

Centre Number	Candidate Number	Name
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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**SCIENCE** **5125/04, 5126/04**

Paper 4 Biology October/November 2005

Additional Materials: Answer Paper **1 hour 15 minutes**

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.  
Write in dark blue or black pen.  
You may use a soft pencil for any diagrams, graphs or rough working.  
Do not use staples, paper clips, highlighters, glue or correction fluid.

**Section A**  
Answer **all** questions.  
Write your answers in the spaces provided on the question paper.

**Section B**  
Answer any **two** questions.  
Write your answers on the separate answer paper provided.

At the end of the examination, fasten all your work securely together.  
The number of marks is given in brackets [ ] at the end of each question or part question.

If you have been given a label, look at the details. If any details are incorrect or missing, please fill in your correct details in the space given at the top of this page.

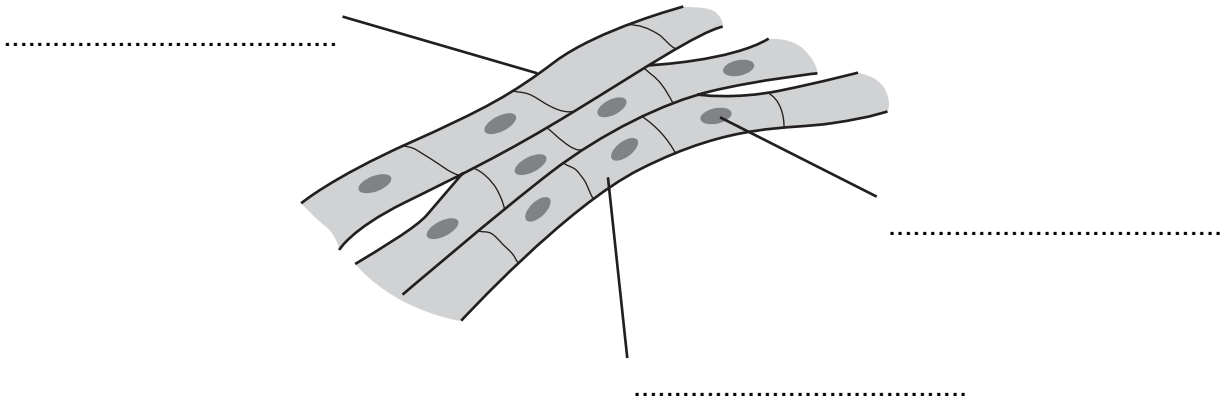
Stick your personal label here, if provided.

For Examiner's Use	
Section A	
Section B	/
<b>Total</b>	

**Section A**

Answer **all** the questions in the spaces provided.

1 Fig. 1.1 shows some muscle cells.



**Fig. 1.1**

(a) Complete the labels in Fig. 1.1 to name three parts of these muscle cells. [3]

(b) Describe **two** ways by which Fig. 1.1 shows that these are animal cells and not plant cells.

.....

.....

.....[2]

(c) The muscle cells in the arm contract when a person's hand touches a hot object, so that the hand is pulled away.

This reflex action is described in the sentences below, but they are in the wrong order.

- A** A relay neurone in the spinal cord receives the message.
- B** A message from the motor neurone causes the muscle to contract.
- C** Sensory cells in the hand detect the heat.
- D** The message is passed on to a motor neurone.
- E** A message is sent along the sensory neurone.

Write the correct order for these sentences in the boxes below.

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[4]

