



General Certificate of Secondary Education  
2009

## Science: Biology

Paper 1  
Foundation Tier

[G0901]

WEDNESDAY 20 MAY, AFTERNOON

StudentBounty.com

71

Candidate Number



### TIME

1 hour

### INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper.

Answer **all fourteen** questions.

### INFORMATION FOR CANDIDATES

The total mark for this paper is 80.

Quality of written communication will be assessed in question **14(d)**

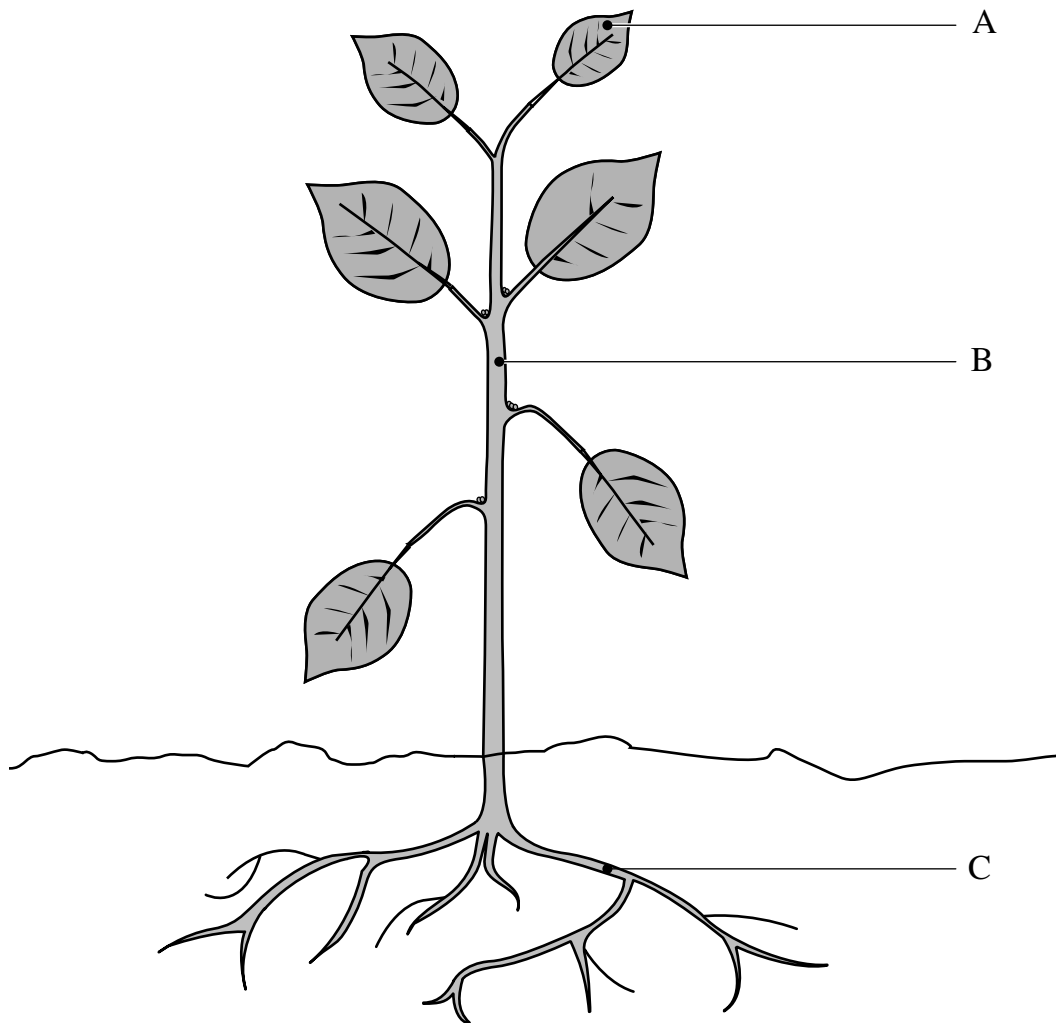
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	

<b>Total Marks</b>	
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1 The diagram shows a plant.

