

Surname	Centre Number	Candidate Number
Other Names		0



**GCSE**

0239/01

**ADDITIONAL SCIENCE  
FOUNDATION TIER  
BIOLOGY 2**

A.M. TUESDAY, 24 January 2012

45 minutes

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	9	
2.	9	
3.	9	
4.	8	
5.	5	
6.	3	
7.	7	
<b>Total</b>	<b>50</b>	

0239  
010001

**ADDITIONAL MATERIALS**

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

**INSTRUCTIONS TO CANDIDATES**

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet.

**INFORMATION FOR CANDIDATES**

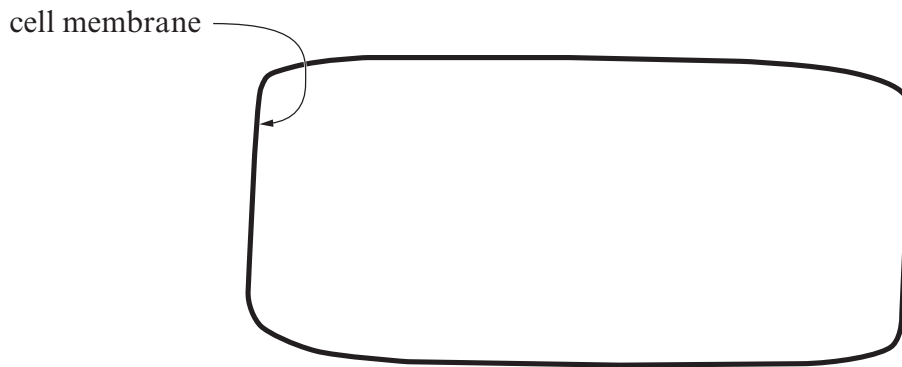
The number of marks is given in brackets at the end of each question or part-question.

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

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Answer **all** questions.

1. The diagram shows the cell membrane in a plant cell.



(a) On the diagram, **draw** and **label** each of the following parts in their correct place:

vacuole, chloroplast, cell wall, nucleus.

[4]

(b) Label the cytoplasm.

[1]

(c) Which part of a plant cell:

(i) controls the entry and exit of molecules;

[1]

.....

(ii) is the site of photosynthesis?

[1]

.....

(d) Name any **two** of the labelled structures which are found in **both** plant and animal cells. [2]

.....

