

Candidate Name	Centre Number	Candidate Number
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GCSE

239/01

**ADDITIONAL SCIENCE
FOUNDATION TIER
BIOLOGY 2**

A.M. THURSDAY, 13 January 2011

45 minutes

For Examiner's use only		
Question	Max. Mark	Mark Awarded
1	10	
2	8	
3	6	
4	11	
5	6	
6	5	
7	4	
Total	50	

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ADDITIONAL MATERIALS

In addition to this paper you may require a calculator and a ruler.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet.

INFORMATION FOR CANDIDATES

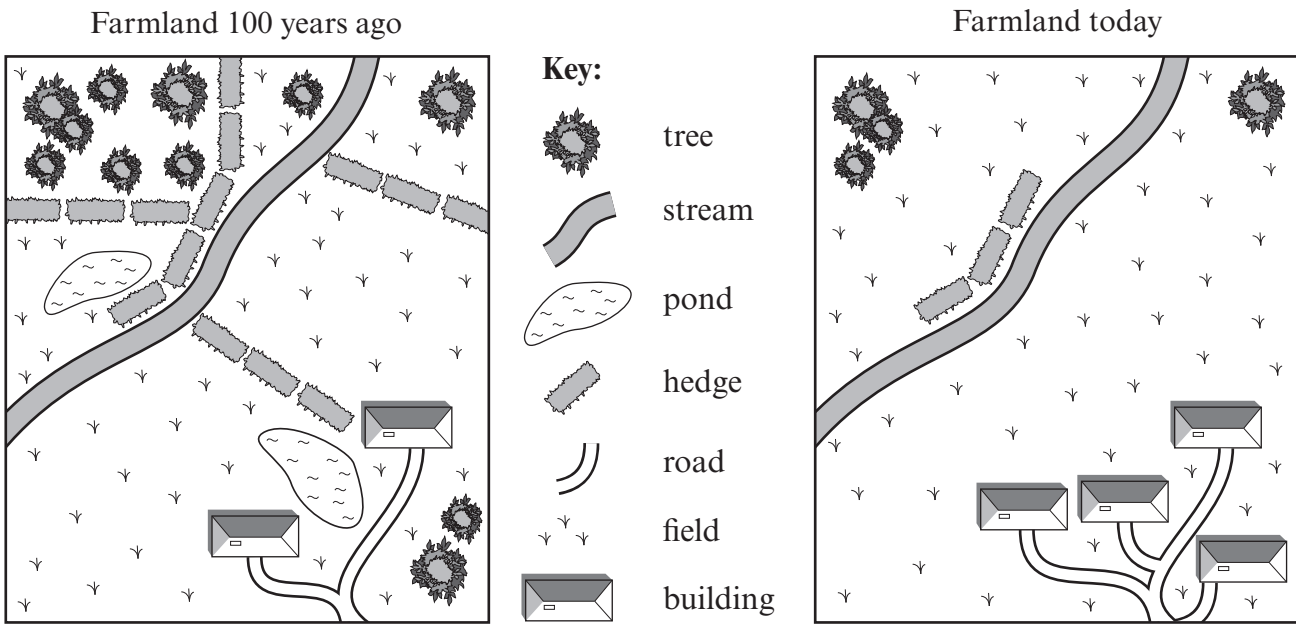
The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the necessity for good English and orderly presentation in your answers.

Answer **all** questions.

1. The human population of the world is increasing quickly. Farming methods have changed so that more people can be fed.

(a) The maps show the same area of farmland 100 years ago and as it is today.



- (i) What has happened to the size of the fields? [1]

.....

- (ii) State **three other** ways in which the farmland has changed. [3]

I.

II.

III.

