



OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Advanced Subsidiary GCE

BIOLOGY

2803/01

Transport

Wednesday

15 JANUARY 2003

Afternoon

45 minutes

Candidates answer on the question paper.

Additional materials:

Electronic calculator

Candidate Name	Centre Number	Candidate Number										
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TIME 45 minutes

INSTRUCTIONS TO CANDIDATES

- Write your name in the space above.
- Write your Centre number and Candidate number in the boxes above.
- Answer **all** the questions.
- Write your answers, in blue or black ink, in the spaces on the question paper.
- Read each question carefully before starting your answer.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- You will be awarded marks for the quality of written communication where this is indicated in the question.
- You may use an electronic calculator.
- You are advised to show all the stages in any calculations.

FOR EXAMINER'S USE		
Qu.	Max.	Mark
1	6	
2	16	
3	9	
4	5	
5	9	
TOTAL	45	

This question paper consists of 11 printed pages and 1 blank page.

Answer **all** the questions.

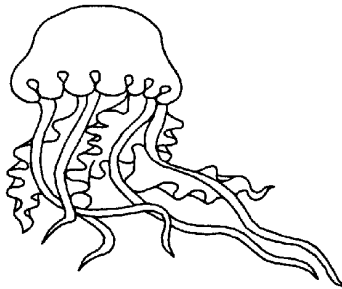
1 Fig. 1.1 shows three examples of organisms and provides some information on their size and the number of cell layers present.

amoeba



- single celled
- 0.5 mm diameter

jelly-fish



- 2 layers of cells
- each layer 1 cell thick
- up to 10 cm diameter

field mouse



- 3 layers of cells in embryo
- each layer many cells thick in the adult
- length approximately 10 cm

Fig. 1.1

(a) (i) Which of the organisms shown in Fig. 1.1 will need the most highly developed transport system?

..... [1]

(ii) State **two** reasons for your answer.

1

2

(b) List **three** substances that would need to be transported in the organism you have chosen in (a) (i).

1

2

3

[Total: 6]

