WJEC CBAC

GCE AS/A level

1072/01

BIOLOGY – BY2

A.M. MONDAY, 3 June 2013

1½ hours plus your additional time allowance

Surname _____

Other Names _____

Centre Number _____

Candidate Number 2 _____

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For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	8	
2.	13	
3.	13	
4.	12	
5.	5	
6.	9	
7.	10	
Total	70	

ADDITIONAL MATERIALS

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

INSTRUCTIONS TO CANDIDATES

Use black ink, black ball-point pen or your usual method.

Write your name, centre number and candidate number in the spaces provided on the front cover.

Answer ALL questions.

Write your answers in the spaces provided in this booklet. If you run out of space, use the continuation pages at the back of the booklet, taking care to number the question(s) correctly.

INFORMATION FOR CANDIDATES

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

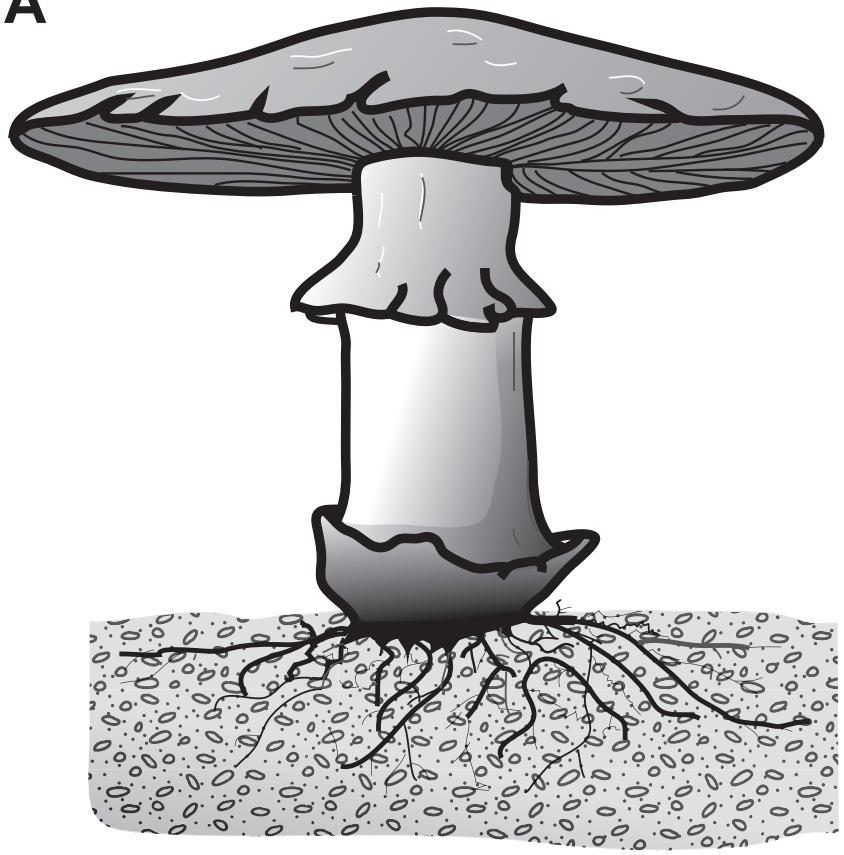
You are reminded of the necessity for good English and orderly presentation in your answers.

The quality of written communication will affect the awarding of marks.