2 Fig. 2.1 gives information about photosynthesis in the leaf of a green plant.

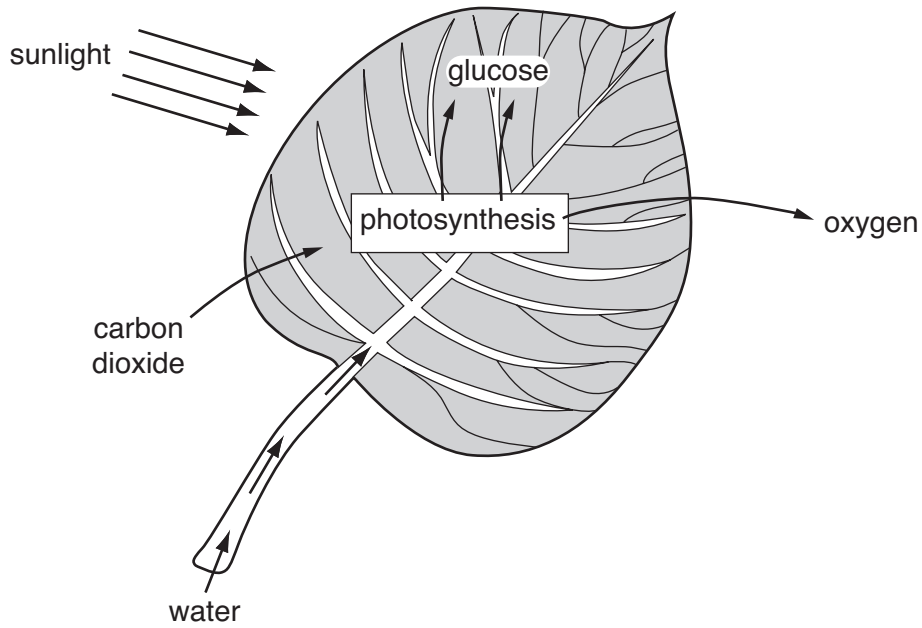


Fig. 2.1

(a) Write a symbol equation for photosynthesis.

.....[3]

(b) Fig. 2.1 shows that light is used in the process.

(i) Why is light necessary for photosynthesis?

.....  
.....[2]

(ii) How is this light absorbed by the plant?

.....[1]

(c) Photosynthesis uses carbon dioxide and produces oxygen.

How does the exchange of gases take place?

.....  
.....  
.....[2]

(d) Glucose is produced by photosynthesis.

Describe how the plant uses glucose.

.....

.....

.....

.....[3]

3 Fig. 3.1 gives information about the composition of some foods.

food	content / g per 100 g (to the nearest g)			
	protein	fat	carbohydrate	fibre
beans	5	1	10	4
beefburger	29	24	0	0
cottage cheese	13	4	3	0
diet cola	0	0	0	0
egg	12	11	0	0
French fries	4	11	38	0
milk	3	4	5	0
boiled potato	1	0	20	0
wholemeal bread	9	3	42	5

Fig. 3.1

A café offers a menu that includes the following meals.

meal 1	meal 2
boiled potato	French fries
cottage cheese	beefburger
egg	egg
diet cola	milk

(a) (i) An essential nutrient is missing from both meal 1 and meal 2.

Use the information in Fig. 3.1 to name this nutrient.

.....[1]

(ii) Why is this nutrient important in the diet?

.....

.....[2]

(iii) Choose a food from Fig. 3.1 that can be added to provide this nutrient.

.....[1]

(iv) Name **two** important dietary requirements not listed in Fig. 3.1.

.....  
.....[2]

(b) Meal 2 contains a very high proportion of fat.

Name and describe a health problem that may be caused by a diet high in fat.

.....  
.....  
.....  
.....[3]

4 (a) Fig. 4.1 shows a vertical section through a broad bean seed.

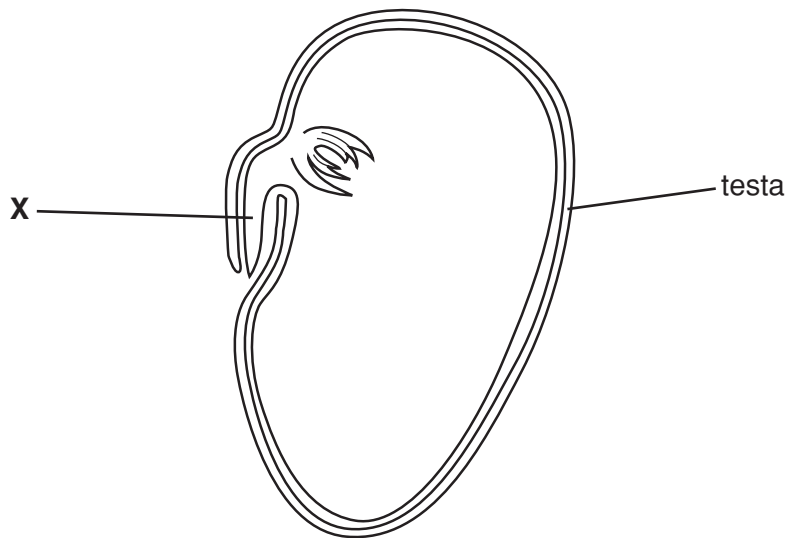


Fig. 4.1

(i) Name the part labelled **X**.

.....[1]

(ii) Which part of the plant grows from **X**?

.....[1]

(iii) What are the functions of the testa?

.....

.....

.....[2]

(b) Fig. 4.2 shows fruits from four different types of plant.

Seeds in these fruits are dispersed in different ways.

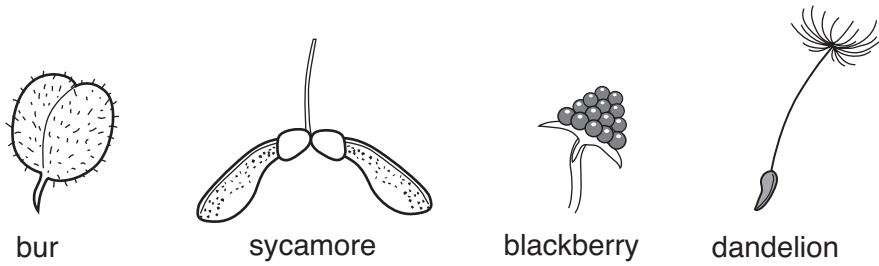


Fig. 4.2

(i) Suggest which of these fruits are dispersed by the action of wind?

