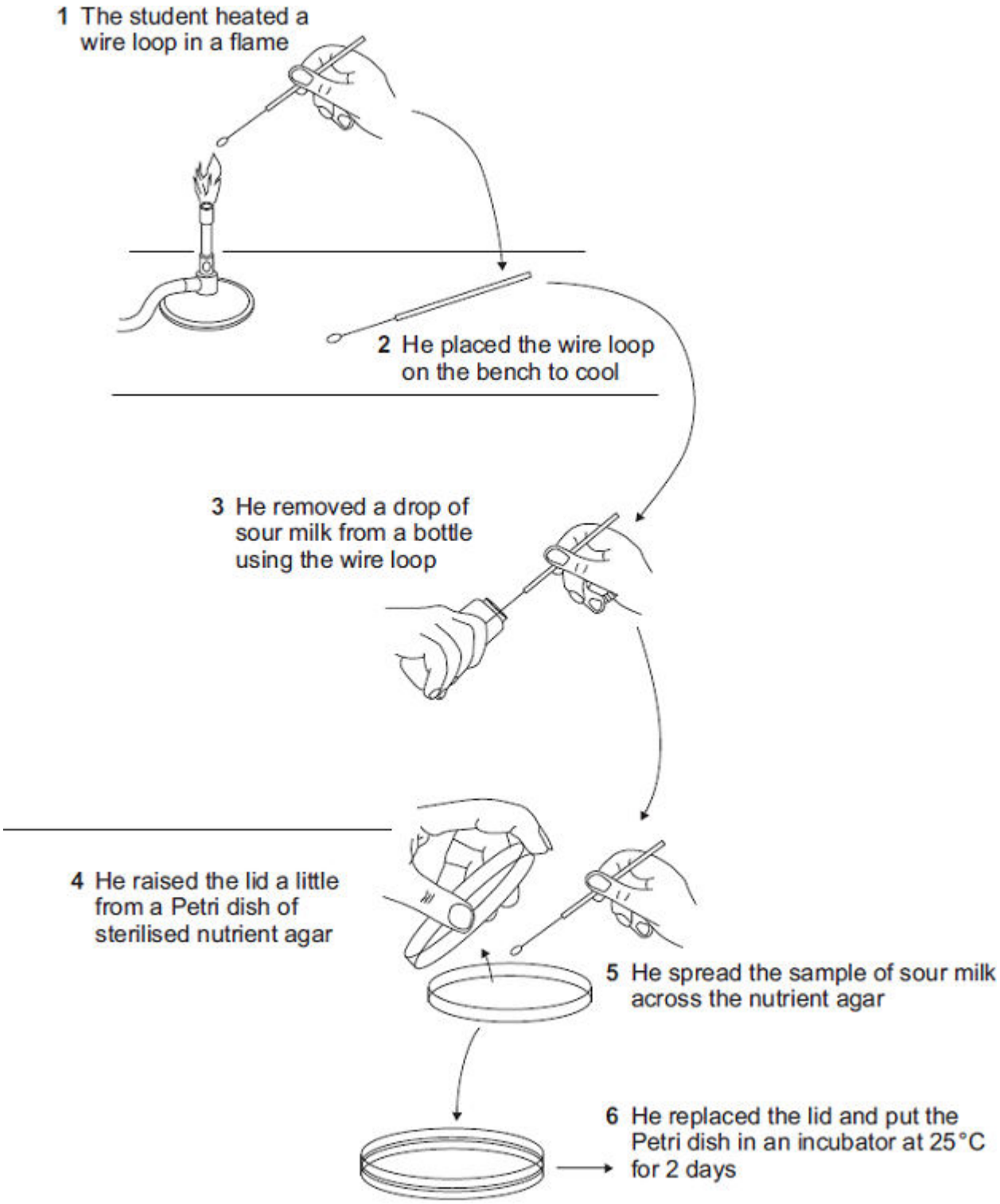
**(3)**
**(Total 11 marks)**

**21** The diagram shows how a student transferred some sour milk from a bottle to a Petri dish of nutrient agar.



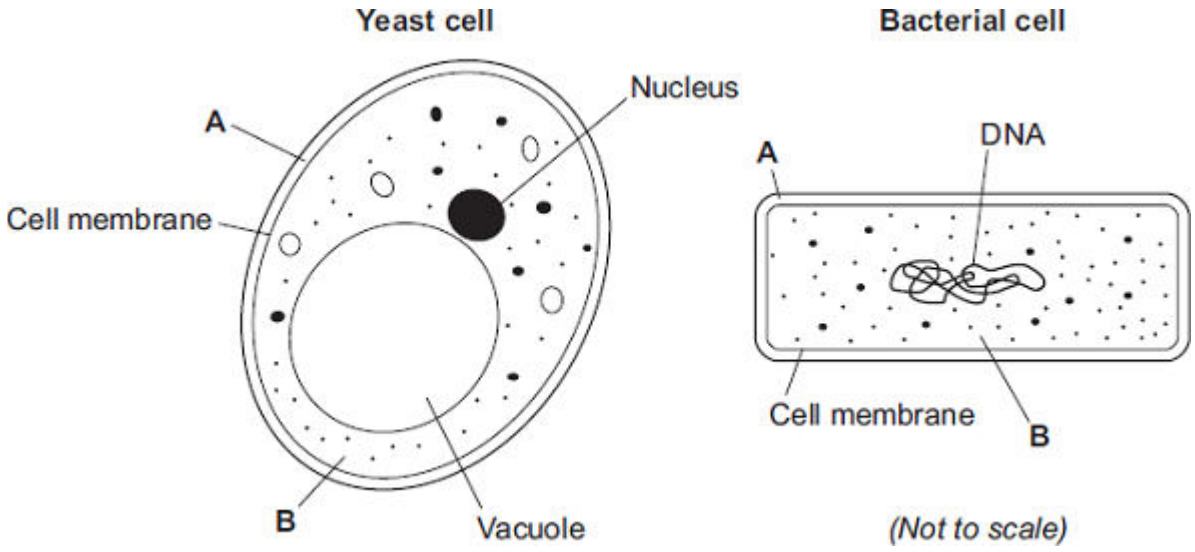

**List A** gives four actions carried out by the student.
**List B** gives five possible effects of these actions.

Draw a straight line from each action in **List A** to its effect in **List B**.
Draw only **one** line from each action.

