



General Certificate of Secondary Education
2013–2014

Double Award Science: Biology

Unit B1

Foundation Tier

[GSD11]



MONDAY 24 FEBRUARY 2014, MORNING

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all seven** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 70.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Quality of written communication will be assessed in question **7(c)**.

Centre Number

71

Candidate Number

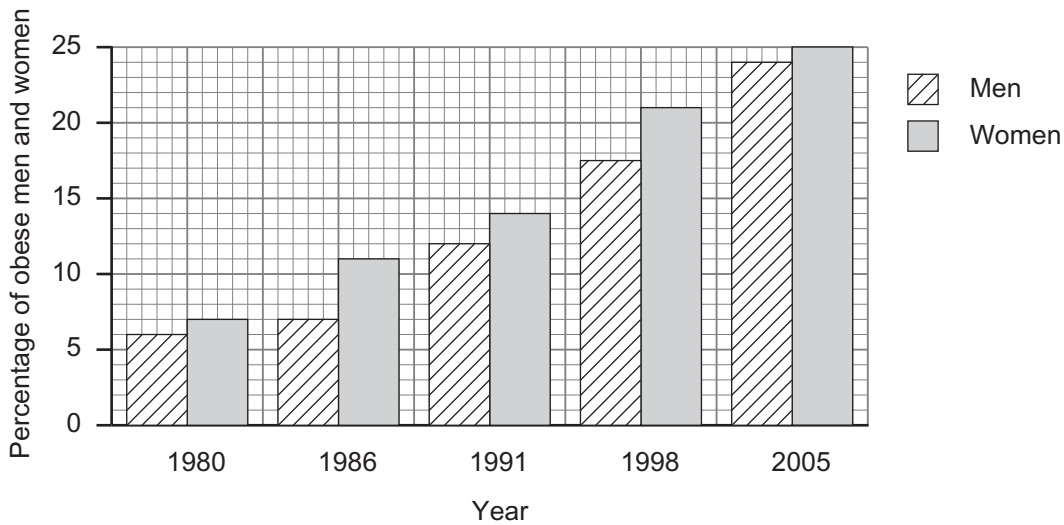
For Examiner's
use only

Question Number	Marks
1	
2	
3	
4	
5	
6	
7	

Total
Marks

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- 2 (a) The bar chart shows the percentage of obese men and women in the UK population between 1980 and 2005.



© P Zaninotto et al. University College London

- (i) Using the bar chart, give the general trend for the percentage of obese men and women between 1980 and 2005.

_____ [1]

- (ii) Suggest **one** change in eating patterns in the UK population that might explain this general trend.

_____ [1]

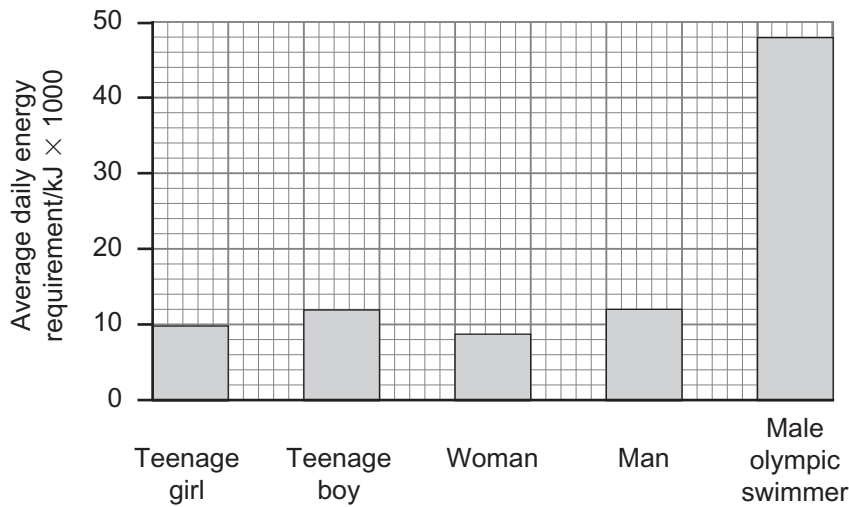
- (iii) Obesity can cause harmful effects on the body.

Give **one** harmful health effect of obesity.

_____ [1]

Examiner Only	
Marks	Remark

- (b) The bar chart gives the average daily energy requirements for different groups of people in thousands of kilojoules (kJ) per day.



Adapted from: Big Picture issue 14 Summer 2011 © Wellcome Trust www.bigpictureeducation.com

- (i) How many **times** higher is the energy requirement of the male olympic swimmer compared to the teenage boy?

Show your working.