.....

.....[2]

(ii) Explain your reasoning for **one** of the fruits you chose in (i).

.....

.....[1]

(iii) What is the purpose of the dispersal of seeds?

.....

.....

.....[2]

5 Alcohol is a drug contained in drinks such as beer and wine. Alcohol is carried around the body in the blood stream.

(a) Explain what is meant by the term *drug*.

.....  
.....[2]

(b) (i) Name the component of blood in which alcohol is carried around the body?

.....[1]

(ii) Name the part of the body in which alcohol is broken down?

.....[1]

(c) State three effects of excessive alcohol consumption.

- 1 .....
- 2 .....
- 3 .....[3]

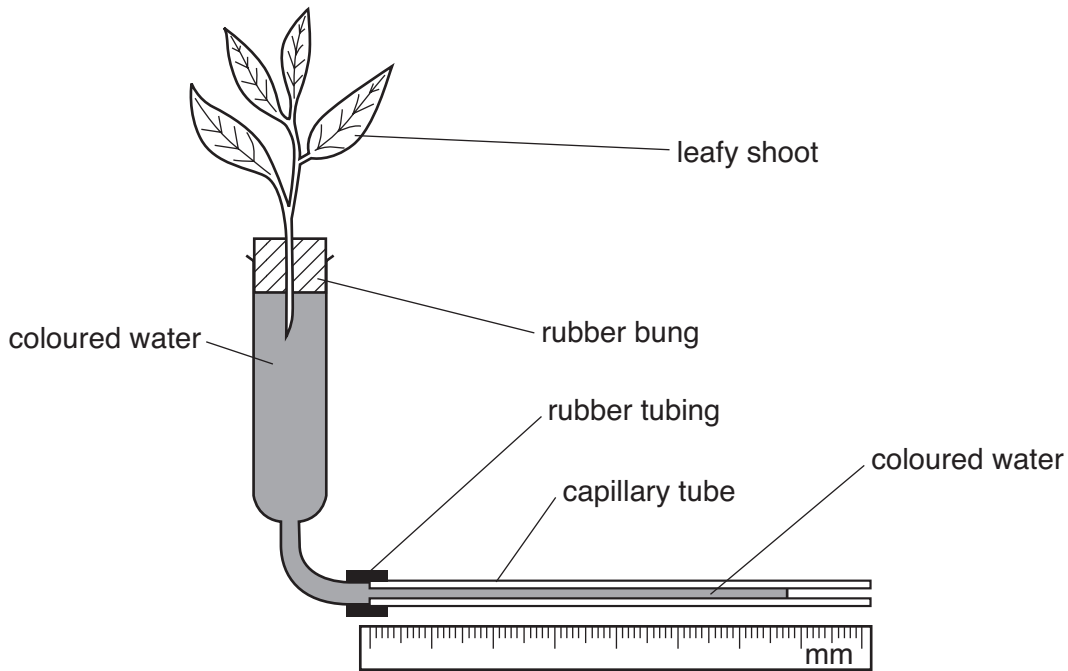
## Section B

Answer **two** questions from this section.

Write your answers on the separate answer paper provided.

- 6 Fig. 6.1 shows apparatus used to measure rate of transpiration in a leafy shoot.

Movement of the coloured water in the capillary tube is measured over a period of time.



**Fig. 6.1**

- (a) Describe how this apparatus is used to investigate the effect of change of temperature on the rate of transpiration. Include details to ensure fair testing. Outline and explain the results you would expect. [6]
- (b) The apparatus is used in another investigation. Firstly the upper surfaces only of the leaves are covered with grease and the rate of transpiration measured. This experiment is then repeated using another leafy shoot of the same size and type. This time only the lower surfaces of the leaves are covered with grease. Describe and explain the results of this investigation. [4]
- 7 During gaseous exchange in the lungs, oxygen from air passes into the blood and carbon dioxide from the blood passes out of the lungs.
- (a) This exchange takes place in the alveoli. Describe how the alveoli are adapted to enable the exchange to occur rapidly. [4]
- (b) Explain why the body needs to take in oxygen and to give out carbon dioxide. [6]



- 8 (a) Human activities have caused extensive damage to the ecosystem of the Earth. Use examples of international importance to describe and explain some of the ways by which these activities have damaged the ecosystem. [4]
- (b) Describe and explain how pollution of air and water causes damage to the local ecosystem. [6]





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