

Candidate Name	Centre Number	Candidate Number
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**GCSE**

239/01

**ADDITIONAL SCIENCE  
FOUNDATION TIER  
BIOLOGY 2**

P.M. WEDNESDAY, 21 May 2008

45 minutes

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	8	
2.	8	
3.	7	
4.	12	
5.	8	
6.	7	
<b>Total</b>	<b>50</b>	

**ADDITIONAL MATERIALS**

In addition to this paper you may require a calculator.

**INSTRUCTIONS TO CANDIDATES**

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.

1. Read the following information.  
Answer the questions which follow.

**Tortoises on Isabella Island**




Giant tortoise



**Before 1980**

Trees and shrubs covered in leaves



**After 1995**

*Galapagos News 2005*

Giant tortoises, which survive for many years, inhabit the island of Isabella. They feed on shrubs, vines and other plants. They need trees for shade.

In 1980 human visitors brought a few goats to the island.

The goats reproduced. By 1995 there were thousands of goats. They had eaten almost all of the plants and destroyed most trees.

By 2002, many tortoises had died from starvation or overheating.

To help these tortoises survive, scientists started “Project Isabella”.

Using **this** information:

- (a) Name **two** type of plants which these tortoises eat. [1]
- .....

- (b) (i) How did goats arrive on the island of Isabella? [1]
- .....

- (ii) State **two** ways in which the goats caused problems for the tortoises. [2]

1. ....
2. ....

(c) What happened to

(i) the number of goats between 1980 and 1995? [1]

.....

(ii) the number of tortoises by 2002? [1]

.....

(iii) To help these tortoises survive, scientists started “Project Isabella”.  
Suggest **two** things they could do to make the project successful. [2]

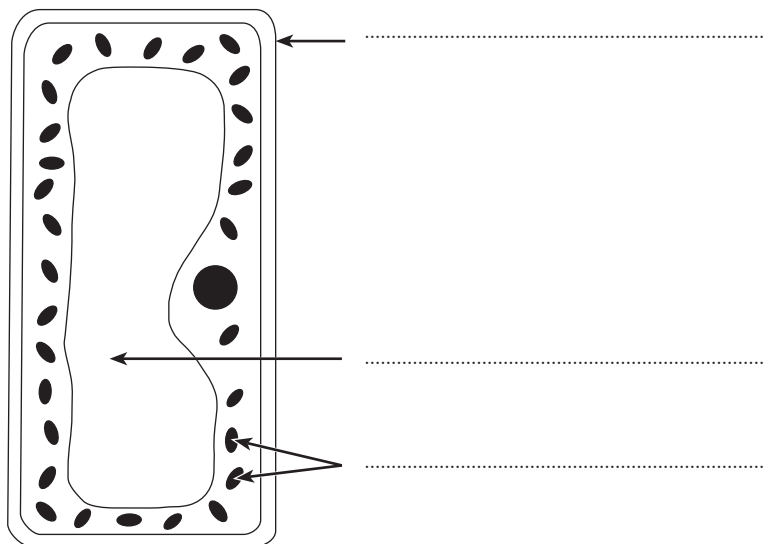
1. ....

2. ....

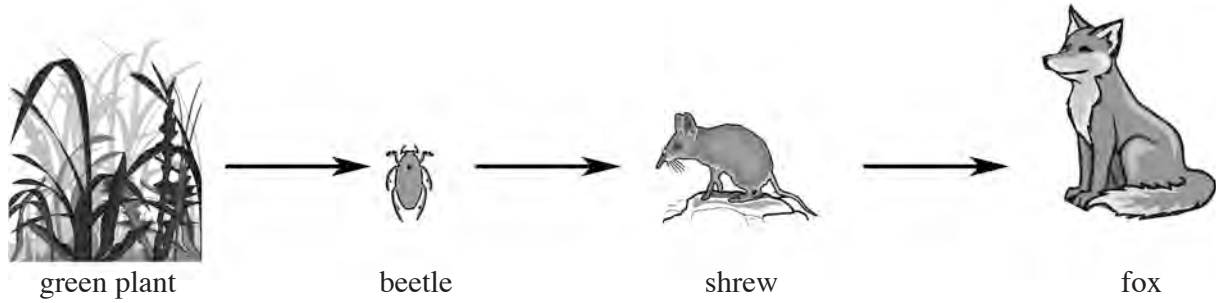
2. (a) The table below shows structures found in animal and plant cells. Complete the table with a tick (✓) if the structure is present and a cross (✗) if it is absent. The first one has been done for you. [5]