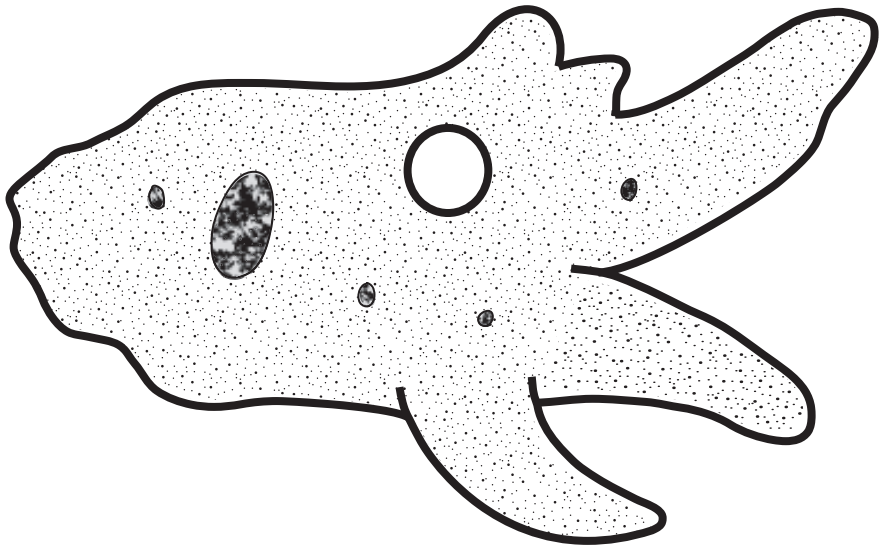
1(a) Complete the table on classification given below. **[4]**

Kingdom	Phylum	Class	Genus
	Angiosperm	Dicotyledons	Ranunculus (Buttercup)
Animalia		Oligochaetae	Lumbricus (Earthworm)
Animalia		Mammalia	Rattus (Rat)
Animalia	Arthropoda		Locusta (Locust)

A



B



1(b) **The diagrams, A and B opposite, show two organisms from TWO other Kingdoms NOT given in the table on page 5.**

