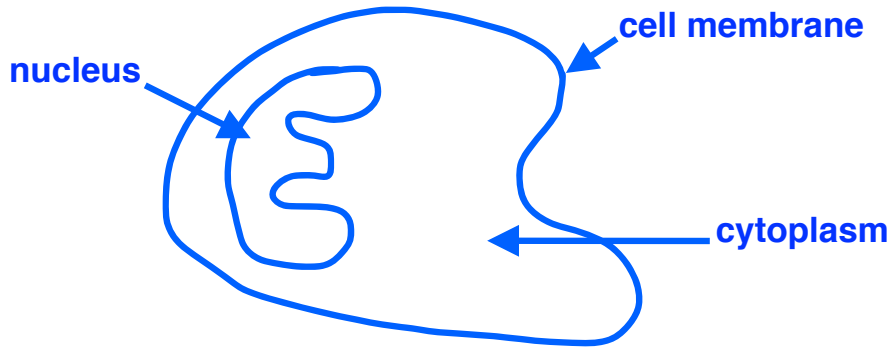


1 The immune system responds to infection using white blood cells. A phagocyte is one type of white blood cell.

(a) (i) Draw and label a phagocyte.

(3)



(ii) Give one way that the structure of this cell differs from a red blood cell.

(1)

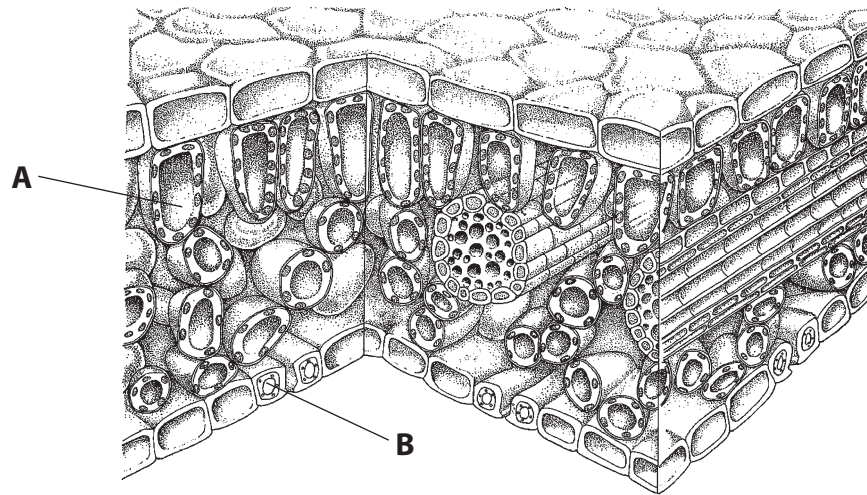
it has a nucleus

(b) Describe how white blood cells are used by the body to defend against infection.

(5)

Lymphocytes produce antibodies which bind to proteins on the surface of specific pathogens marking them for destruction by the phagocytes. Phagocytes engulf pathogens and secrete enzymes which digest the pathogens.

2 (a) The diagram shows a section through a leaf.



(i) Name the structures labelled **A** and **B**.

(2)

A palisaide cell

B guard cell

(ii) Give the function of the waxy cuticle.

(1)

it reduces water loss by transpiration

(iii) Some of the leaf cells carry out photosynthesis. Write a word equation for this process.

(2)

carbon dioxide + water -> glucose + oxygen

(iv) Plants, like all living organisms, need to excrete waste products.
Explain how the excretory product of photosynthesis is removed from the leaf.

(2)

Carbon dioxide diffuses through the stomata because of the concentration gradient between the inside of the leaf and the air.

(b) Some plants lose their leaves in cooler months. This can be described as an excretory mechanism. Suggest **two** other reasons why some plants lose their leaves in cooler months.

(2)

1 **There is less light in the winter so photosynthesis is less effective.**

2 **Shedding leaves reduces water loss by transpiration.**

(c) Name **one** excretory organ in humans and name the substance it excretes.

