



GCE AS/A level

1072/01 – LEGACY

BIOLOGY – BY2

P.M. TUESDAY, 7 June 2016

1 hour 30 minutes plus your additional time allowance

Surname _____

Other Names _____

Centre Number _____

Candidate Number 2 _____

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	9	
2.	7	
3.	16	
4.	6	
5.	9	
6.	13	
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 on the front cover.

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.

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

Photograph A



Photograph B



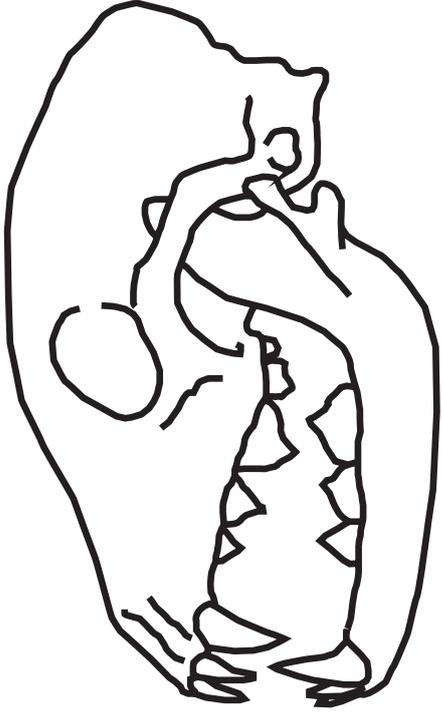
Answer ALL questions.

1(a) Photograph A opposite is of a mistletoe plant, VISCUM ALBUM, attached to the branch of a tree. Photograph B shows an enlarged image of the mistletoe plant. Mistletoe plants attach to and penetrate the branches of a tree in order to obtain water and nutrients from the tree. This commonly reduces the growth of the host tree and can kill the portion of branch it grows on.

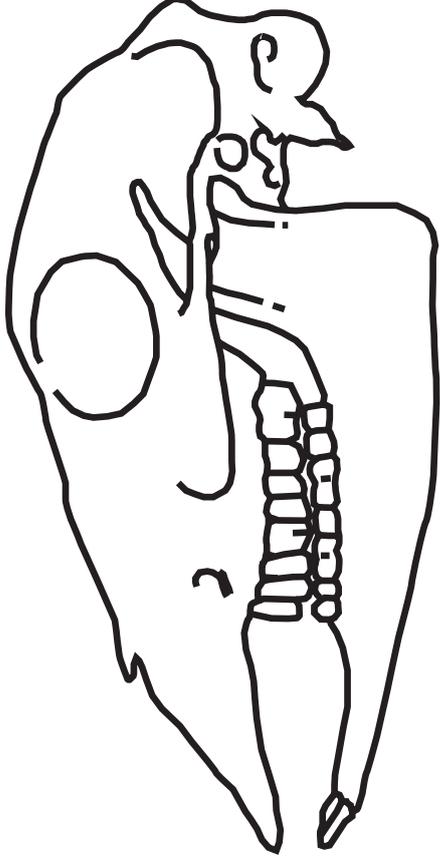
(i) Explain why mistletoe is referred to as being a parasite. [1]

1(a) (ii) Mistletoe however is only partially parasitic. Use the information provided to explain this statement. [2]

Animal X



Animal Y





2(a) Opposite is a photograph of the dragonfly, **Aeshna caerulea**, which inhabits wetland areas of Scotland.

(i) State the name of the phylum to which it belongs. [1]