(i) **Name the TWO Kingdoms to which the two organisms belong. [2]**

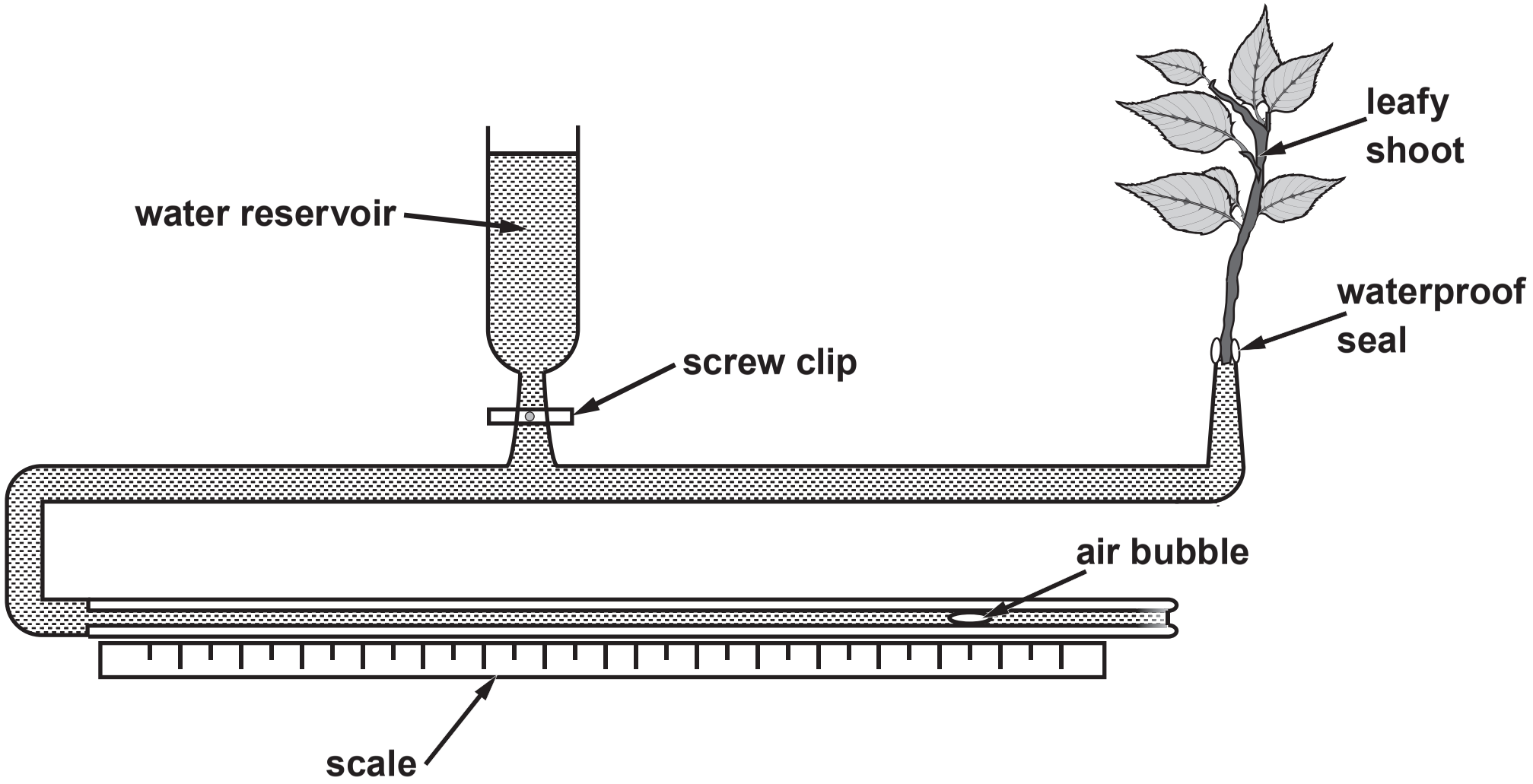
A _____

B _____

(ii) **State ONE characteristic of each organism which is a feature of its Kingdom. [2]**

A _____

B _____


water reservoir
screw clip
leafy shoot
waterproof seal
air bubble
scale

2(a) Plants carry out the process of transpiration.