| List A – Action | List B – Effect |
|---|---|
| Heating loop in flame | Risk of contamination with bacteria increased |
| Placing loop on bench to cool | Fewer bacteria will enter |
| Only lifting lid of Petri dish a little | Kills bacteria |
| Placing Petri dish in incubator at 25°C | Prevents air entering |
| | Risk of growth of pathogens decreased |

**(Total 4 marks)**

**22** (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.

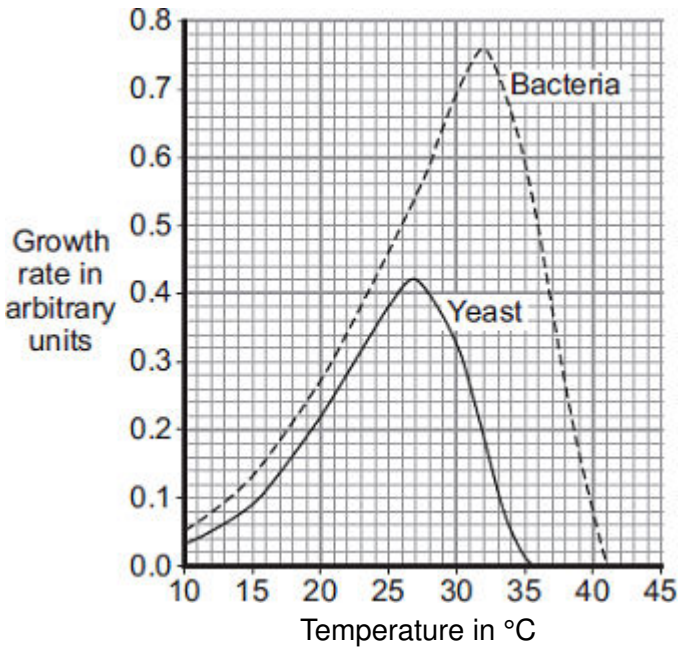
.....

.....