- (iii) Suggest what has happened to the variety of wildlife in the farmland. [1]

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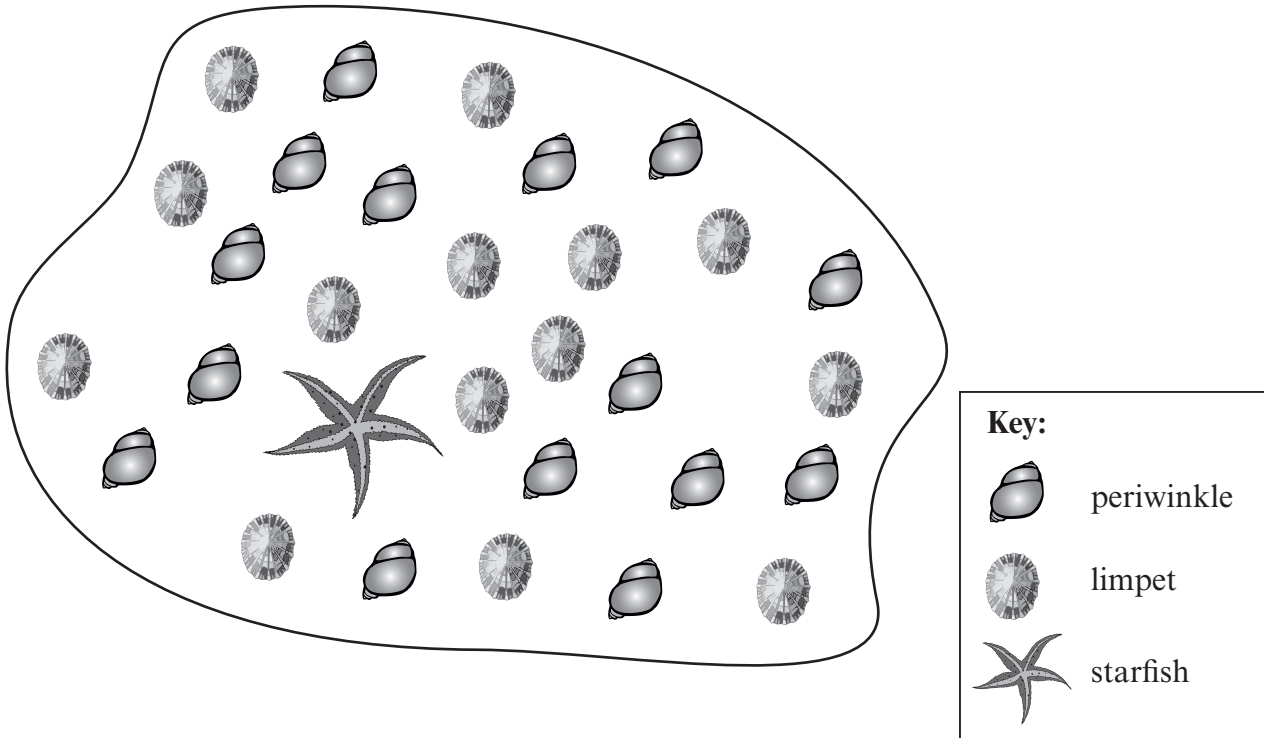
(b) Complete the sentences below using some of the words from the list: [5]

pesticides chains insects heavy metals fertilisers minerals

Farmers use to kill and other pests
that destroy crops. The use of these chemicals can disturb food

Farmers use to replace lost from
the soil.

2. Isabel carried out a rock pool study on the seashore. She counted the number of plants and animals. Only the animals are shown in the pool below.