2 Fig. 2.1 is a vertical section through part of the leaf of a dicotyledon.

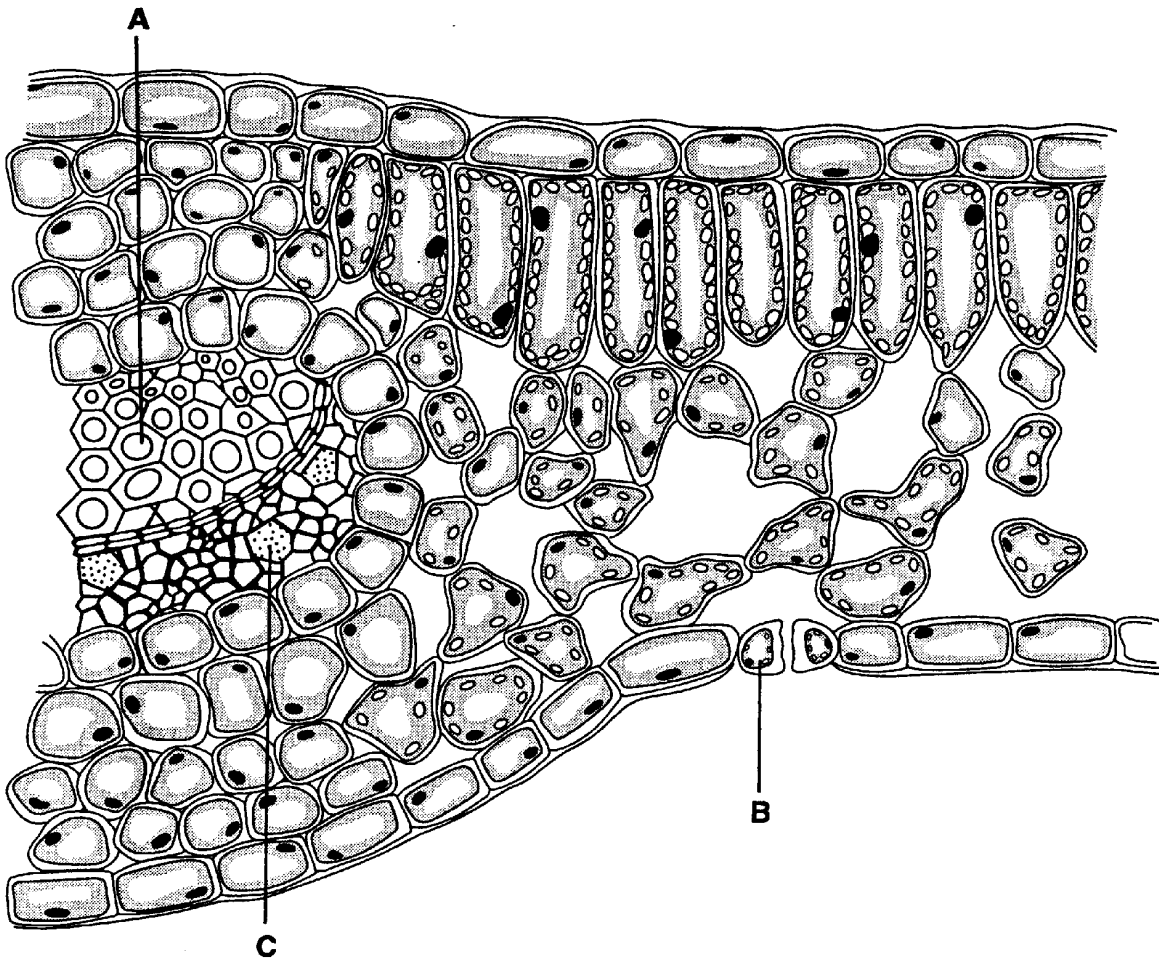


Fig. 2.1

(a) Identify A, B, and C.

- A
- B
- C [3]

(b) Plants typically lose large quantities of water each day by transpiration.

Explain why the loss of large quantities of water by transpiration is inevitable.

-
-
-
-
-
- [2]

- (c) Fig. 2.2 shows the rate of transpiration of the **same plant** on two consecutive mornings, day 1 and day 2.

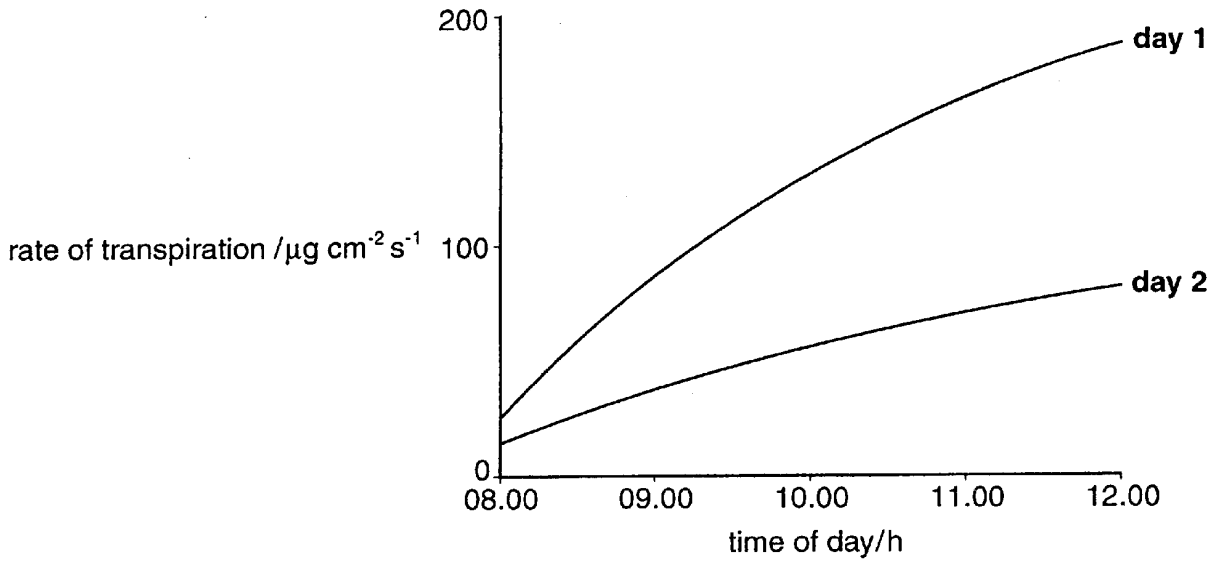


Fig. 2.2

- (i) Suggest **two** environmental factors that could account for the difference between day 1 and day 2 and explain how they could have caused the difference.

factor 1

explanation

.....

factor 2

explanation

..... [4]

- 3 (a) Fig. 3.1 is a simplified plan of the mammalian circulatory system. The system is described as a double circulation.