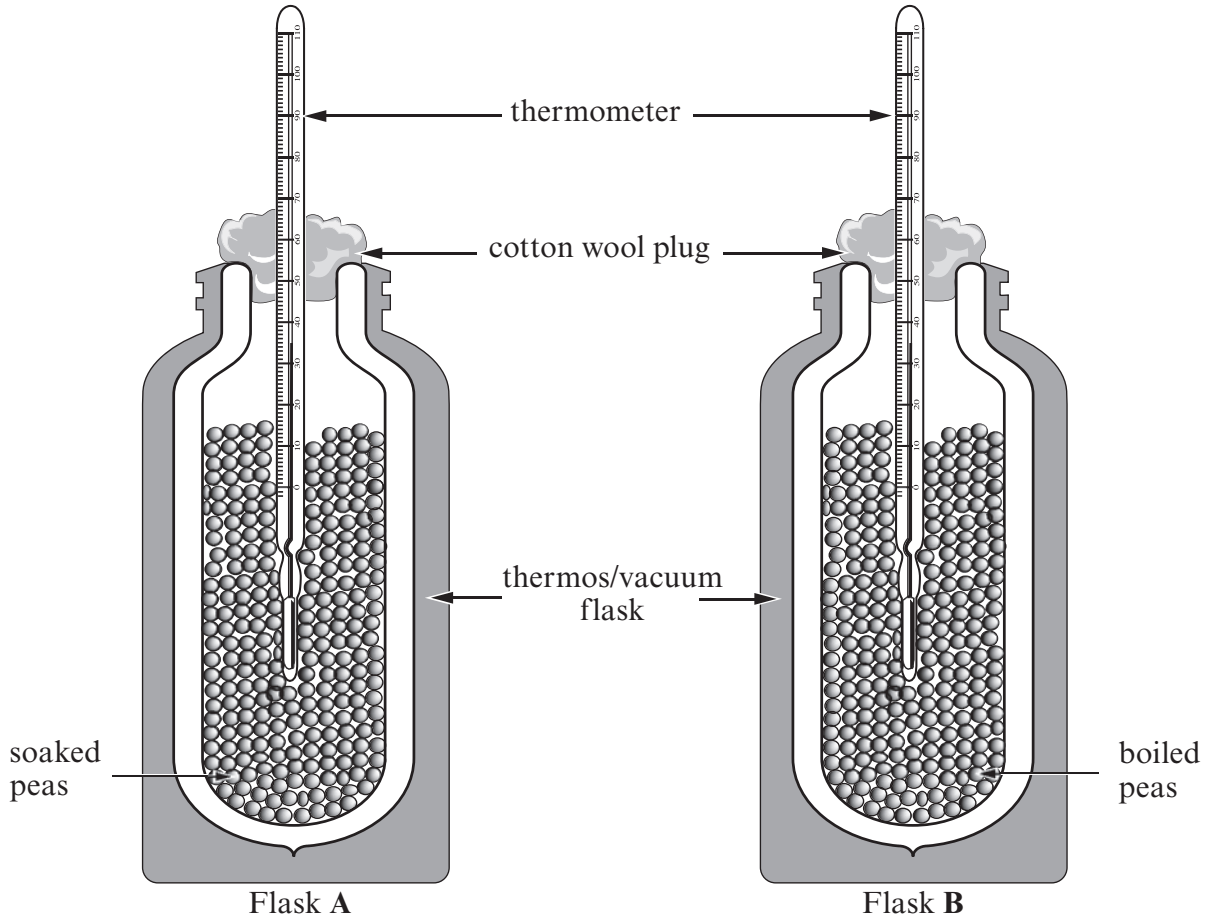
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2. (a) Complete the equation for respiration using some words from the list below. [3]

carbon dioxide    enzymes    oxygen    water

glucose + ..... → ..... + .....

(b) The diagram shows an investigation into respiration in germinating pea seeds.



(i) Disinfectant is used in this investigation.

I. What is the purpose of using disinfectant? [1]

.....

II. In order to make the investigation a fair test, which **one** of the following procedures, A to C, should be used?

- A disinfect the peas in flask A only
- B disinfect the peas in flask B only
- C disinfect the peas in both flasks A and B.

Procedure ..... [1]

III. State **one** way to make this investigation more reliable. [1]

.....

(ii) Complete the following sentences by underlining the correct answer.

I. During the investigation, the temperature in flask **A** would

rise / fall / stay the same

[1]

II. During the investigation, the temperature in flask **B** would

rise / fall / stay the same

[1]

(c) Living organisms use energy from respiration for growth.  
State **one other** use of the energy from respiration.

[1]