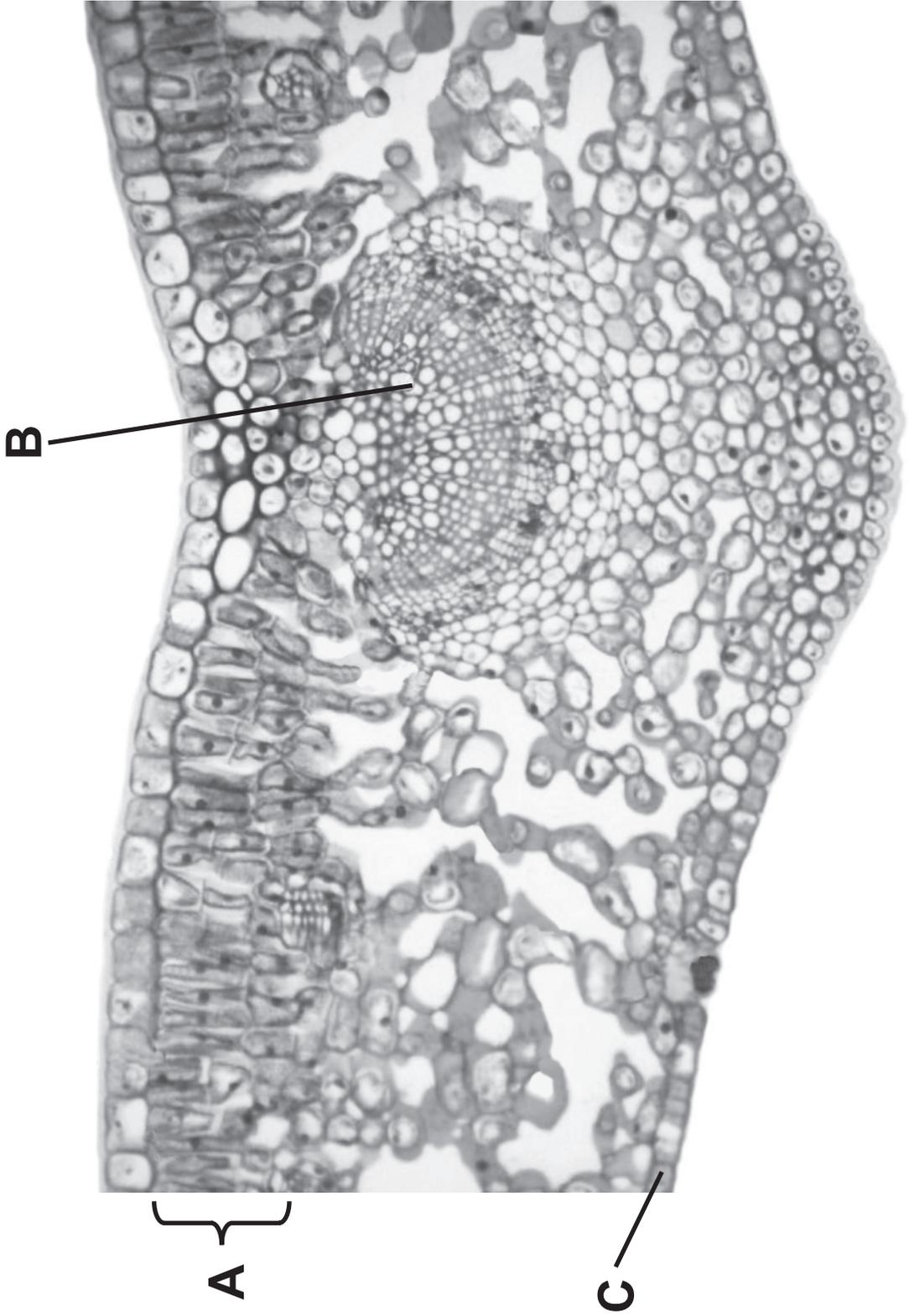
(ii) State TWO characteristics, shown by the dragonfly, which could be used to place it into its phylum. [2]

(iii) What is meant by the term GENUS? [1]

(iv) State the GENUS to which this dragonfly belongs. [1]

2(b) Both dragonflies and birds have wings that enable them to fly, but are placed in different taxonomic groups. What conclusions can be drawn about the evolution of these structures? [2]

7



3. The image opposite shows a transverse section of a leaf from the Chinese privet plant, **Ligustrum lucidum**, a mesophyte.