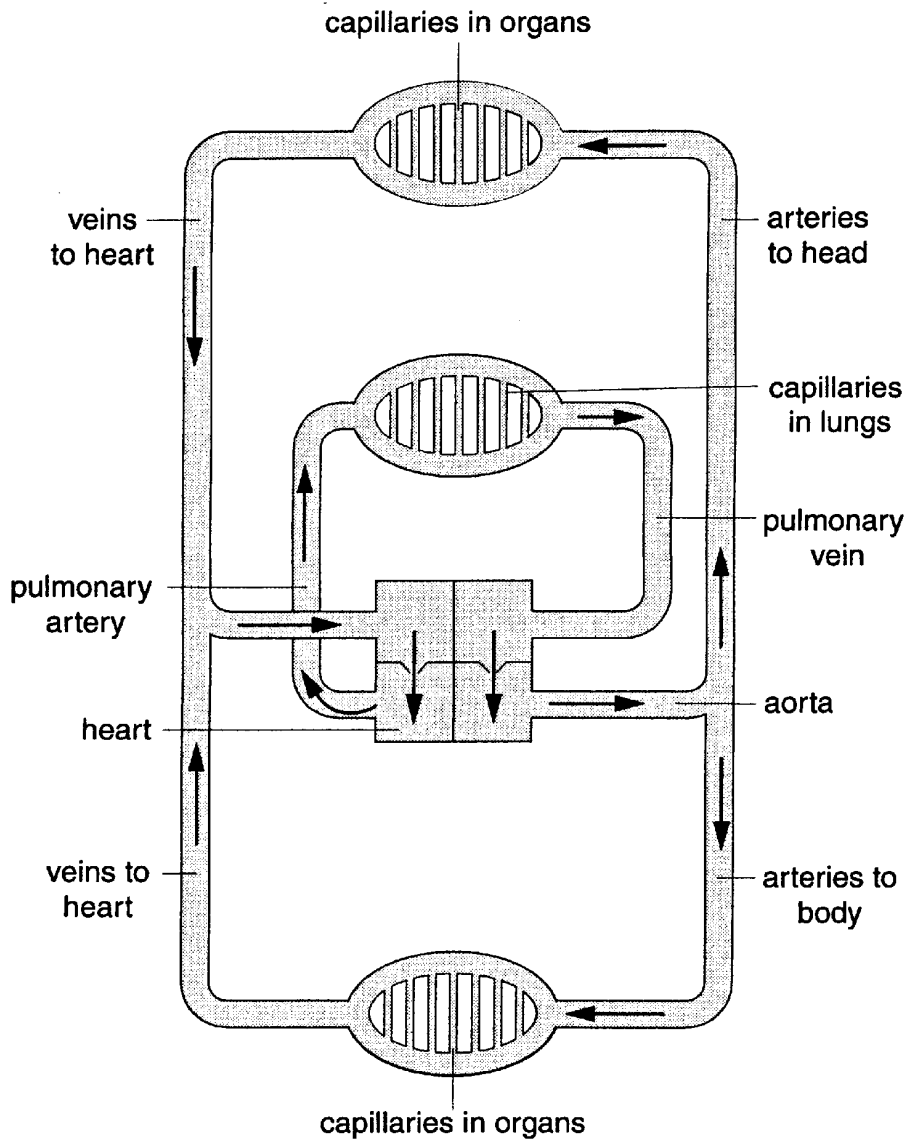


Fig. 3.1

- (i) Use the information in Fig. 3.1 to state what is meant by the term *double circulation*.

.....

 [2]

- (ii) Suggest an advantage of the double circulation shown in Fig. 3.1.

.....

 [1]

(b) Fig. 3.2 shows some detail of the external and internal structure of the mammalian heart and associated blood vessels.