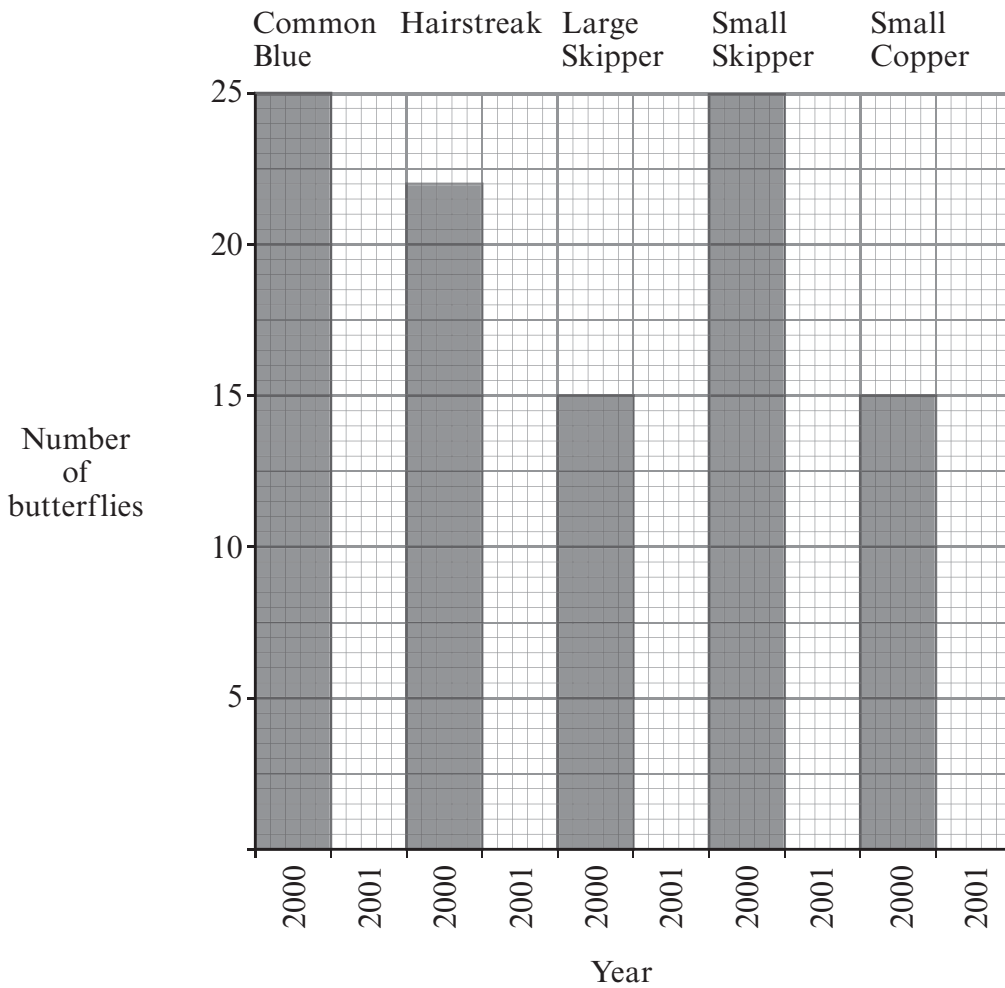
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3. The table shows the numbers of five species of butterflies found in an area of South Wales in 2000 and 2001.

Butterfly	2000	2001
Common Blue	25	17
Hairstreak	22	16
Large Skipper	15	14
Small Skipper	25	3
Small Copper	15	2
<b>Total</b>	102	52

- (a) (i) The results for 2000 are shown in the bar chart below. Use a ruler to plot a bar graph of the results for 2001.

[2]