(a) Name TISSUES **A**, **B** and **C**. [3]

A _____

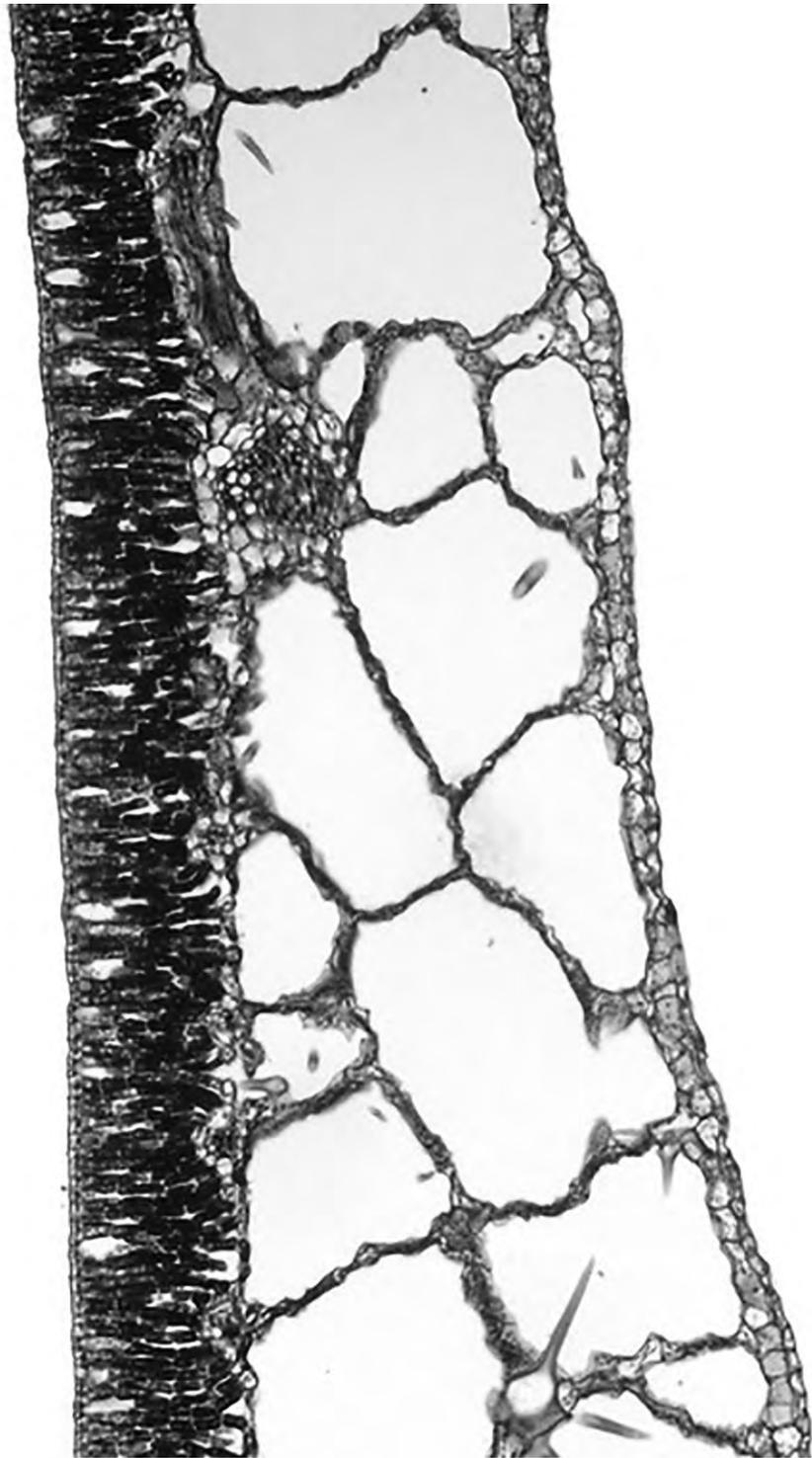
B _____

C _____

(b) Describe AND explain **FOUR** ways in which the leaf is adapted to absorb sunlight. [4]

3(c) Explain why guard cells are important to the functioning of the plant. [2]

(d) Explain the mechanism which causes the stomatal pores to open. [4]