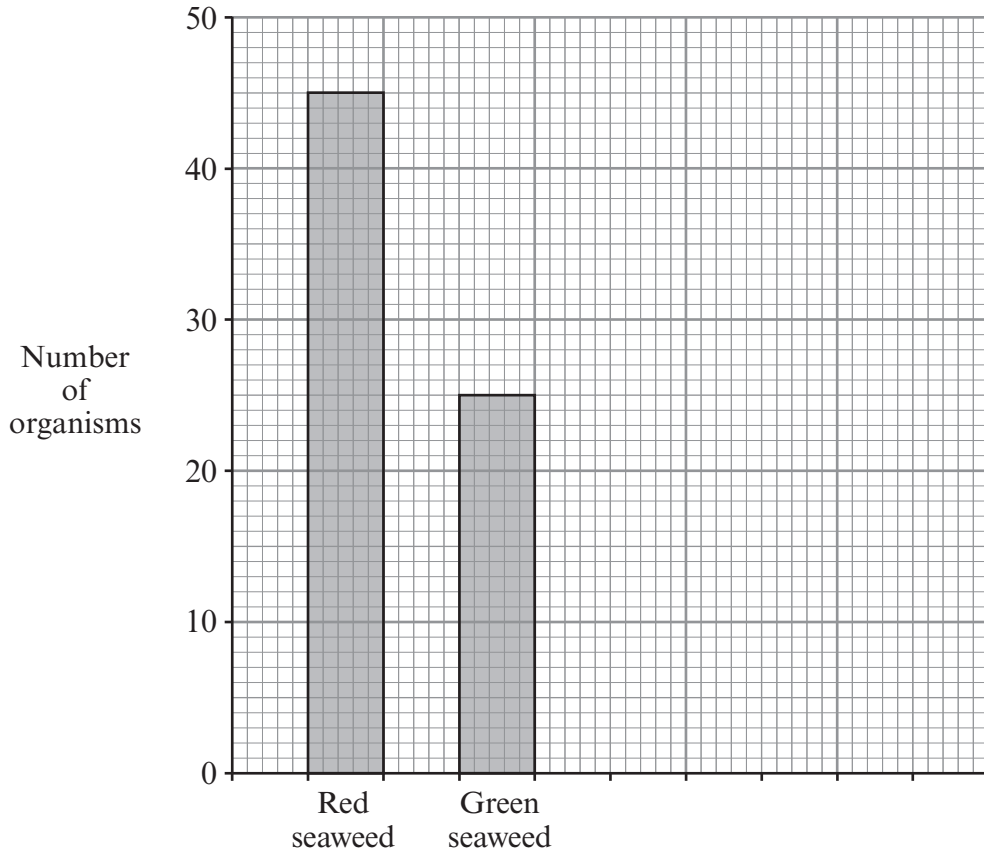


- (a) (i) Complete the table to show the number of animals.

[2]

Organisms	Number
Red seaweed	45
Green seaweed	25
Limpets	
Periwinkles	
Starfish	

(ii) Complete and label the bar chart to show the number of each animal. [3]



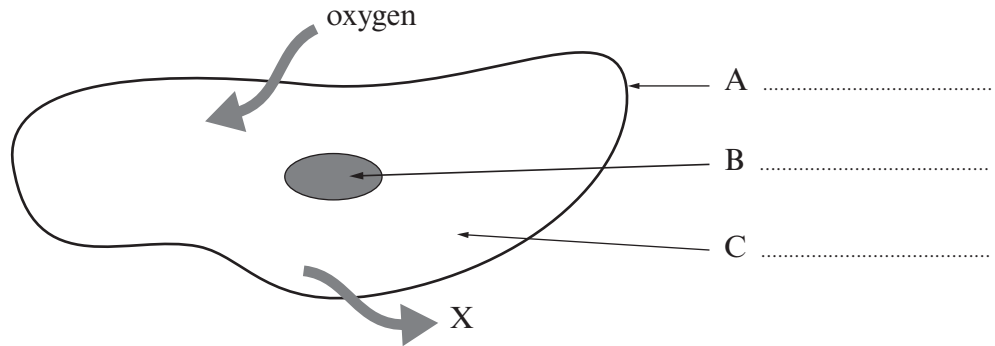
- (b)
- Seaweeds are the producers in the food chain.
 - Periwinkles and limpets eat seaweeds.
 - Starfish eat limpets and periwinkles.

In the space below, draw a labelled pyramid of numbers for the organisms in the rock pool. [3]

Use three levels: producers, herbivores, carnivores.

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3. *Amoeba* is a one-celled animal that lives in ponds.



(a) Label A, B and C on the diagram. [3]

The pond water contains oxygen that *Amoeba* needs.

(b) (i) What is the name of the process by which oxygen moves into the *Amoeba*? [1]

.....

(ii) Name the process that uses oxygen. [1]

.....

(iii) Name the gas that is represented by the letter X in the diagram. [1]

.....