State what is meant by the term TRANSPIRATION. [2]

The diagram opposite shows a type of potometer that can be used to measure the rate of transpiration.

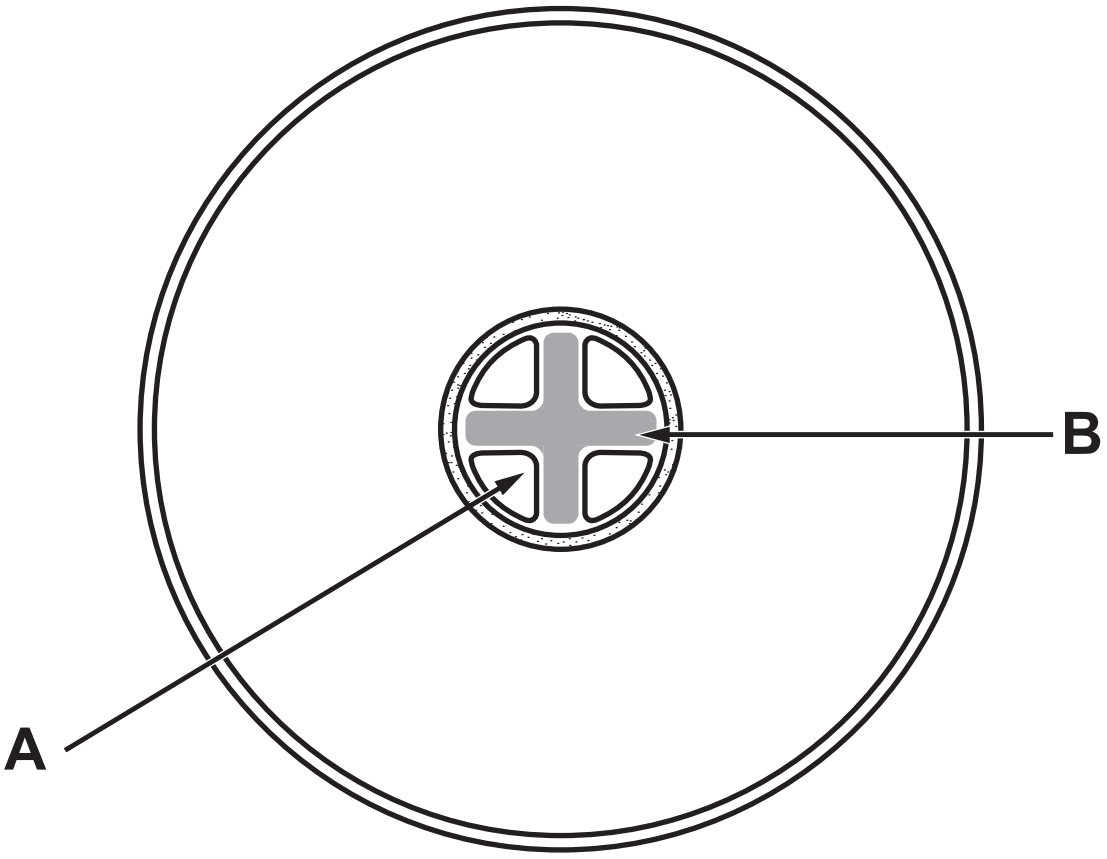
(b) State TWO practical measures which should be taken when setting up the apparatus to ensure the potometer functions correctly. Give reasons for your answers. [4]