Examiner Only	
Marks	Remark



(a) Name the plant organs A and B.

A \_\_\_\_\_ [1]

B \_\_\_\_\_ [1]

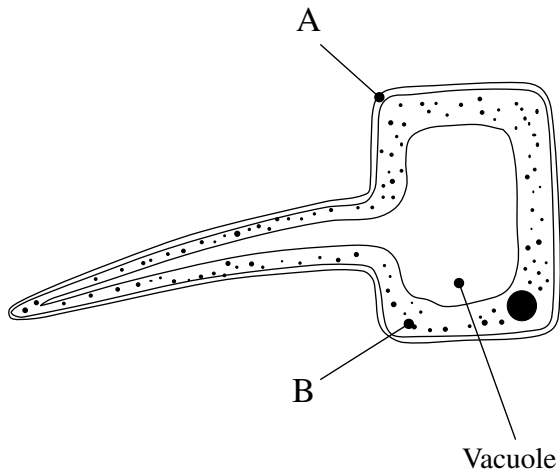
(b) Give **two** functions of C.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

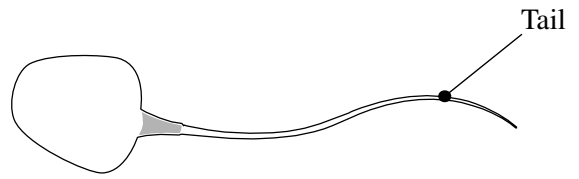
(c) Name **one other** organ of a plant not shown in the diagram.

\_\_\_\_\_ [1]

2 The diagrams show two specialised cells.



Plant cell



Animal cell

(a) Name parts A and B.

A \_\_\_\_\_ [1]

B \_\_\_\_\_ [1]

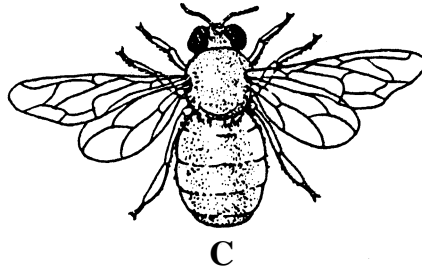
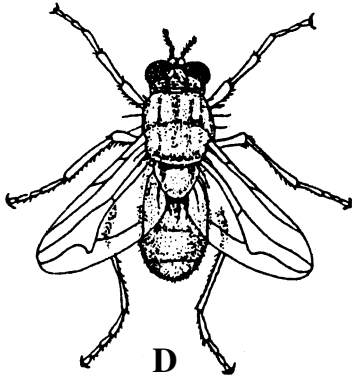
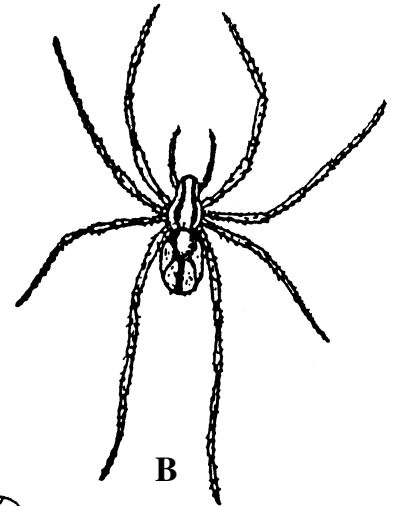
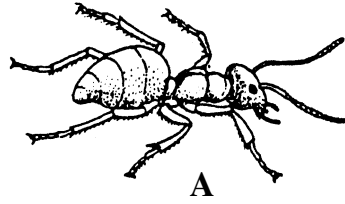
(b) Give the function of the tail on this animal cell.

\_\_\_\_\_  
 \_\_\_\_\_ [1]

(c) On the animal cell **draw** and **label** the nucleus. [2]

Examiner Only	
Marks	Remark

3 The diagrams show four animals.



(a) Use the key to identify the animals and place the correct letter in each box.