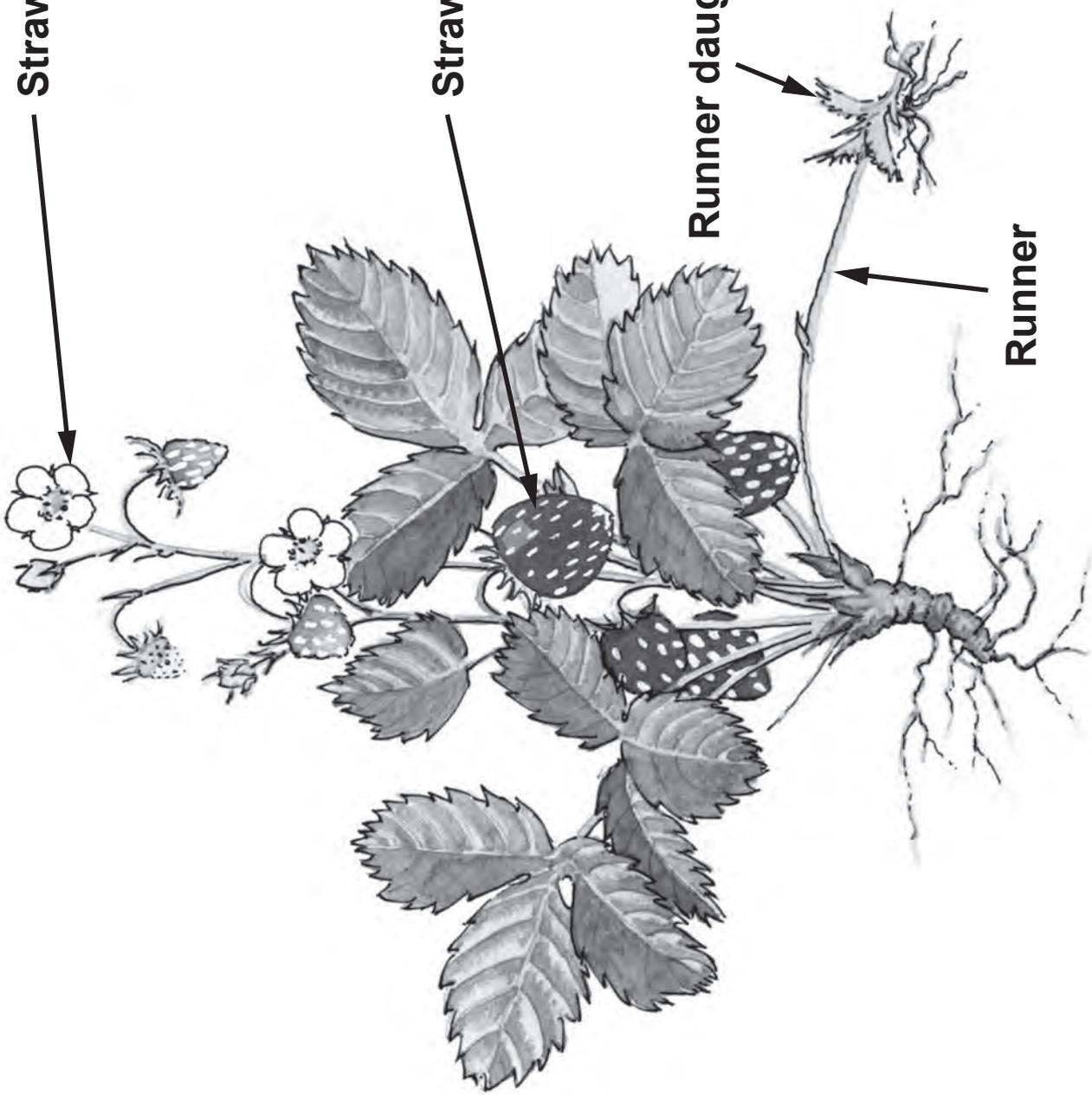


Strawberry flower

Strawberry fruit

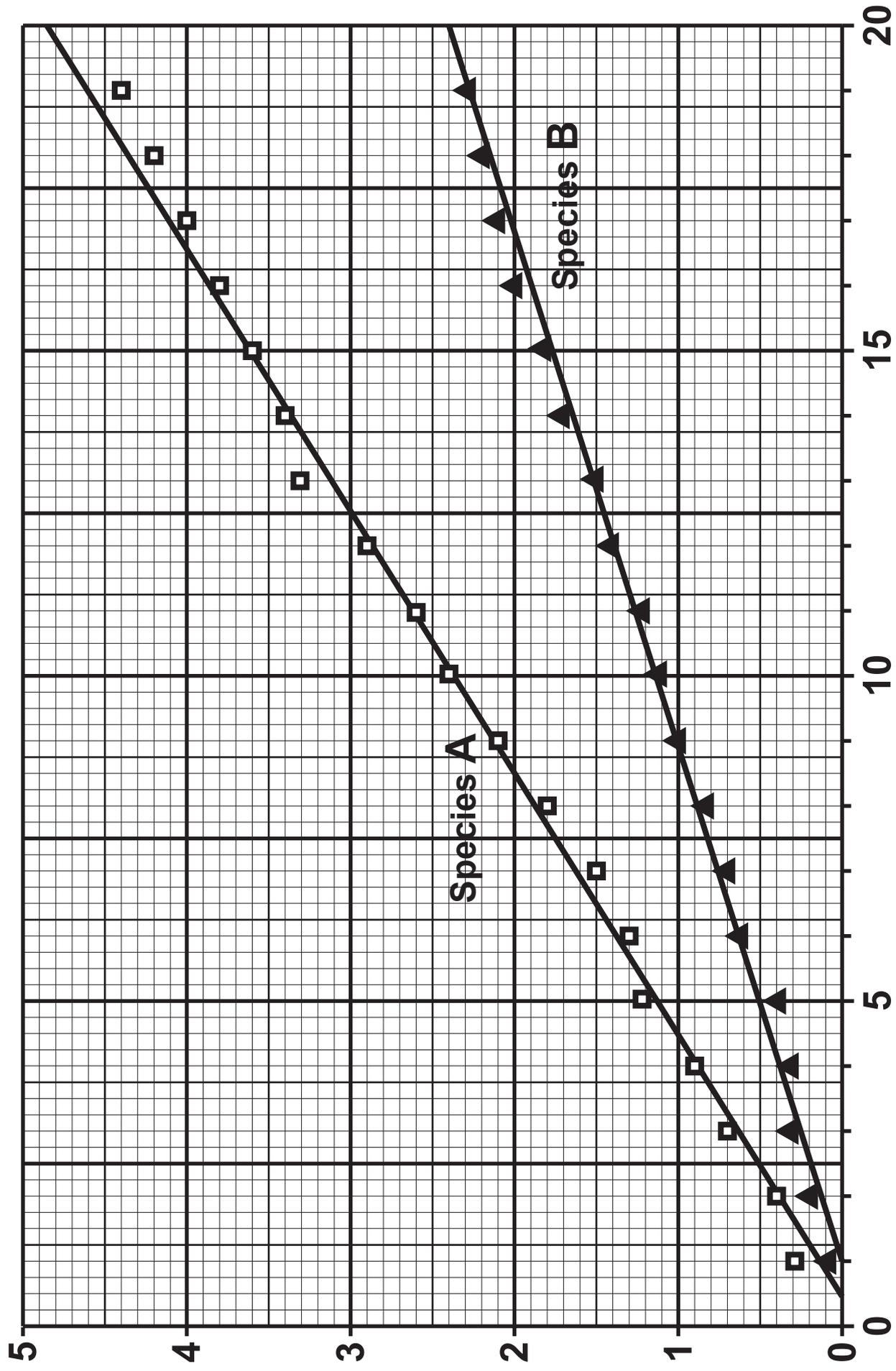
Runner daughter plant

Runner



6

Total Water loss / cm³



Time / minutes

Species A

Species B

- 5(b) Using the data from the experiment, calculate the rate of transpiration for species A between 5 and 15 minutes. [2]

