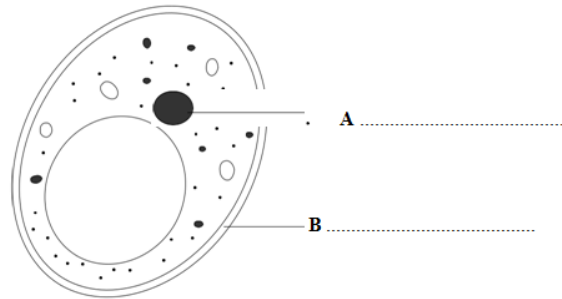


Cell and Microscopy

Q:1 The diagram shows a yeast cell.



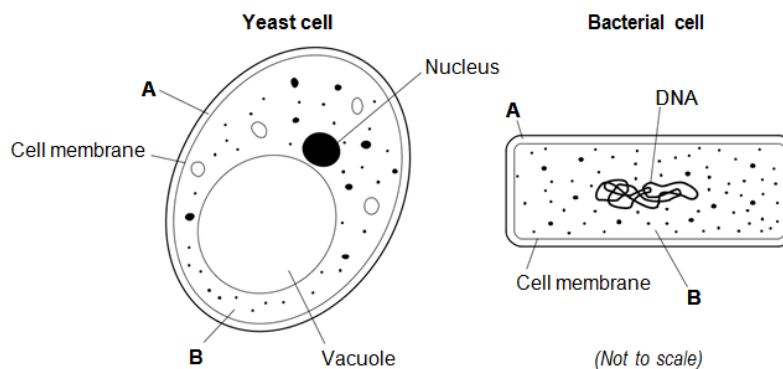
(a) Label structures A and B on the diagram. Choose your answers from the list in the box.

| | | | |
|---------------|-----------|---------|---------|
| cell membrane | cell wall | nucleus | vacuole |
|---------------|-----------|---------|---------|

(2 marks)

Q:2 Sourdough bread is light in texture and tastes slightly sour. It is made using two types of microorganism, a yeast and a bacterium. The bacterium can make acids such as lactic acid. This acid makes the bread taste sour.

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



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

Name structures A and B.

A _____

B _____

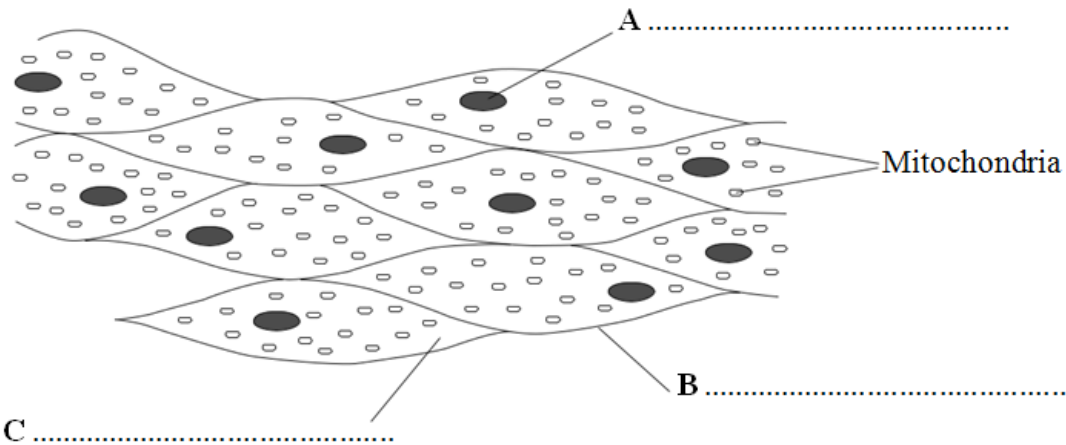
(2 marks)

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

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

(1 mark)

Q:3 The diagram shows a group of muscle cells from the wall of the intestine.



(a) On the diagram, use words from the box to name the structures labelled A, B and C.

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

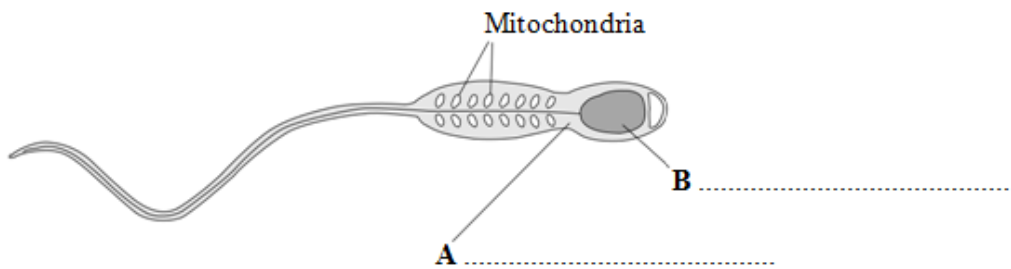
(3 marks)

(b) How are these muscle cells adapted to release a lot of energy?