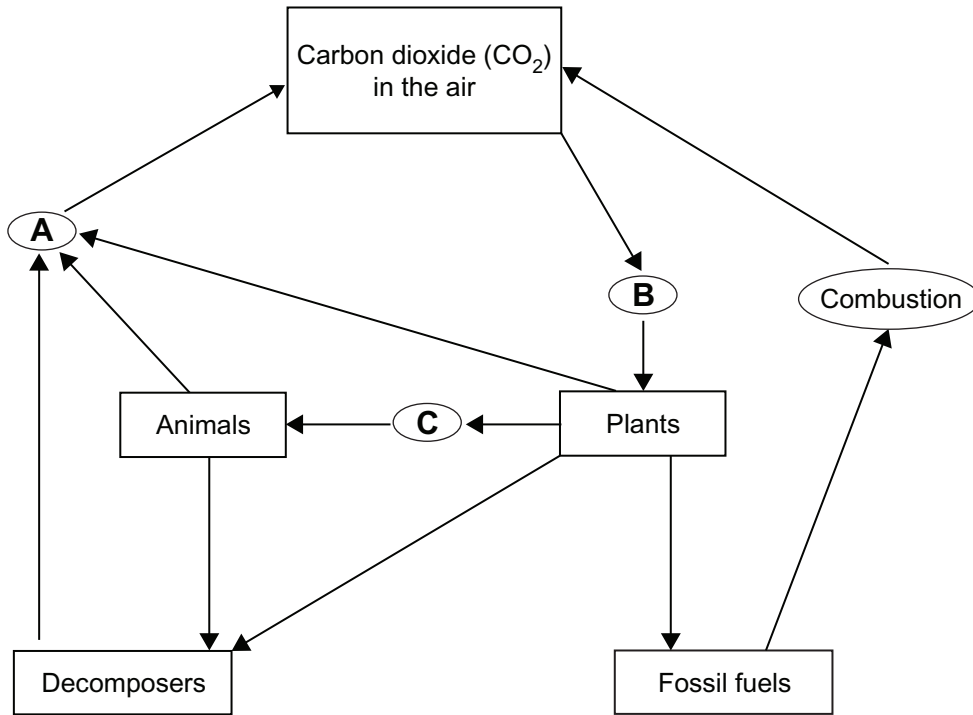
_____ [2]

- (ii) Using this information and your knowledge, explain how physical activity can help prevent obesity.

 _____ [1]

Examiner Only	
Marks	Remark

3 The diagram shows the carbon cycle.



Source: Principal Examiner

(a) Name processes **A**, **B** and **C**.

A _____

B _____

C _____

[3]

(b) Plants make a substance with the carbon dioxide taken in from the air in process **B**.

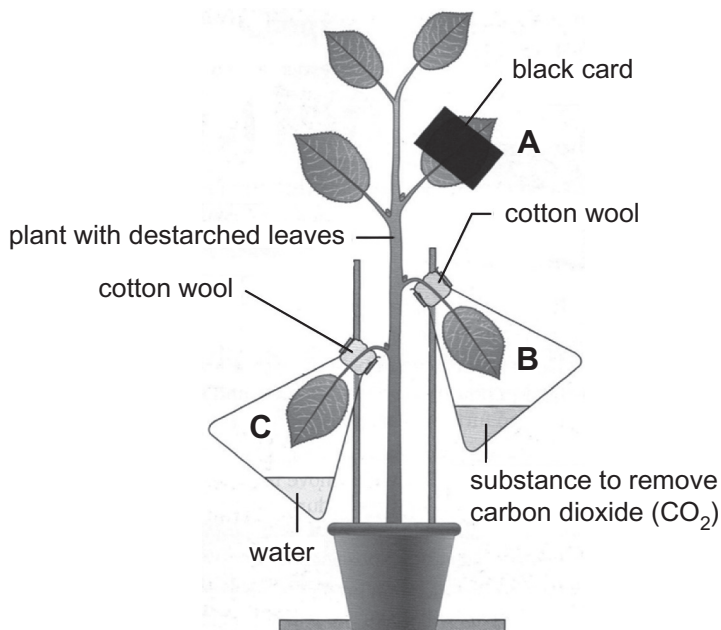
Name this substance.

[1]

Examiner Only	
Marks	Remark

- 4 (a) An experiment was carried out to investigate two factors needed for photosynthesis.

The plant was destarched and set up as shown in the diagram below.



© GCSE Biology for CCEA by R McIlwaine & J Napier, published by Hodder Education, 2003.
ISBN 978 0340 858257. "Reproduced by permission of Hodder Education".

The plant was then left in light for two days before the starch test was carried out on leaves **A**, **B** and **C**.

- (i) Apart from water, name the two chemicals used when testing a leaf for starch.