- |                  |                |                          |     |
|------------------|----------------|--------------------------|-----|
| 1. Wings present | go to 2        |                          |     |
| No wings         | go to 3        |                          |     |
| 2. Two wings     | <i>Musca</i>   | <input type="checkbox"/> | [1] |
| Four wings       | <i>Bombus</i>  | <input type="checkbox"/> | [1] |
| 3. Six legs      | <i>Formica</i> | <input type="checkbox"/> | [1] |
| Eight legs       | <i>Pisaura</i> | <input type="checkbox"/> | [1] |

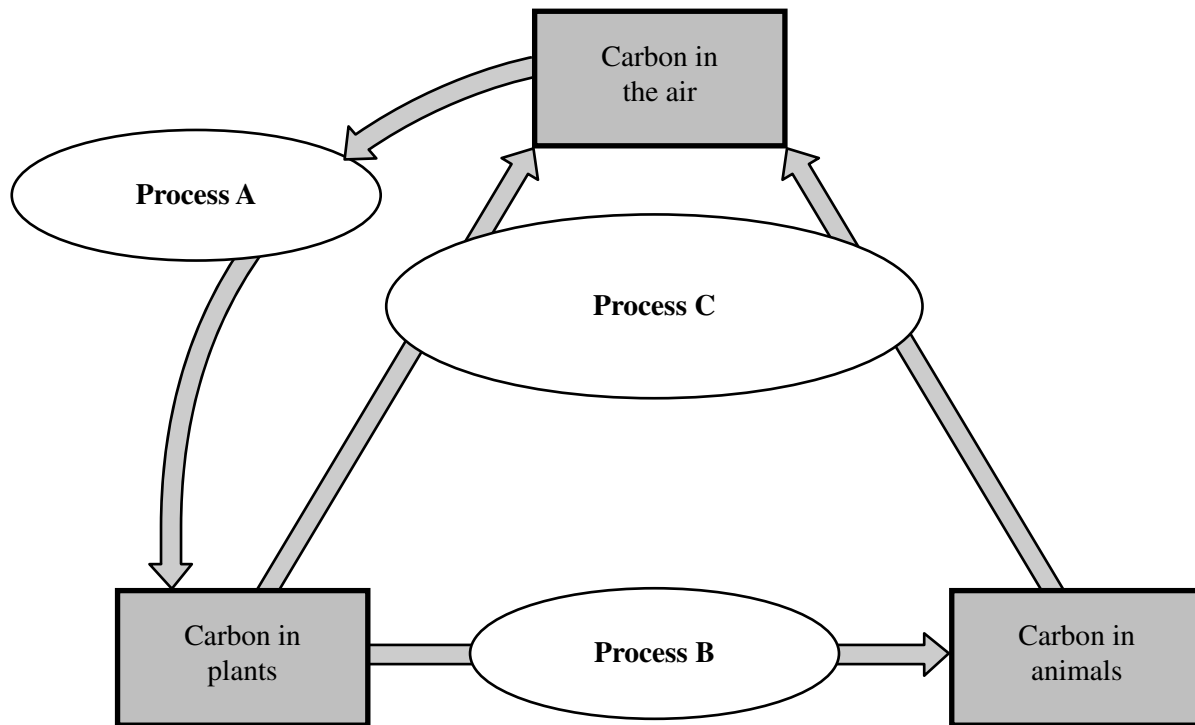
(b) Name the group to which animals A, C and D belong.

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark



5 The diagram shows part of the carbon cycle.



Choose words from the list to help answer the following questions.

- burning**                      **photosynthesis**                      **respiration**  
**fossilisation**                      **feeding**

(a) Name processes A and B.

A \_\_\_\_\_ [1]

B \_\_\_\_\_ [1]

(b) Explain how process C increases the amount of carbon in the air.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [2]

(c) Name **one** food molecule, produced by plants, which contains carbon.