(2 marks)

Q:4 This question is about cells.

(a)(i) The diagram shows a sperm cell.

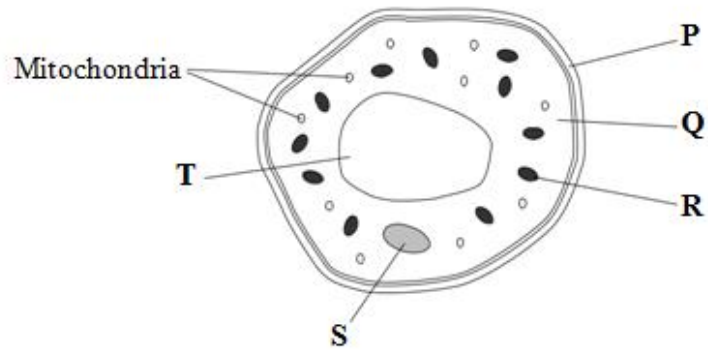


Use words from the box to label parts A and B.

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

(2 marks)

(a)(ii) The diagram shows a cell from a leaf.



Give the letters of two parts of the leaf cell which would not be found in a sperm cell. and
(1 mark)

(b) Sperm cells have many mitochondria.

Why do sperm cells need many mitochondria?

Tick (☑) one box.

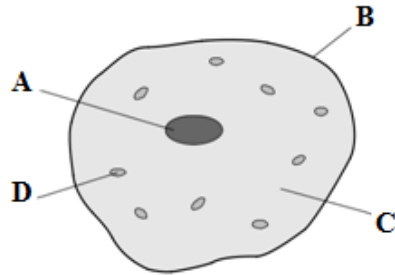
Sperm cells are involved in fertilisation.

Sperm cells are produced in very large numbers.

Sperm cells need a lot of energy to swim.

(1 mark)

Q:5 The diagram shows a human body cell.



Choose the correct answer from the box to complete each sentence.

| | | | |
|---------------|-----------|-----------|---------|
| cell membrane | cell wall | cytoplasm | nucleus |
|---------------|-----------|-----------|---------|

(a)(i) The part of the cell labelled B is the _____

(1 mark)

(a)(ii) The part of the cell labelled C is the _____

(1 mark)

(b) Which part of the cell, A, B, C or D:

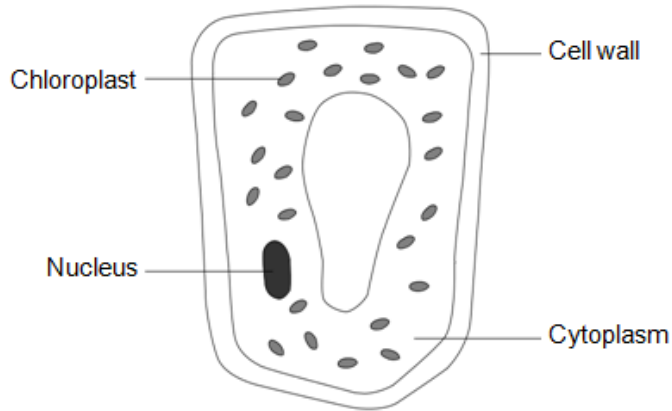
(b)(i) contains the allele for cystic fibrosis

(1 mark)

(b)(ii) is affected by cystic fibrosis?

(1 mark)

Q:6 The diagram shows a plant cell from a leaf.



(a) List A gives the names of three parts of the cell.

List B gives the functions of parts of the cell.

Draw a line from each part of the cell in List A to its function in List B.

| List A Parts of the cell | List B Functions |
|------------------------------------|---|
| Nucleus | Where most of the chemical reactions take place |
| Cytoplasm | Absorbs light energy to make food |
| Chloroplast | Strengthens the cell |
| | Controls the activities of the cell |

(3 marks)

(b) Respiration takes place in the cell.

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

energy.

All cells use respiration to release oxygen.