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4. (a) The table shows parts of the digestive system. Number the boxes from 1 to 5 to show the correct order of parts that food passes through. [3]

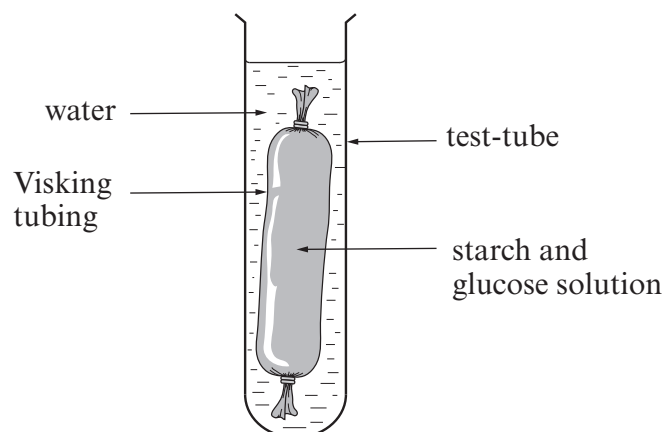
Part of digestive system	Order that food passes through
anus	
stomach	
mouth	
large intestine	
small intestine	

- (b) In the table below, match each part of the digestive system to its correct function by writing the appropriate letters A - D from the list. [3]

- A absorbs digested food
- B joins the mouth with the stomach
- C secretes proteases and acid
- D secretes three types of digestive enzyme.

Part of digestive system	Function
oesophagus [gullet]	
stomach	
small intestine	
pancreas	

- (c) Rhodri carried out an experiment, using the following apparatus, to show the absorption of food.



Rhodri tested the contents of the Visking tubing and test-tube for starch and glucose at the start of his experiment.
He re-tested after 30 minutes.
His results are shown in the table.

Key: ✓ substance present X substance absent

Time [mins]	Contents of Visking tubing		Contents of test-tube	
	starch	glucose	starch	glucose
0	✓	✓	X	X
30	✓	✓	X	✓

After 30 minutes, what did Rhodri find

(i) in the test-tube? [1]

.....

(ii) in the Visking tubing? [1]

.....

(iii) Explain his results. [2]

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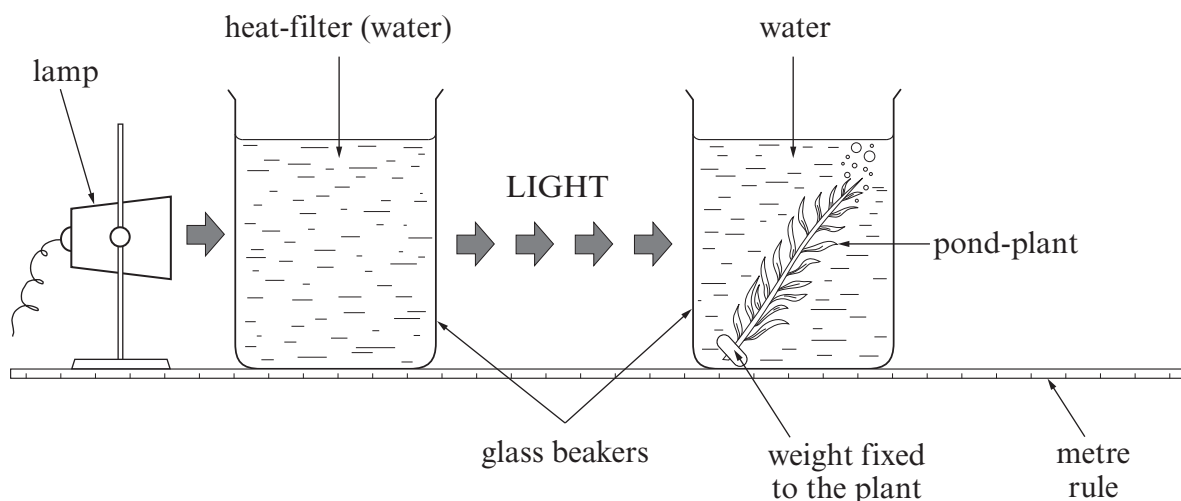
(iv) In this model of the intestine, what does the water in the test-tube represent? [1]

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5. (a) Name the chemical used by green plants to absorb sunlight energy during photosynthesis. [1]

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- (b) The following apparatus was set up by students in a school laboratory.