<i>Structure</i>	<i>Found in Animal cells</i>	<i>Found in Plant cells</i>
Cell wall	✗	✓
Cytoplasm		
Large vacuole		
Chloroplast		
Cell membrane		
Nucleus		

- (b) Choose some of the words in the table to label the diagram of the cell below. [3]



3. The diagram shows a food chain.



From the diagram:

(a) What do the arrows in the food chain show? [1]

(b) (i) Name the *producer* and state its source of energy. [2]

Producer .....

Energy source .....

(ii) Name **one** *carnivore* in the chain. Give the reason for your choice. [2]

Name .....

Reason .....

(c) (i) State **one** way in which energy is lost from a food chain. [1]

(ii) Megan counted the numbers of these animals in a habitat. What would be the result? [1]

Underline the correct answer:

More foxes than shrews

Fewer beetles than shrews

More beetles than shrews

4. (a) Complete the sentences below using some of the words in the list: [3]

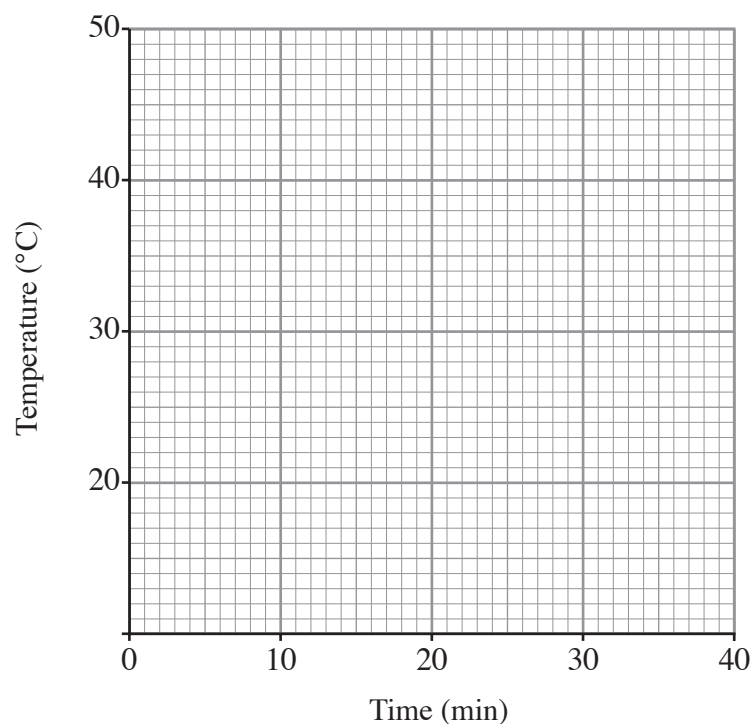
aerobic, energy, enzymes, diffusion.

During respiration chemical reactions occur which release .....  
and which are controlled by ..... . When oxygen is available we  
say that respiration is .....

- (b) Jordan competes in a race during which his skin temperature is measured every 10 minutes. The results are shown in the table below.

<i>Time (min)</i>	<i>Skin Temperature (°C)</i>
0 (start)	30
10	32
20	38
30	44
40	40

- (i) Plot the results on the graph. Join the points with a ruler. [3]



- (ii) The temperature after 10 minutes is 32°C.  
**From your graph**, what is the temperature after 25 minutes? [1]

.....