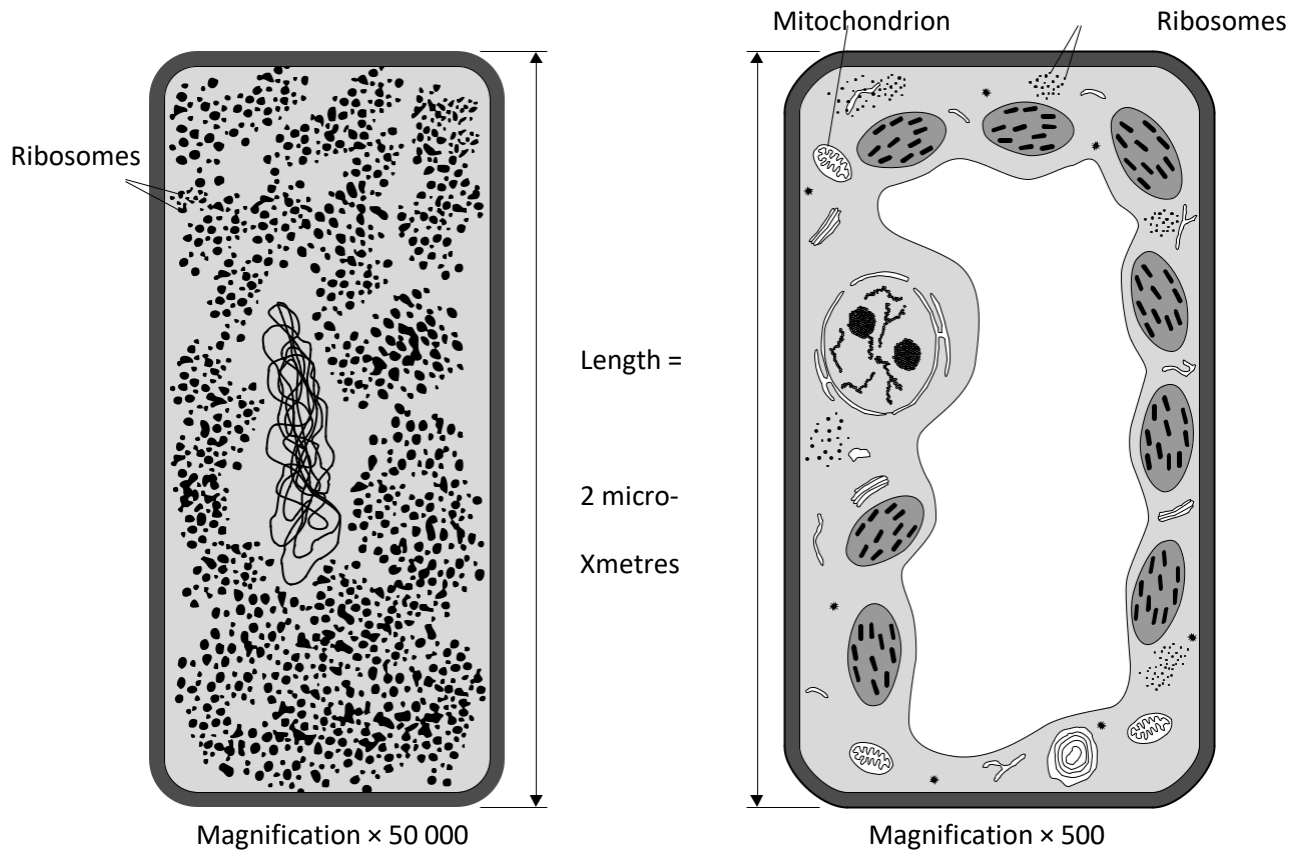
sugar.

(1 mark)

Q:7 The diagram shows two cells, a bacterial cell and a plant cell.

Bacterial cell

Plant cell



(a) (i) Both the bacterial cell and the plant cell contain ribosomes.

What is the function of a ribosome?

(1 mark)

(a) (ii) The plant cell contains mitochondria but the bacterial cell does not contain mitochondria. Give one other way in which the plant cell is different from the bacterial cell.

(1 mark)

(b) (i) Both cells are drawn the same length, but the magnification of each cell is different.

The real length of the bacterial cell is 2 micrometres.

Calculate the real length, X, of the plant cell. Give your answer in micrometres.

Show clearly how you work out your answer.

X = _____ micrometres

(2 marks)

(b) (ii) Most mitochondria are about 3 micrometres in length.

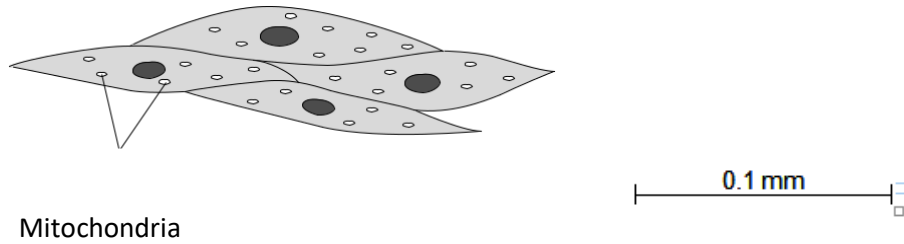
The plant cell contains mitochondria but the bacterial cell does not contain mitochondria.

Use your answer to part (b)(i) and the information in the diagram to suggest why.

(1 mark)

Q:8 Figure 6 shows some muscle cells from the wall of the stomach, as seen through a light microscope.

Figure 6



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

[2 marks]

(b) Figure 6 is highly magnified.

The scale bar in Figure 6 represents 0.1 mm.

Use a ruler to measure the length of the scale bar and then calculate the magnification of Figure 6.

Magnification = _____ times

[2 marks]

(c) The muscle cells in Figure 6 contain many mitochondria.

What is the function of mitochondria?

[2 marks]

(d) The muscle cells also contain many ribosomes. The ribosomes cannot be seen in Figure 6.

(d) (i) What is the function of a ribosome?

[1 mark]

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

[1 mark]