8

2(c) Water passes through the xylem of the root and stem of a plant before reaching its leaves.

(i) Name the original source of energy that moves water through a plant. [1]

(ii) Explain how water moves up the xylem. [2]


B
A

2(d) The diagram opposite shows the cross section of a root.

(i) Name the TWO tissues labelled A and B on the diagram opposite. [2]

A _____

B _____

(ii) Explain how it is possible to tell that the diagram opposite is of a root and not a stem. [2]

_____

_____

_____

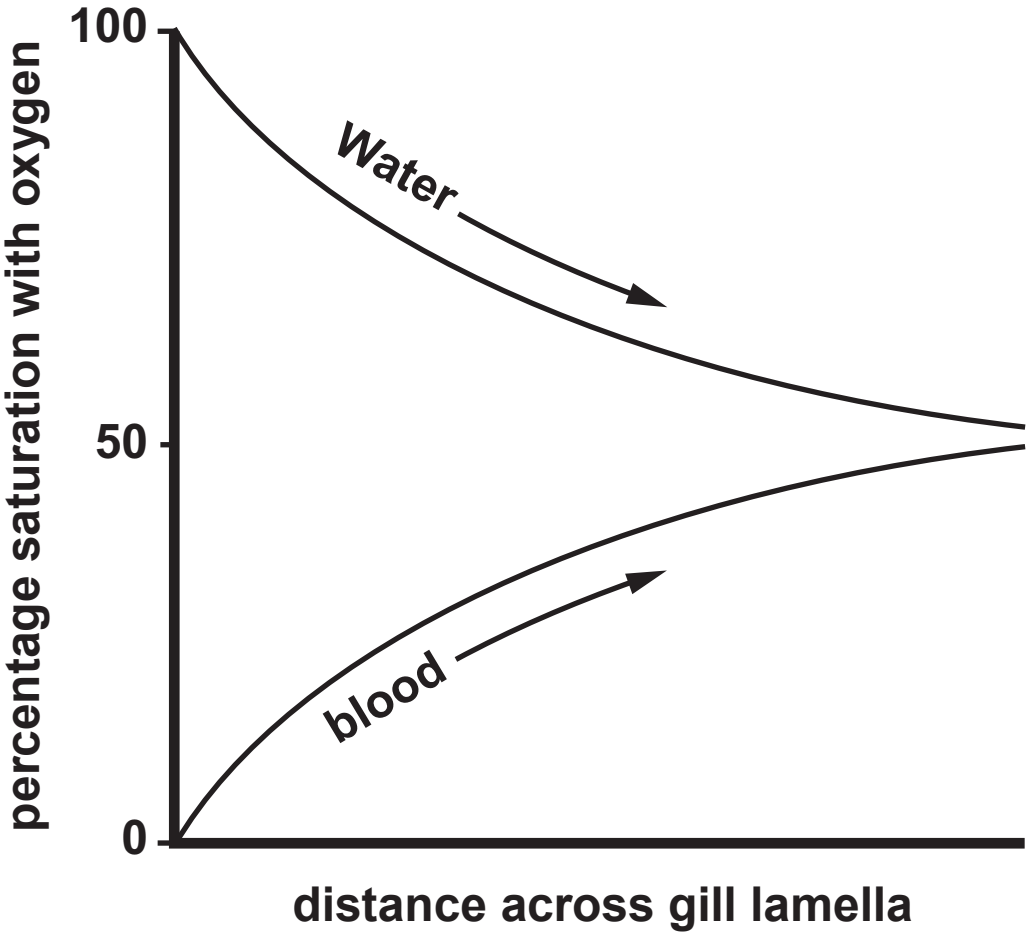
_____

_____

_____

3(a) Describe and explain the process of INSPIRATION in a mammal. [4]

3(b) (i) Explain how counter current flow works in the gills of bony fish. [4]


100
50
0
percentage saturation with oxygen
Water
blood
distance across gill lamella

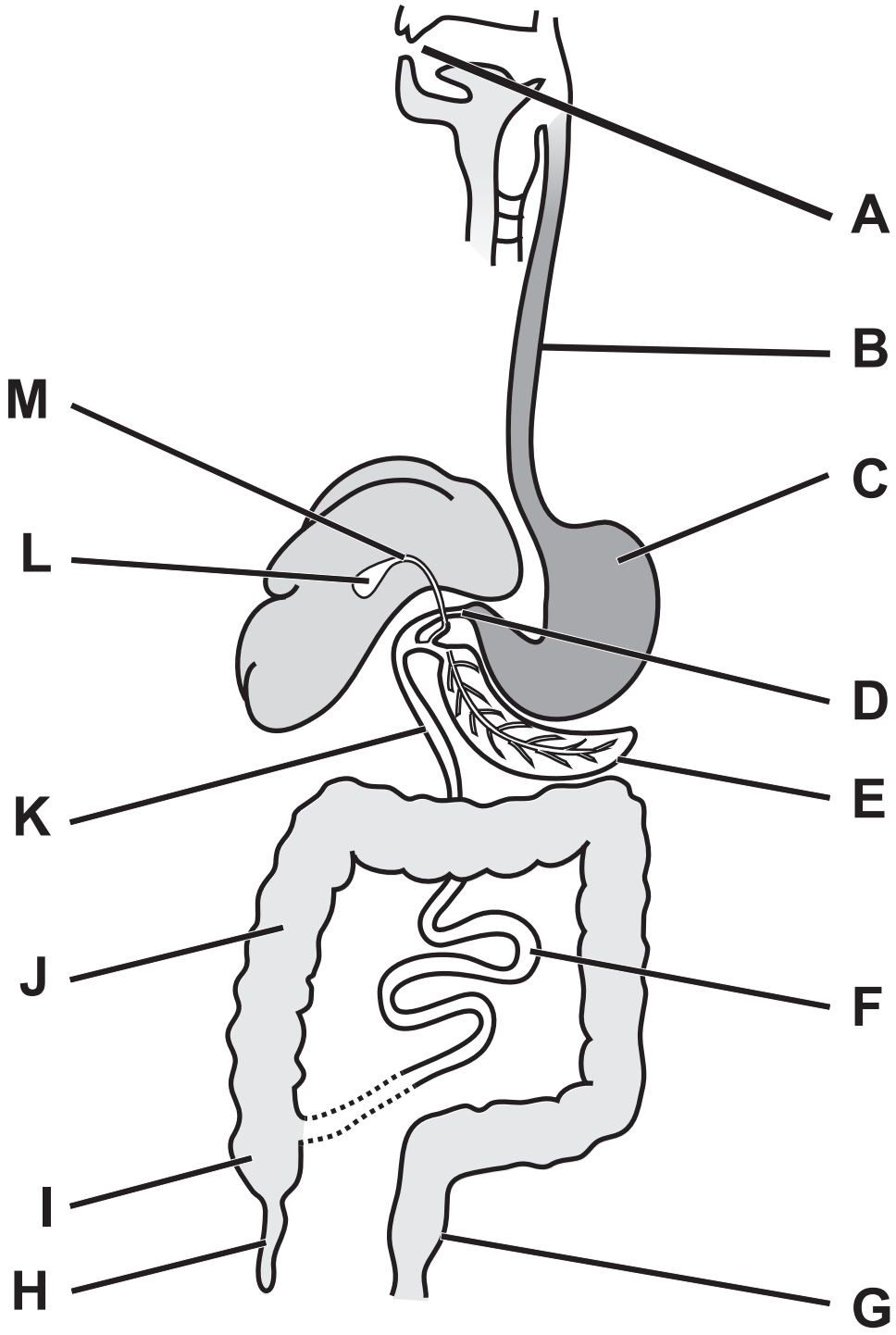
3(b) The graph opposite shows another type of flow.