- (iii) Work out the temperature increase between 10 and 25 minutes. [1]

Answer ..... °C

- (iv) What process causes the temperature to increase? [1]

.....

- (v) How could this investigation be made more reliable? [1]

.....

- (c) Fill the gaps in the equation by naming two waste products of respiration. [2]

Glucose + oxygen  $\longrightarrow$  ..... + .....

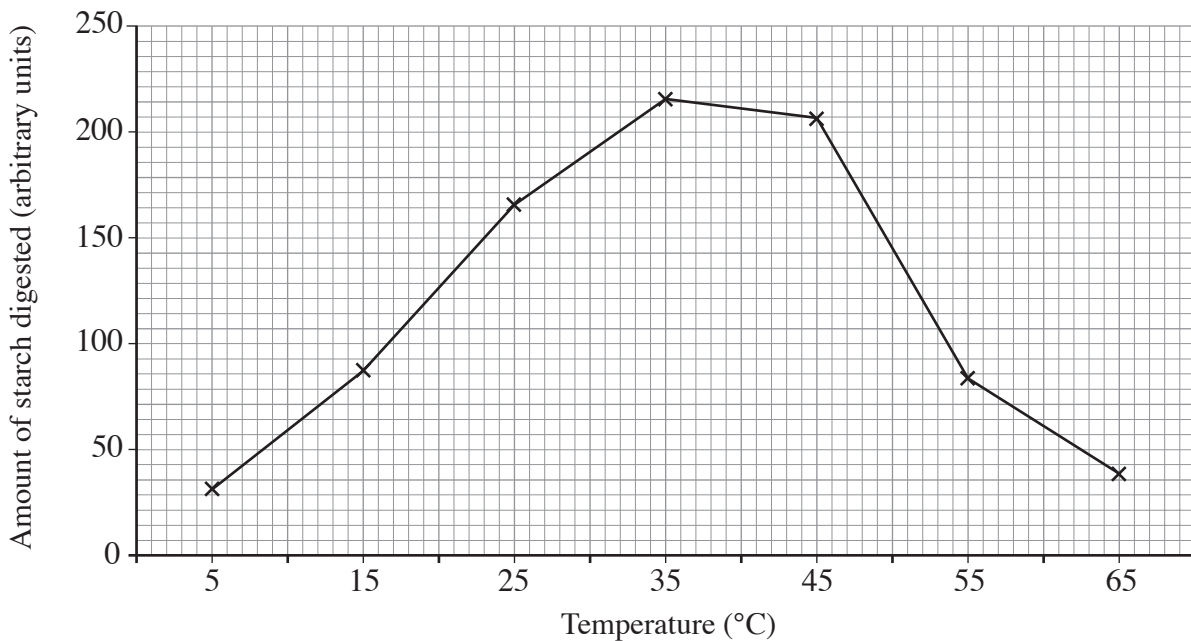
5. In our mouth we produce an enzyme which digests starch. A scientist measured the amount of this enzyme in three groups of people who eat different foods. The results are shown in the table:

<i>Group</i>	<i>Food eaten</i>	<i>Amount of enzyme in mouth / units per cm<sup>3</sup></i>
A	Mixed diet of meat, vegetables, fruit and starchy cereals	101
B	Mainly meat	22
C	Mainly starchy cereals	248

- (a) How does the type of food eaten affect the amount of enzyme produced?

[1]

- (b) The graph shows the effect of temperature on the digestion of starch by this enzyme.





(i) **Describe** the effect of temperature on the action of this enzyme. [2]

.....

.....

.....

(ii) **Explain** the results obtained between 35 - 65°C. [2]

.....