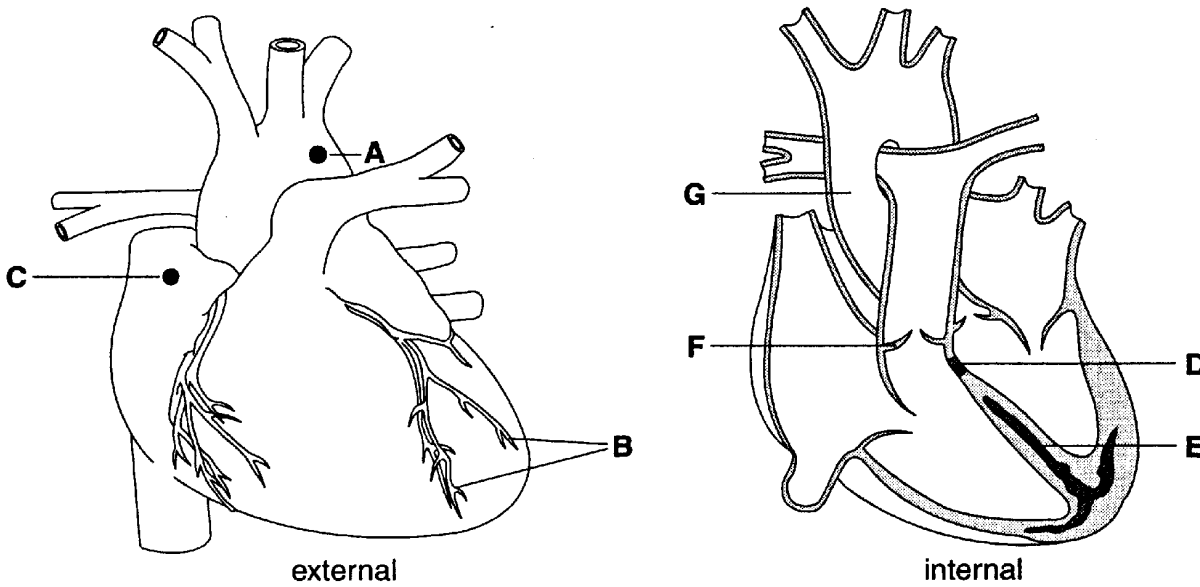


Fig. 3.2

Table 3.1 lists some possible functions of parts of the heart.

Table 3.1

possible function	letter
contracts to force blood into the ventricle	P
stops impulses crossing the septum between the atria and the ventricles	Q
acts as a pacemaker	R
carries blood away from the heart to the body	S
conducts impulses to the apex of the heart	T
relays the impulses to the septum between the ventricles	U

Complete the table below by

- identifying each of the features listed, using an appropriate letter from Fig. 3.2
- matching a function to the feature, using the appropriate letter from Table 3.1.

The first one has been done for you.

feature	letter on Fig. 3.2	letter in Table 3.1
aorta	G	S
sino-atrial node		
atrio-ventricular node		
Purkyne (Purkinje) fibres		

[6]

[Total: 9]

[Turn over

4 The paragraph below gives information about phloem transport in plants.

Fill in the blanks in the paragraph with the most appropriate word or words.

Phloem consists of two important types of cell concerned with transport, namely sieve tube elements and cells . Sieve tube elements are connected to each other by modified cell walls known as

These elements transport assimilates , mainly , from areas known as sources to areas known as ATP is needed for this process, which suggests that the mechanism is

[5]

[Total: 5]

5 (a) Fig. 5.1 shows two blood vessels, X and Y, in transverse section.

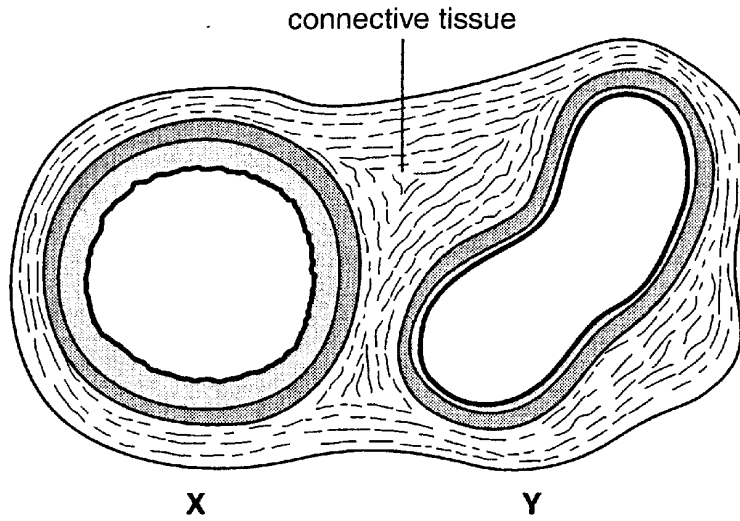


Fig. 5.1

(i) State which of the blood vessels, X or Y, is a vein.