(ii) Name the type of flow shown in the graph opposite. [1]

(iii) Explain why this is less efficient than counter current flow. [2]

3(c) Suggest why gill filaments / lamellae would not provide an efficient gas exchange surface on land.

[2]


A
B
C
D
E
F
G
H
I
J
K
L
M

4 **The diagram opposite shows the human alimentary canal.**

(a) **Use a letter or letters from the diagram opposite to answer the following questions. [6]**

(i)	**Which is the most acidic region of the alimentary canal?**	
(ii)	**In which TWO areas are proteins, carbohydrates and lipids digested together?**	
(iii)	**Where does the process of protein digestion begin?**	
(iv)	**Where is the main site of lipase production?**	
(v)	**The section of the alimentary canal where most absorption of digested products occurs.**	
(vi)	**The section of the alimentary canal whose main function is to absorb water.**	

4 The diagram opposite shows the lower jaw of a mammal.

(b) Use the information in the diagram opposite to:

(i) State the name given to describe the mode of nutrition of this mammal. [1]

(ii) Explain how the jaw and teeth shown opposite are adapted for this mode of nutrition. [3]

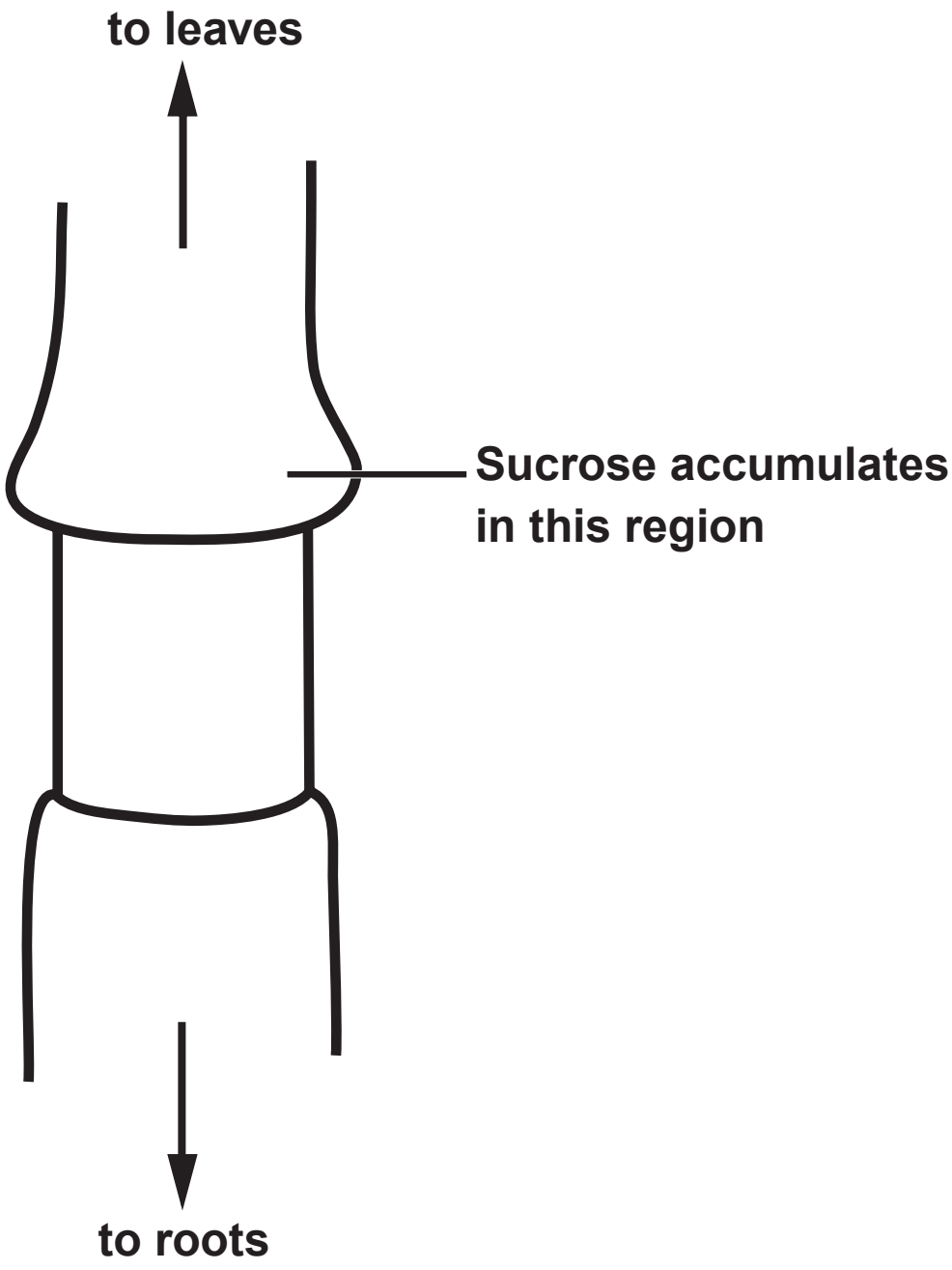
4(b) (iii) **Explain how the GUT of this mammal is adapted for digestion. [2]**

5 The tapeworm, TAENIA SOLIUM, is a parasite of humans.

(a) State what is meant by the term PARASITE. [2]

5 The tapeworm consists of a head with no mouth, followed by a large number of thin flat segments called proglottids.

(b) Describe how the tapeworm is adapted to obtain its nutrients. [3]


to leaves
Sucrose accumulates in this region
to roots

6(a) **The diagram opposite shows part of a plant stem with the tissue external to the xylem removed, a technique known as ringing.**

An accumulation of sucrose was found in the region shown.

(i) **Explain why this accumulation of sucrose occurred. [3]**

6(a) (ii) **Name ONE other type of organic molecule that is likely to accumulate with the sucrose. [1]**

(b) **If the growing points of the shoot of the plant are removed there is a greater accumulation of sucrose.**

Explain why there is a greater accumulation of sucrose. [2]

6(c) Explain fully the likely effect of the removal of the ring of tissue on the concentration of sucrose BELOW the ring. [3]

7 Answer ONE of the following questions.
Any diagrams included in your answer must be fully annotated.

EITHER,

(a) Describe how the reproductive strategies of vertebrates show a gradual adaptation to the colonisation of land.

OR

(b) Describe how arteries and veins are structurally adapted to their functions. [10]

10

END OF PAPER

Question number	Additional page, if required. Write the question numbers in the left-hand margin.

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