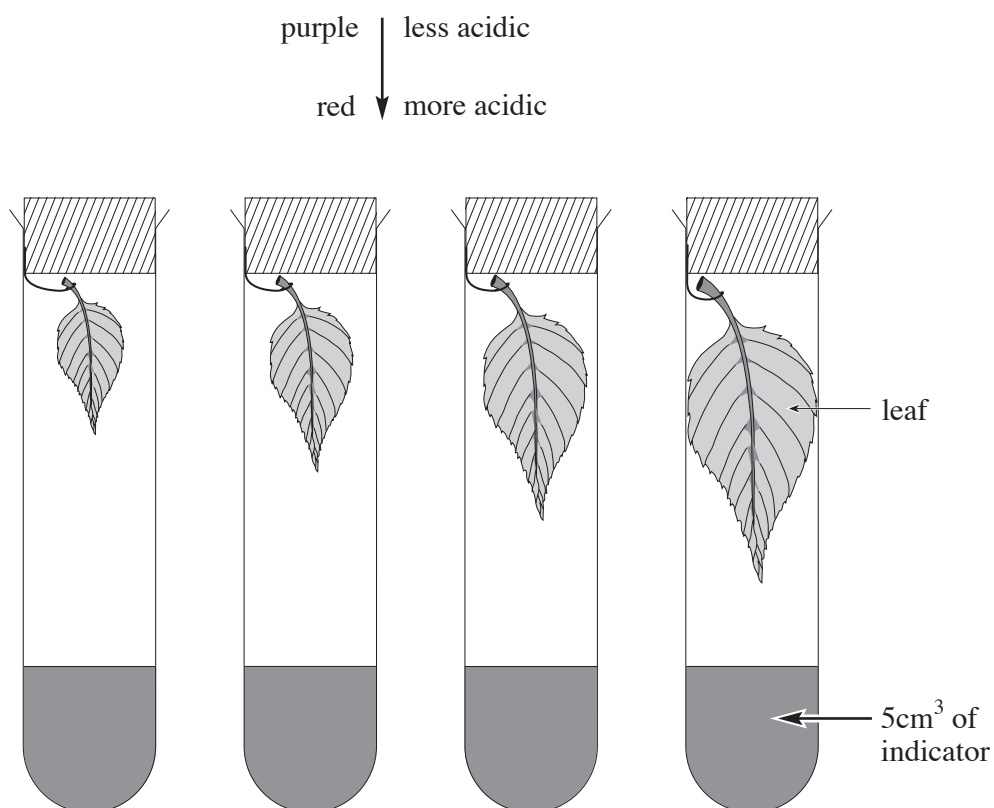
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(c) Complete the table below to show the action of enzymes in different regions of the digestive system. [3]

<i>Region of digestive system</i>	<i>Enzyme</i>	<i>Action of enzyme</i>
Stomach	Protease	..... .....
Small intestine	.....	Digests starch to glucose
.....	Lipase	Digests fats to fatty acids and glycerol

6. Green leaves of four different sizes were placed in tubes, as shown in the diagram, and left in the light. Each tube contained an equal quantity of an indicator which changes from red to purple when it becomes less acidic. The presence of carbon dioxide increases acidity.



The time taken for the indicator to change from red to purple in each tube is recorded in the table below.

<i>Leaf size</i>	<i>Time taken for indicator to change from red to purple / minutes</i>
Small	63
Medium	47
Large	26
Very large	18

- (a) Explain how a biological process in the leaves caused the indicator to change from red to purple. [3]

.....

.....

.....

.....

.....

(b) Explain why the indicator in the tube with the largest leaf changed colour the quickest. [1]

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(c) After 60 minutes which tube would be expected to contain the most oxygen? [1]  
Underline the correct answer.

The tube with the:

small leaf

medium leaf

large leaf

very large leaf

(d) If the apparatus was kept in the dark for several hours, which tube would contain the most oxygen at the end of the period? [1]  
Underline the correct answer.

The tube with the:

small leaf

medium leaf

large leaf

very large leaf

(e) In order to make it a fair test state **one** factor that should be kept constant. [1]

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