..... [1]

(ii) Give **two** reasons for your choice.

1

.....

2

..... [2]

(b) Fig. 5.2 gives information about blood pressure in various parts of the mammalian blood system.

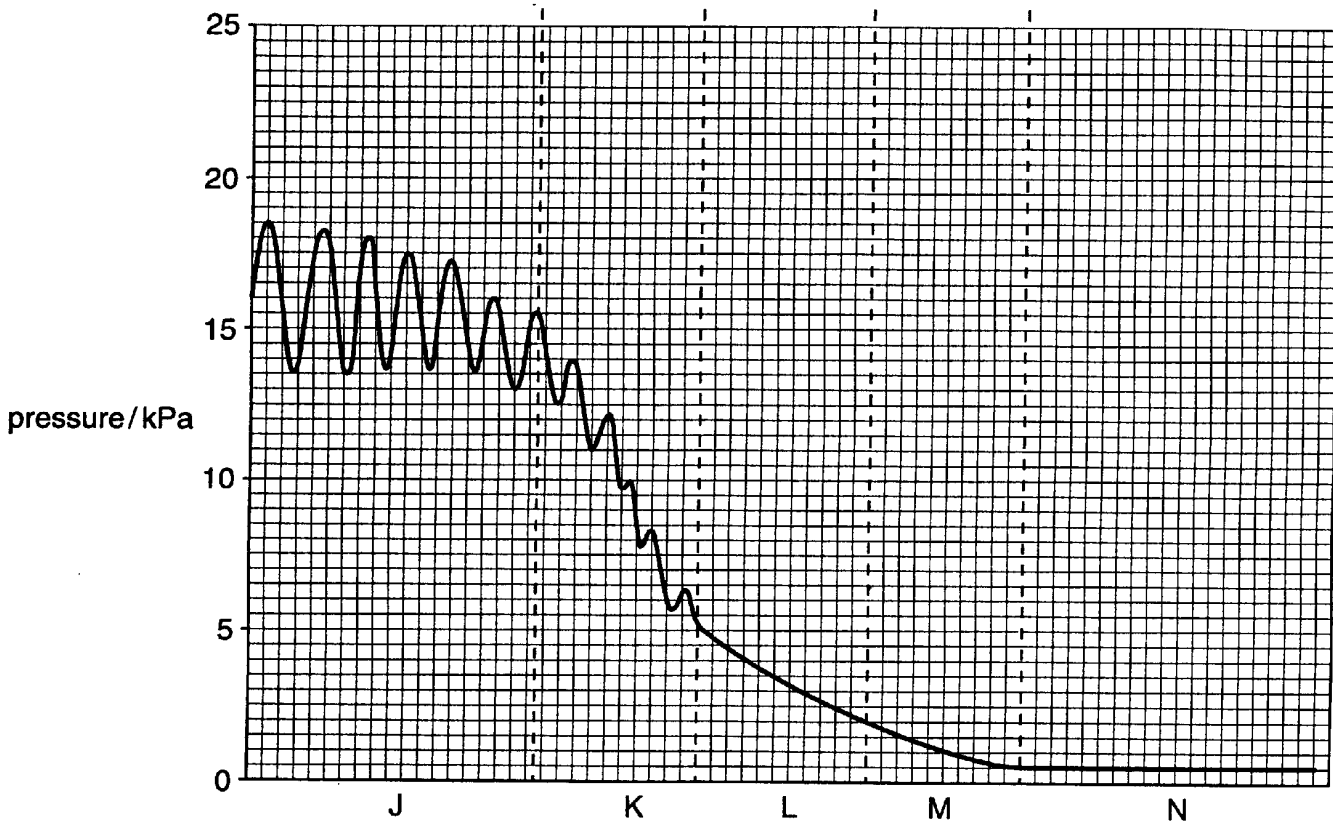


Fig. 5.2

(i) Calculate the drop in systolic pressure in section J of Fig. 5.2. Show your working.

.....

Answer kPa [2]

(ii) State which section, J to N, of Fig. 5.2 shows the pressure in the veins.

..... [1]

(c) Explain briefly how blood in the veins is returned to the heart.

.....

 [3]