**(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.




(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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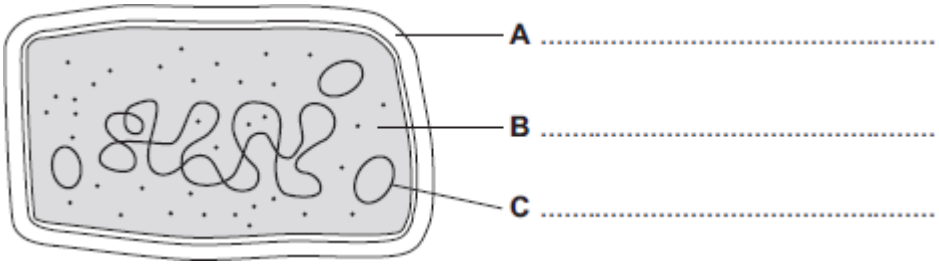
**(2)**
**(Total 7 marks)**

**23** (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.

.....

**(1)**

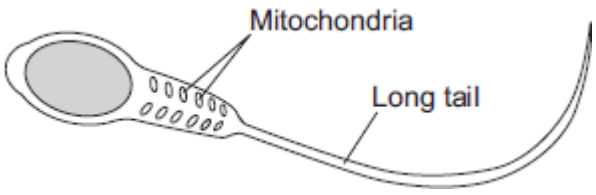
(iii) Name **one** structure that is found in a plant cell but is **not** found in a bacterial or an animal cell.

.....

**(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.....

.....

.....

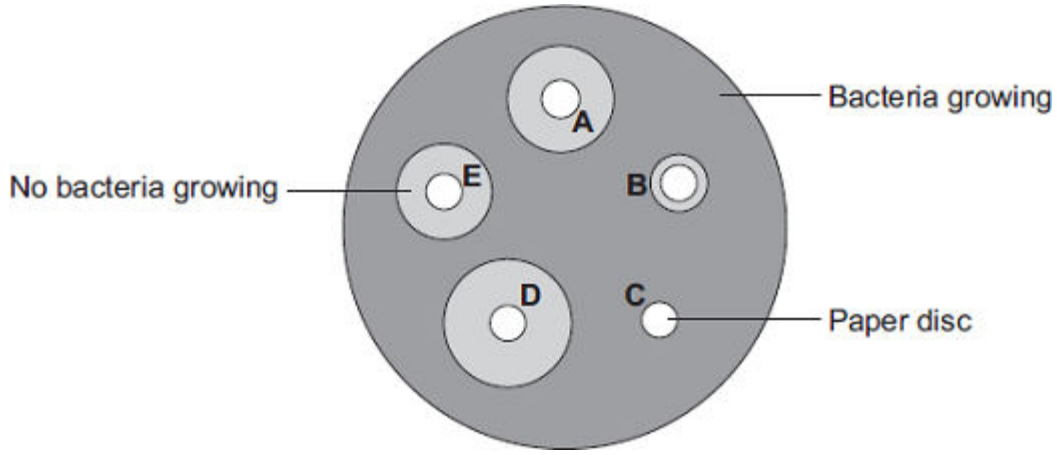
**(4)**
**(Total 9 marks)**

**24** Students in a school investigated the effect of five different antibiotics, **A**, **B**, **C**, **D** and **E**, on one type of bacterium.

The students:

- grew the bacteria on agar jelly in a Petri dish
- soaked separate paper discs in each of the antibiotics
- put the paper discs onto the bacteria in the Petri dish
- put the Petri dish into an incubator.

The diagram shows what the Petri dish looked like after 3 days.




(a) (i) What is the maximum temperature the incubator should be set at in the school?

Draw a ring around your answer.

**10°C** **25°C** **50°C**

**(1)**

(ii) Draw a ring around the correct answer to complete the sentence.

The incubator should **not** be set at a higher temperature because the higher temperature might help the growth of

| |
|---|
| pathogens. |
| toxins. |
| viruses. |

**(1)**

(b) Which antibiotic, **A**, **B**, **C**, **D** or **E**, would be best to treat a disease caused by this type of bacterium?

Write your answer in the box. ☐

Give the reason for your answer.

.....

.....

**(2)**

(c) Antibiotics **cannot** be used to treat diseases caused by viruses.

Why?

Tick (✓) **one** box.