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

6 The table shows some characteristics of 25 pupils in a class.

Characteristic	Variations	Number of pupils
Tongue rolling	Yes	19
	No	6
Scars	Present	5
	Absent	20
Hair length	Short	13
	Shoulder length	8
	Long	

(a) Calculate the number of pupils in the class who had long hair.  
Show your working.

\_\_\_\_\_ [2]

(b) Some characteristics are controlled by genes.

(i) What is a gene?

\_\_\_\_\_  
\_\_\_\_\_ [1]

(ii) Suggest **one** characteristic from the table which is normally controlled by

genes. \_\_\_\_\_  
the environment. \_\_\_\_\_ [2]

Examiner Only	
Marks	Remark

7 (a) Complete the table.

Method to prevent food spoilage	Treatment	Example of food treated this way
	Food kept at $-18^{\circ}\text{C}$	Ice cream
Refrigeration		
	Heated to high temperature and cooled quickly	Milk

[4]

(b) Describe how drying preserves food.

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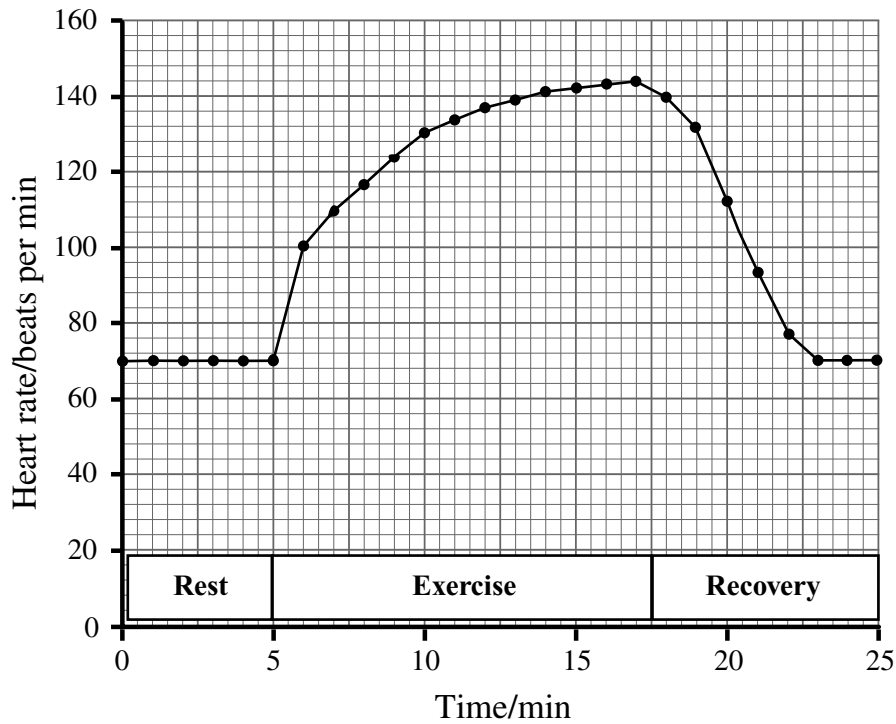
[2]

Examiner Only	
Marks	Remark



8 The graph shows the effect of exercise on heart rate.

Examiner Only	
Marks	Remark



© Biology for AQA by Anne Fullick published by Heinemann Education, 2001, ISBN 0435583549, reprinted by Pearson Education Ltd, publishers.

Use the graph to answer the following questions.

(a) What is the heart rate at rest?

\_\_\_\_\_ beats per minute [1]

(b) Describe what happens to the heart rate during exercise.

\_\_\_\_\_ [1]

(c) Explain why the heart rate changes during exercise.