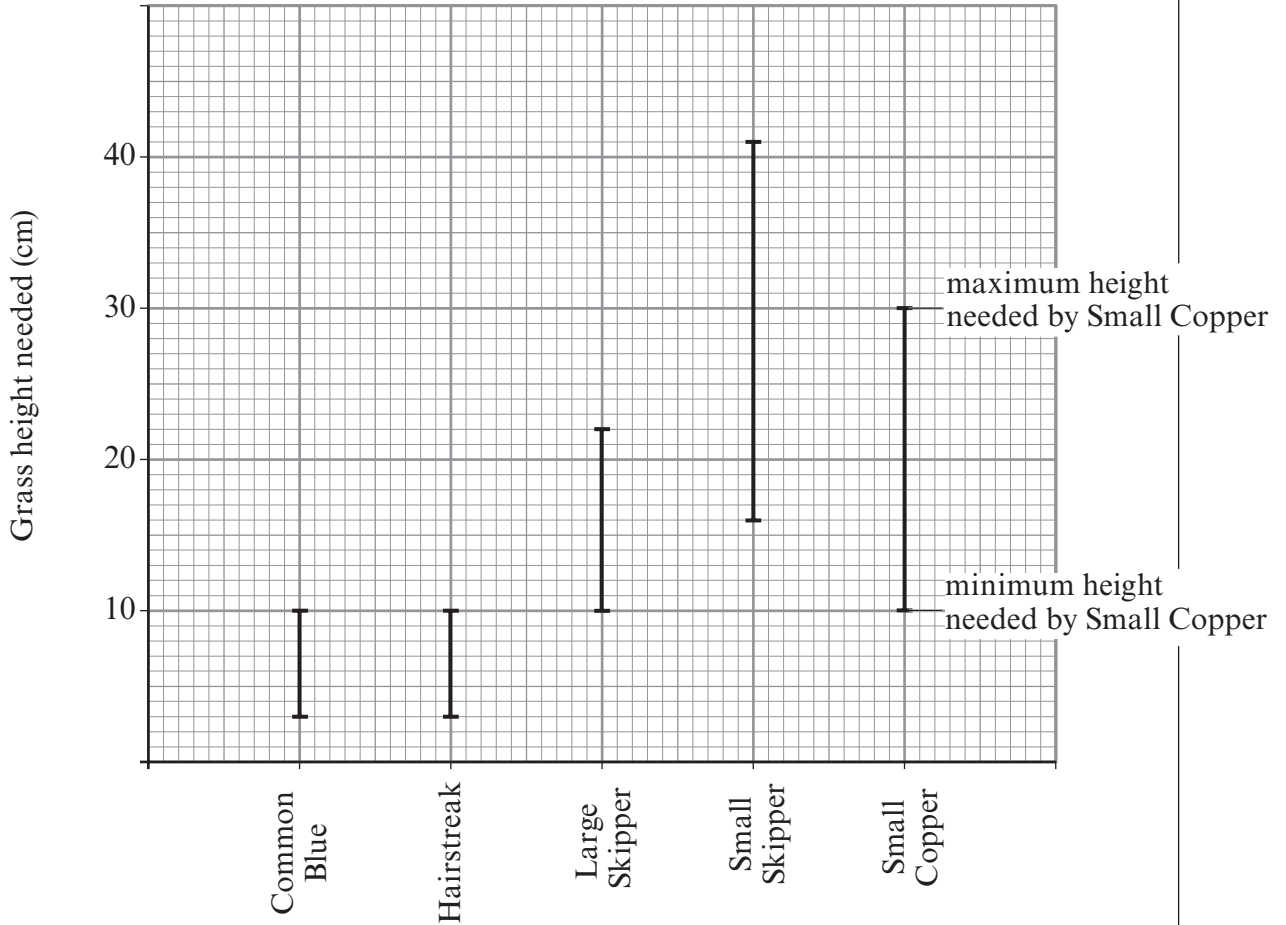
- (ii) From the chart, name the **two** species with the greatest decrease in number.

[2]

..... and .....

(b) In 2000, the area was grassland. In 2001, the area became a golf course and the grass was cut short each week.

Some butterfly species need grass of particular heights. The lines in the chart below show the range of grass heights needed by each butterfly species.



(i) Which **two** species need the shortest grass? [2]

..... and .....

(ii) Using the information in the chart, suggest an explanation for the steep decrease in the numbers of Small Skipper. [1]

.....

(iii) Suggest the height of grass which would be suitable for **most** butterfly species. [1]

..... cm

(c) Suggest **one** reason why the **total** numbers of all butterfly species decreased after the golf course was made. [1]

.....

4. Read the information below about the body of a man, now known as Lindow Man, found in a marsh in Cheshire.

Lindow Man



*BBC.co.uk*

- The man died nearly 2000 years ago.
- The body and surrounding plant remains had not decayed because the marsh is acidic, with very little oxygen.
- The body was dried at the British Museum and put on display.
- The plant material in the marsh is called peat.
- In the past, peat was commonly used as a fossil fuel.
- Some gardeners add peat to the soil around their plants. The peat decays releasing nutrients into the soil for the plants to absorb, so aiding growth.