Explain how you could use the apparatus to investigate the effect of different light intensities on the **rate** of photosynthesis of the pond plant. [3]

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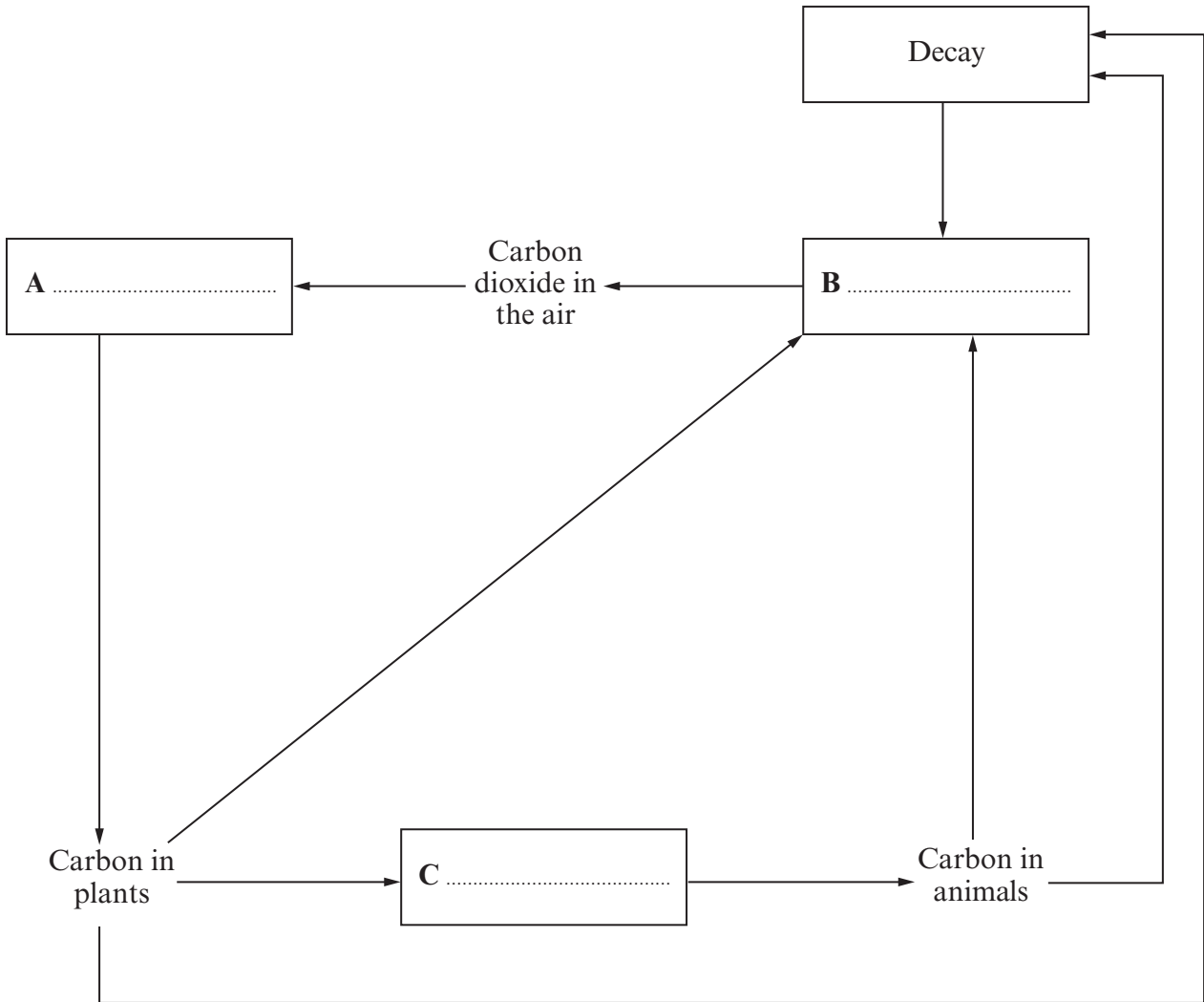
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- (c) State **two** ways in which plant cells use the glucose produced in photosynthesis. [2]

.....