Viruses are not pathogens ☐

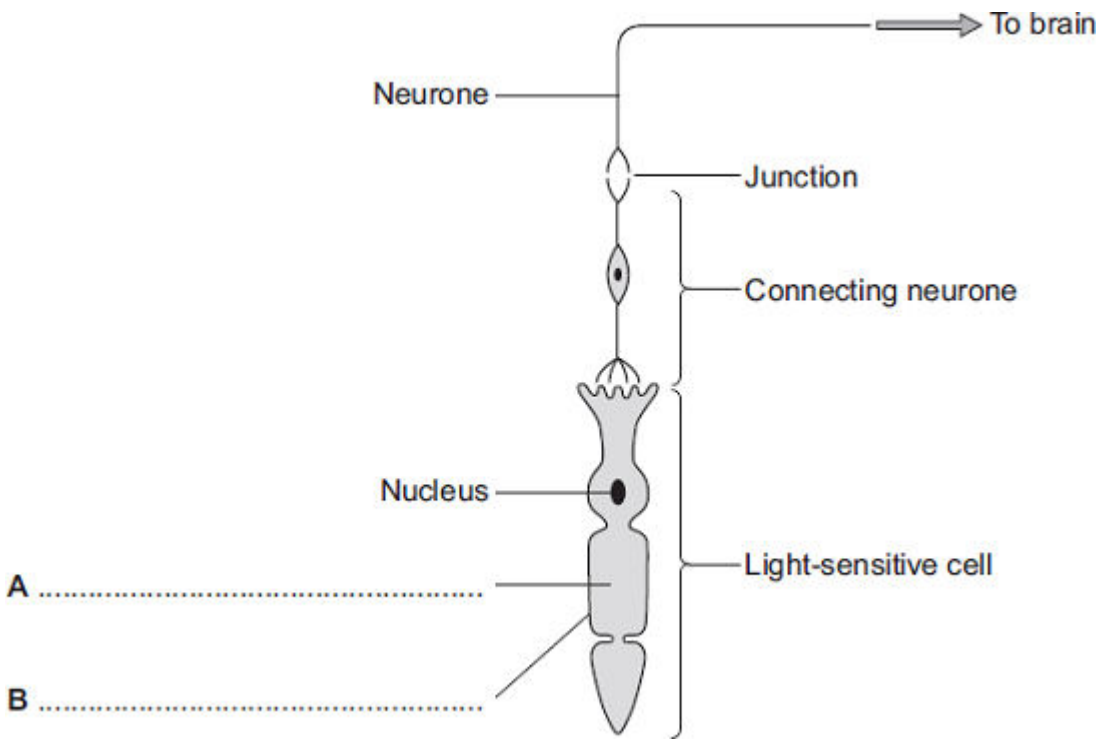
There are too many different types of virus ☐

Viruses live inside cells ☐

**(1)**
**(Total 5 marks)**

**25** **Diagram 1** shows cells from the light-sensitive layer in the eye.

**Diagram 1**




(a) On **Diagram 1**, add labels to name part **A** and part **B** of the light-sensitive cell.

**(2)**

(b) There is a junction between the connecting neurone and the neurone carrying the impulse to the brain.

(i) What name is given to the junction?

.....

**(1)**

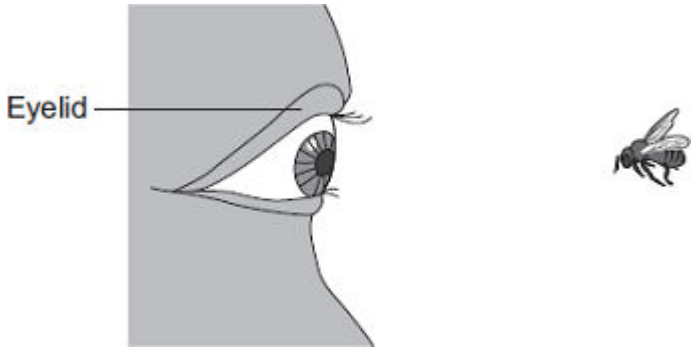
(ii) In what form is information passed across the junction?

.....

.....

**(1)**

(c) Diagram **2** shows a bee flying towards a man's eye.




In the *blink reflex* , light from the bee reaches the light-sensitive cell in the eye. The muscles in the eyelid shut the man's eye before the bee hits the eye.

Describe the pathway taken by the nerve impulse in the *blink reflex*.

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**(4)**
**(Total 8 marks)**