Use the above information and your own knowledge to answer the following questions.

- (a) (i) Name **one** group of microorganisms that cause decay. [1]

.....

- (ii) Give **two** reasons why the body of Lindow Man had not decayed in the marsh. [2]

I. ....

II. ....

- (iii) How was the decay of Lindow Man prevented at the British Museum? [1]

.....

- (b) (i) What was the common use for peat in the past? [1]

.....

- (ii) Name the gas released when peat burns. [1]

.....

- (c) Explain how peat helps garden plants to grow. [2]

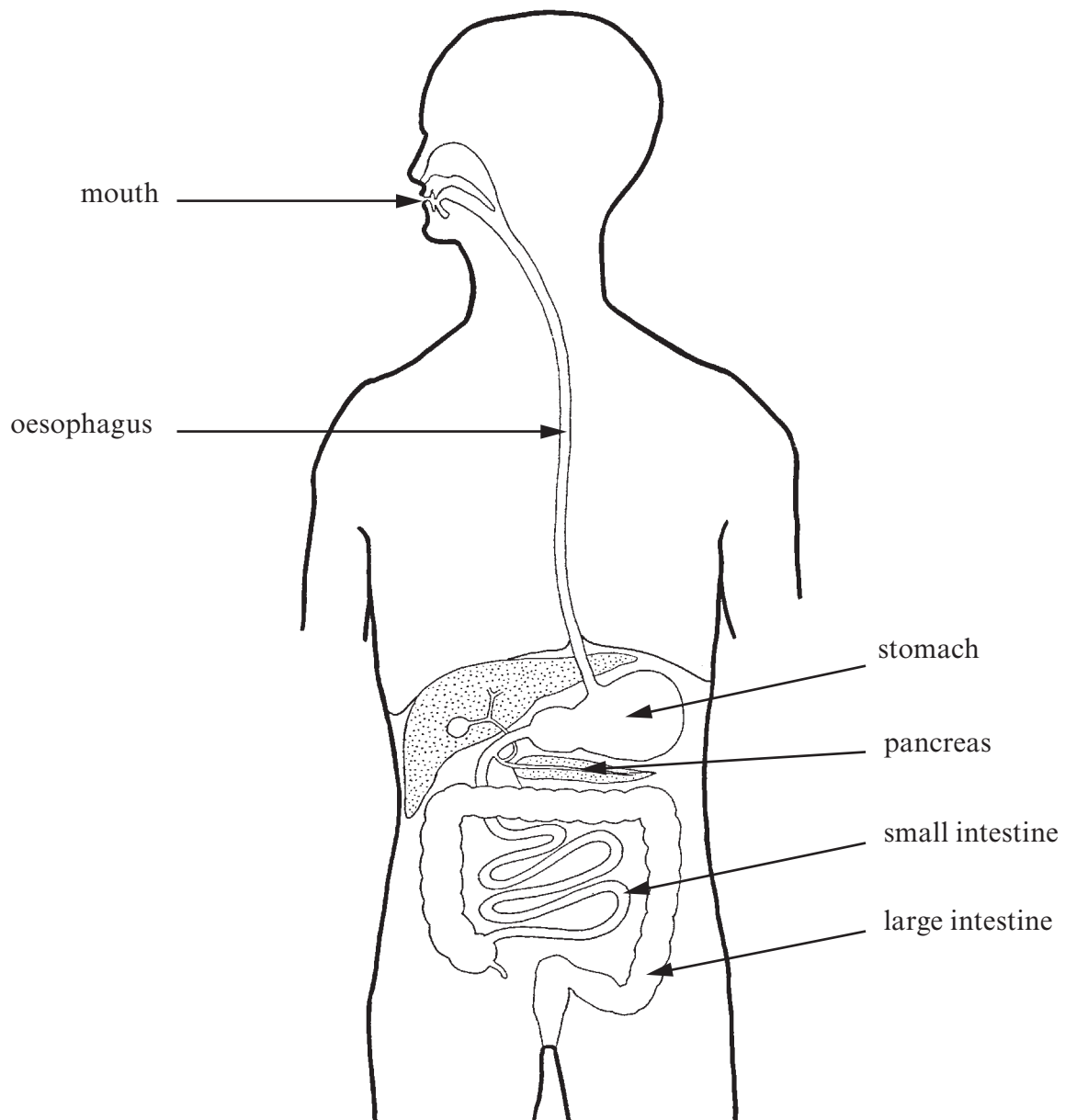
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5. The diagram shows the digestive system.