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6. The diagram shows the carbon cycle.



(a) Complete the diagram of the carbon cycle by naming the processes **A**, **B** and **C**. [3]

(b) Explain the part played by microbes in the carbon cycle. [2]

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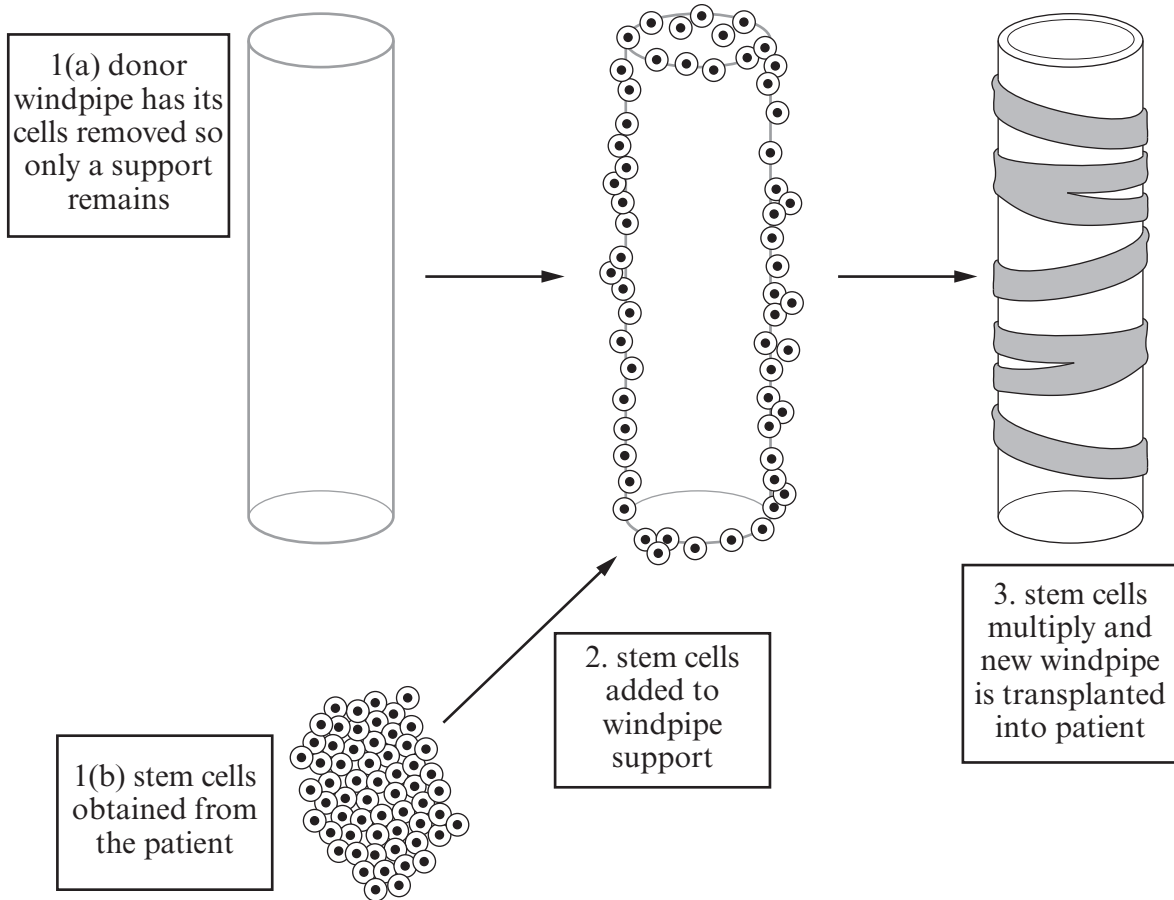
7. (a) What are stem cells?

[2]

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(b) In 2008 scientists carried out the first successful windpipe transplant in humans using the patient's own stem cells.

The process involved the following stages:



State **two** advantages to the patient of using their own stems cells rather than using embryonic stem cells. [2]

(i)
.....
(ii)
.....