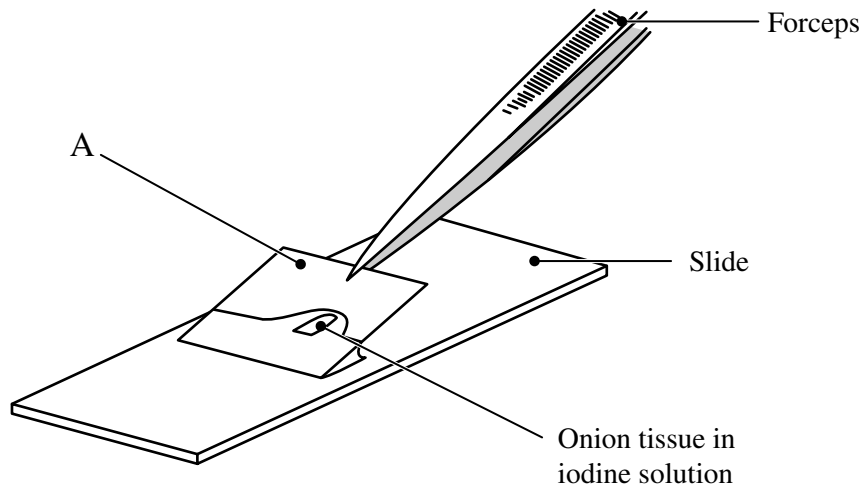
\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [2]

(d) Give **two** other changes to the body during exercise.

1. \_\_\_\_\_ [1]

2. \_\_\_\_\_ [1]

9 The diagram shows a microscope slide being prepared.



Source: D. G. Mackean, *Life Study: A Textbook of Biology*, John Murray (Publishers) Ltd., 1981

(a) Name A.

\_\_\_\_\_ [1]

(b) Describe how the forceps are used when preparing a slide.

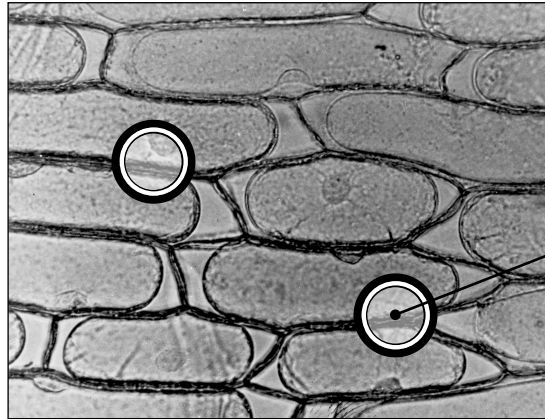
\_\_\_\_\_  
 \_\_\_\_\_ [1]

(c) Explain why the onion tissue is placed in iodine solution.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [2]

Examiner Only	
Marks	Remark

The drawing shows the appearance of a prepared slide.



Ring shape

(d) What causes the ring shapes?

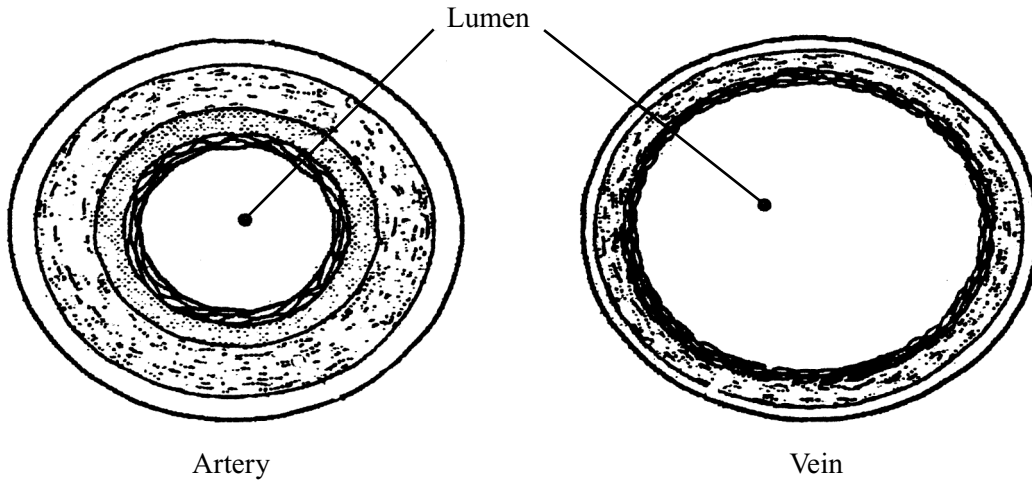
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[1]