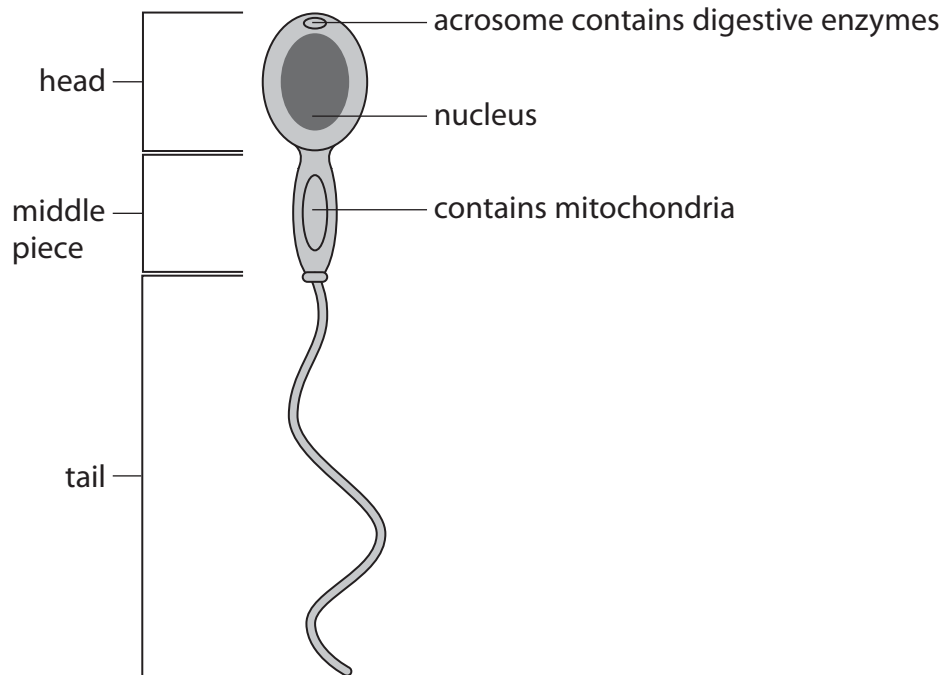
(2)

organ **lungs**

substance **carbon dioxide**

(Total for Question = 11 marks)

- 1 (a) The diagram shows a human sperm, which is a specialised cell.



Suggest the function of each of the sections of the sperm cell.

- (i) head

(2)

The head carries DNA and is also used to break into the egg.

- (ii) middle piece

(2)

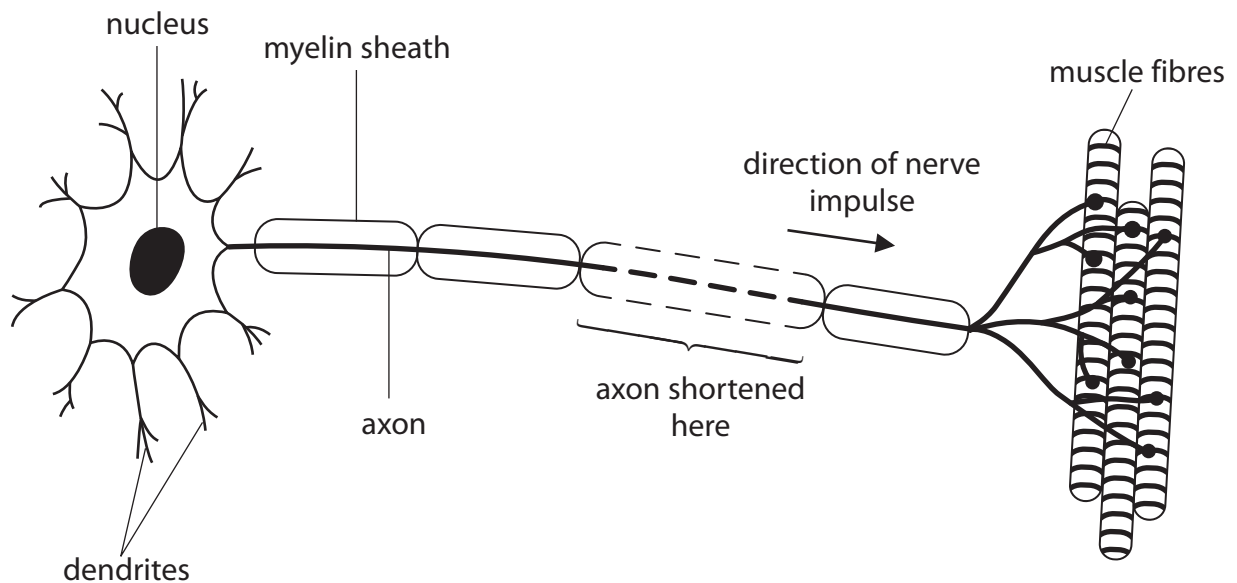
This stores energy and carries out respiration.

- (iii) tail

(1)

This is used to move the sperm cell.

(b) The diagram shows a motor neurone, which is another specialised human cell.



Suggest two ways in which the structure of the motor neurone is adapted for its function.

(2)

1 **It has many dendrites so it can easily attach to other neurones**

.....

.....

2 **Its axon is myelinated so that signals travel quickly along the cell.**

.....

.....

(Total for Question = 7 marks)