(a) Write down the name of the organ from the diagram that best fits each description below.

(i) An organ that secretes lipases, proteases and carbohydrases. [1]

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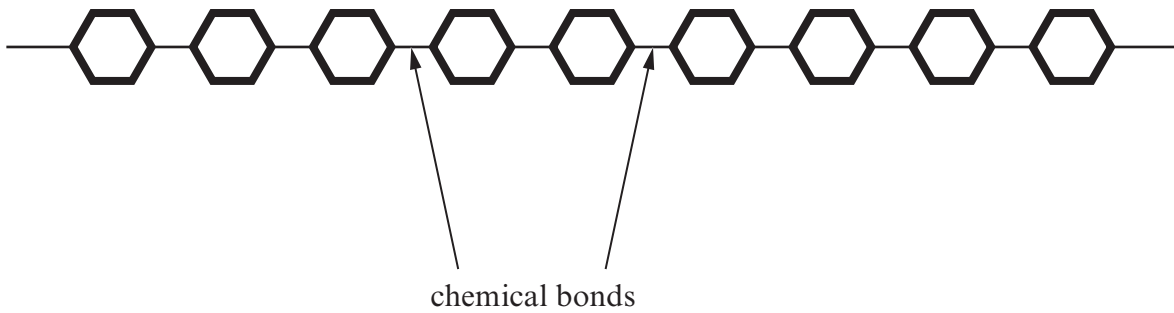
(ii) The organ where fats are digested to fatty acids and glycerol. [1]

.....

(iii) The organ where the digestion of starch begins. [1]

.....

(b) The diagram below represents a short length of a starch molecule.



(i) Name the type of enzyme that digests the chemical bonds in the starch molecule. [1]

.....

(ii) Name the end product of starch digestion. [1]

.....

5

6. (a) What is meant by the term *biological control*? [2]

.....  
.....  
.....

(b) What name is given to a species of animal or plant which is introduced to an area where it has not previously lived? [1]

.....

3

7. A commercial tomato grower was concerned that the temperature in his greenhouses was too high at certain times of the year. The high temperature was reducing the yield of tomatoes.

He experimented by using 7 greenhouses made of ‘SMARTglass’. When an electric current is passed through ‘SMARTglass’ the percentage of light and heat, it lets in, changes. By adjusting the strength of the electric current, the ‘SMARTglass’ can let a varying percentage of light and heat into the greenhouse.

The experiment was allowed to run for a complete growing season.

The results of the experiment are shown in the table below.

	Greenhouse number						
	1	2	3	4	5	6	7
Light and heat allowed to pass (%)	0	30	40	50	60	70	80
Mean mass of tomatoes produced (kg/plant)	0.0	3.4	5.2	5.6	6.9	4.3	2.2

- (a) (i) To obtain the largest mass of tomatoes, what percentage of heat and light is it best to allow to pass into the greenhouse? [1]

..... %

- (ii) All the plants were given as much water as they needed.  
Name **one other** factor, which affects the rate of photosynthesis, which should be kept the same for all the tomato plants. [1]

.....

- (iii) When setting up this experiment suggest **two other** ways in which the tomato grower could have kept the experiment fair. [2]

I. ....

.....

II. ....

.....

- (b) Explain fully why the yield of tomatoes in greenhouse number 2 was less than greenhouse number 5. [3]

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