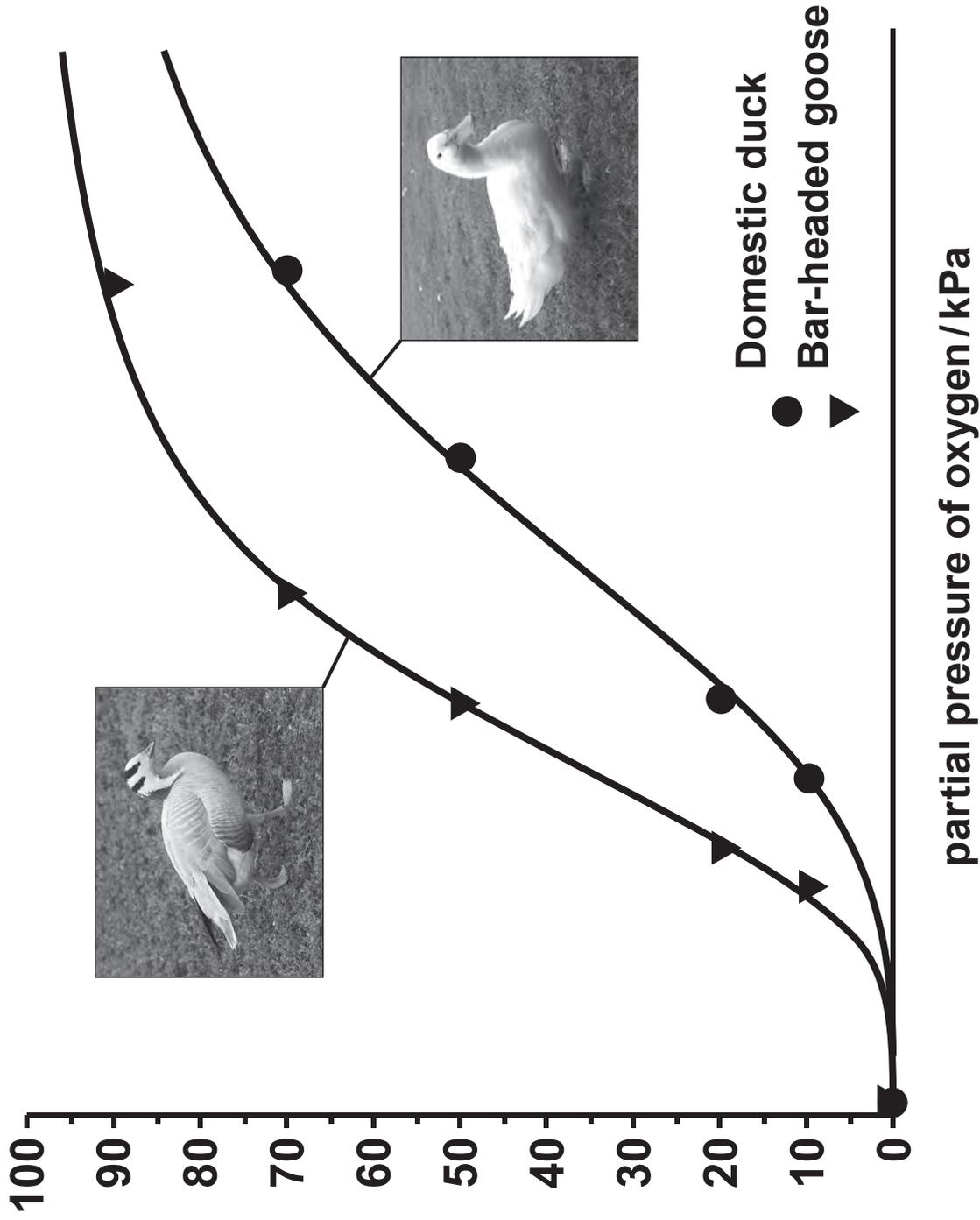
Rate of transpiration = _____ $\text{cm}^3\text{min}^{-1}$

6. The passage on the opposite page has been adapted from the book 'Life Ascending' by Nick Lane:

(a) Describe THREE features of the gas exchange surface in the goose. [3]

(b) What is the advantage of birds having internal lungs for gas exchange? [1]

percentage saturation of haemoglobin with oxygen



- 6(d) (ii) What is the disadvantage to the bar-headed goose of the position of the dissociation curve? [1]

13

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

EITHER,

- (a) Changes in pressure are essential for the flow of blood through the heart. Describe how these changes are initiated and explain their significance during a single cardiac cycle. [10]