1. _____

2. _____

[2]

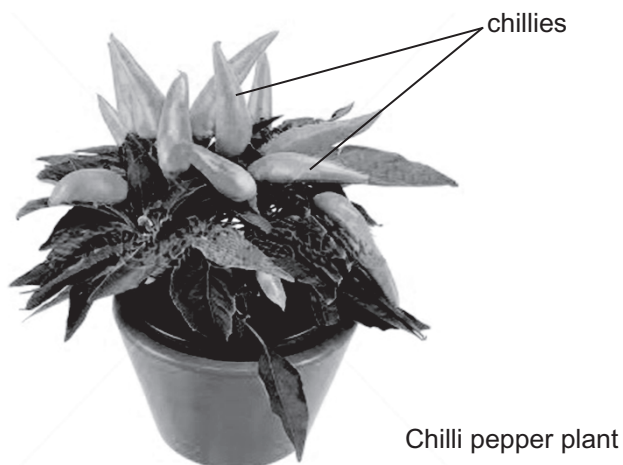
- (ii) Describe and explain the results when the starch test was carried out on leaf **A**.

[3]

Examiner Only	
Marks	Remark

- (c) A grower carried out growth trials on three different varieties of chilli pepper plants. Chillies are the fruits of the plant and are used in cooking.

Most people in the UK prefer hot, rather than very hot chillies.



Source: Principal Examiner

At the start of February equal numbers of seeds of the three varieties were planted.

By mid-May, they had developed into seedlings and were placed in a glasshouse.

In mid-August the total number of chillies that had been produced by each variety of plant was recorded as shown in the table below.

Plant variety	Heat of chillies	Number of chillies picked by mid-August
Etna	very hot	18
Fiesta	very hot	56
Demon Red	hot	366

- (i) If the grower wanted a second crop of chillies ready by mid-September, suggest in which month he would have planted the seeds.

Month _____ [1]

Examiner Only

Marks Remark

(ii) Using the information in the table, suggest two reasons why you would recommend the grower uses the Demon Red variety.

1. _____

2. _____ [2]

(iii) Suggest two factors that could affect the growth of the chilli pepper plants.

1. _____

2. _____ [2]

Examiner Only	
Marks	Remark

- 6 It is thought that the barn owl, once a common bird in Northern Ireland, is now reduced to fewer than 50 breeding pairs.



talons

© Linda Wright / Science Photo Library

The following passage is from a news article written by a reporter who visited a farm where barn owls were nesting in an old barn.

‘Soon the bird appeared, and what a bird! With its silent flight we never heard it arrive. The owl turns its head so that its sensitive ears can find the faint sounds we make. This is one way the owl finds its prey but also explains why it has difficulty hunting in snow or heavy rain. Grasping old beams with its large talons, it turns its very large eyes on us, eyes that are perfect for night time hunting of rodents, e.g. mice.’

Using the information given and your knowledge, answer the following questions.

- (a) Apart from having very large eyes, describe and explain two ways in which the barn owl is adapted for hunting.

1. _____

2. _____

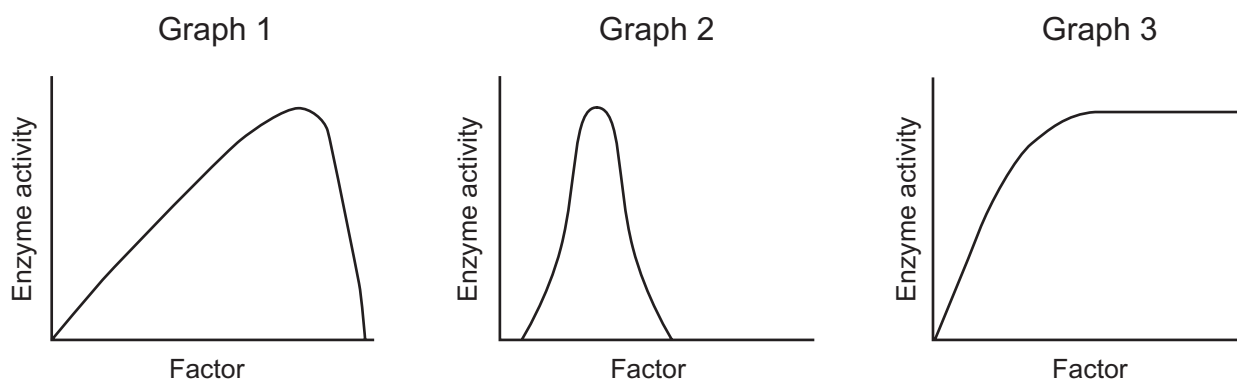
_____ [4]

- (b) Suggest why the barn owl has difficulty hunting in snow or heavy rain.

_____ [1]

Examiner Only	
Marks	Remark

(b) The graphs show how enzyme activity in stomach protease varies with three different factors.



Source: Principal Examiner

(i) Match each graph to the correct factor from the list below.

pH : enzyme concentration : temperature

Graph 1 _____

Graph 2 _____

Graph 3 _____

[2]

(ii) Name the substrate for protease.

[1]

(iii) Apart from the stomach, where else in the digestive system would protease be found?

[1]

Examiner Only	
Marks	Remark

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