Examiner Only	
Marks	Remark

10 The diagram shows an artery and a vein.



Source: *Human Biology: An Activity Approach*, P. Rowlinson, M. Jenkins, Cambridge University Press, 1982

(a) Give **two** ways the structure of an artery differs from a vein.

1. \_\_\_\_\_ [1]
2. \_\_\_\_\_ [1]

(b) Describe how the composition of blood in an artery differs from that in a vein.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [2]

(c) Name the artery which takes blood to the

- kidney. \_\_\_\_\_ [1]
- lung. \_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

**11** Thumb shape is controlled by a gene.

The dominant allele, **T**, results in a normal thumb shape.

The recessive allele, **t**, causes the thumb to be slightly bent to form hitch-hiker's thumb.

Normal thumb



Hitch-hiker's thumb



(a) Give the phenotype of someone whose genotype is **TT**.

\_\_\_\_\_ [1]

(b) Complete the Punnett square to show the possible offspring of a cross between a person with a normal thumb and one with a hitch-hiker's thumb.

		Hitch-hiker's thumb	
	<b>Types of gamete</b>		
Normal thumb	<b>T</b>		
	<b>t</b>		

[3]

(c) What portion of the offspring

would be expected to have hitch-hiker's thumb?

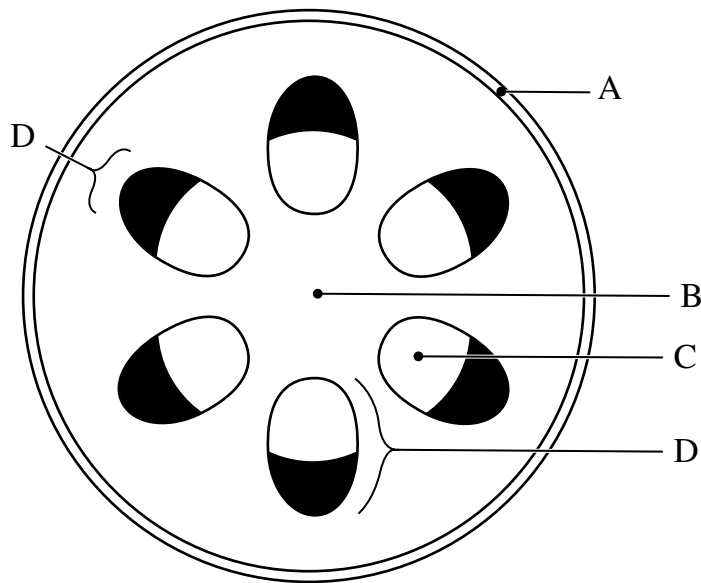
\_\_\_\_\_ [1]

are heterozygous?

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

12 The diagram shows a cross section of a stem.



(a) Name parts A, B, C and D.