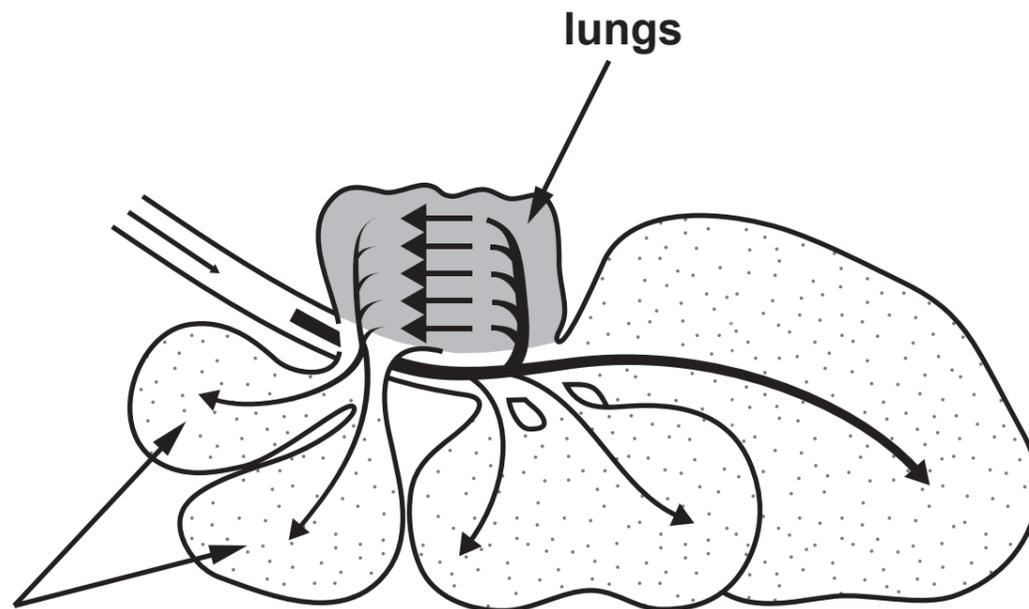
OR,

- (b) The mammalian circulatory system is made up of different types of blood vessel. Describe and explain how the structure of these blood vessels relates to their function. [10]

'Bird lungs are more efficient than mammal's lungs even at low altitudes. At high altitudes birds can extract more oxygen from the air than mammals. This is why migrating bar-headed geese (*Anser indicus*) can fly thousands of feet above the top of Everest.

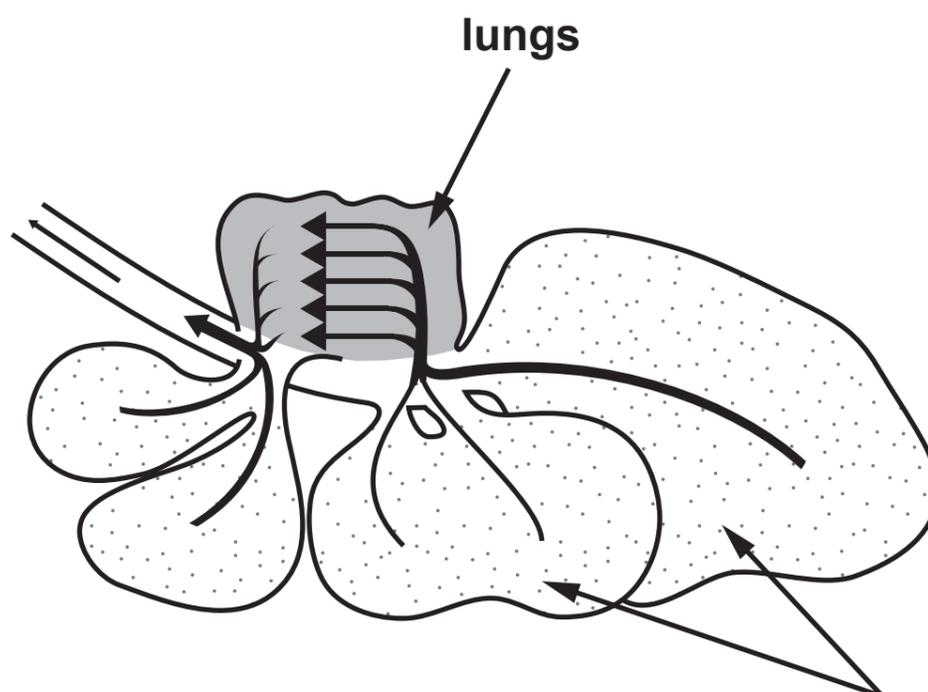
Birds have a sophisticated one way system of interconnected ventilation sacs. Rather than entering the lungs directly, air first flows into the ventilation sacs and eventually exits via the lungs, giving a continuous through-flow of air through the lungs.

INSPIRATION



**inflation of ventilation sacs
draws air through the lungs**

EXPIRATION



**deflation of ventilation sacs
forces air through the lungs**

Air flows continuously in the same direction through the lungs during both inspiration and expiration, while blood flows in the opposite direction, giving a highly efficient counter-current exchange of gases.'