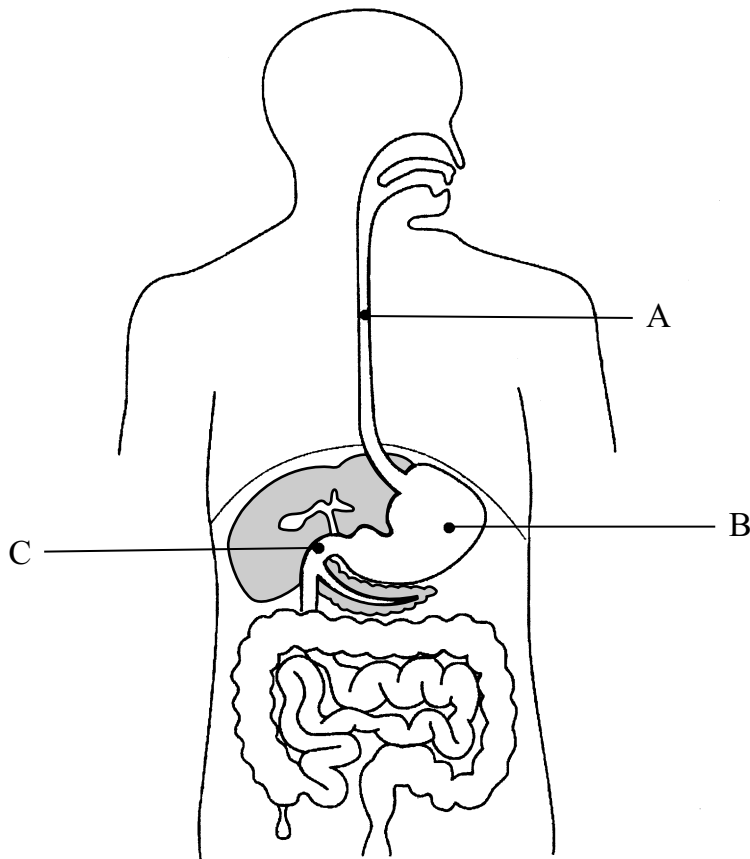
- A \_\_\_\_\_ [1]  
B \_\_\_\_\_ [1]  
C \_\_\_\_\_ [1]  
D \_\_\_\_\_ [1]

(b) Describe the function of the phloem.

\_\_\_\_\_  
\_\_\_\_\_ [2]

Examiner Only	
Marks	Remark

13 The diagram shows the human digestive system.



Source: R. McIlwaine, J Napier, GCSE BIOLOGY for CCEA, Hodder & Stoughton Educational, 2003

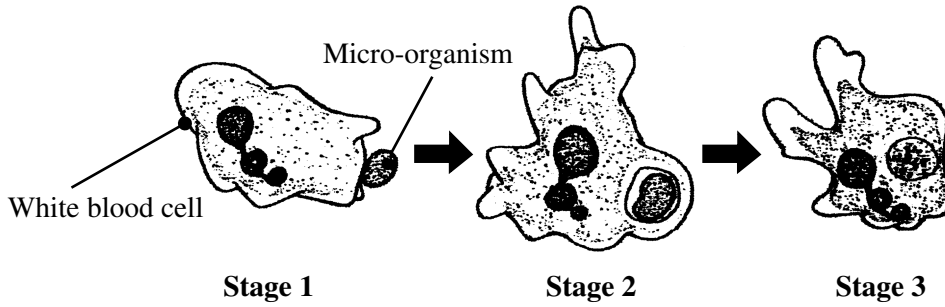
- (a) On the diagram draw a line  
 labelled X to show where ingestion takes place. [1]  
 labelled Y to show where water is absorbed. [1]

- (b) Name parts A, B and C.  
 A \_\_\_\_\_ [1]  
 B \_\_\_\_\_ [1]  
 C \_\_\_\_\_ [1]

- (c) Explain why digestion is necessary.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [2]

Examiner Only	
Marks	Remark

14 The diagram shows one way white blood cells destroy bacteria.



Source: G. Jones, M Jones, *BIOLOGY GCSE edition*, Cambridge University Press, 1987

(a) Name the process shown in the diagram.

\_\_\_\_\_ [1]

(b) Explain how the bacteria are destroyed.

\_\_\_\_\_ [1]

(c) Give **one** other way white blood cells fight infection.

\_\_\_\_\_ [1]

Vaccination is another way of fighting infection.

(d) Describe how Jenner developed a vaccine for smallpox.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [3]

Quality of written communication [2]

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Marks	Remark



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**THIS IS THE END OF THE QUESTION PAPER**

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