

New  
Specification

Rewarding Learning

General Certificate of Secondary Education  
2012–2013

## Science: Single Award

Unit 1 (Biology)

Foundation Tier

[GSS11]



MONDAY 12 NOVEMBER 2012, AFTERNOON

### 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 nine** questions.

### INFORMATION FOR CANDIDATES

The total mark for this paper is 60.

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.

Centre Number

71

Candidate Number

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	

<b>Total Marks</b>	
--------------------	--



**BLANK PAGE**

- 1 (a) The fen violet is a plant that is nearly extinct.



© Crown copyright – The Department of the Environment (Northern Ireland)

What word is used to describe plants that are nearly extinct?

Choose from:

**discontinuing      non-active      endangered**

\_\_\_\_\_ [1]

- (b) Complete the sentence below.

Choose from:

**water : oxygen : carbon dioxide : food : colour**

It is important to save plants from extinction as they provide us with

\_\_\_\_\_ and \_\_\_\_\_. [2]

Examiner Only

Marks Remark

2 (a) Below are some processes in the carbon cycle and their descriptions.

Use lines to link each process with its correct description.

Process	Description
burning	carbon released into the air from fossil fuels
feeding	carbon taken in by animals from plants
	carbon taken in by plants from animals

[2]

Increasing carbon dioxide is causing global warming and affecting the area of ice in polar regions.

Year	1998	1999	2000	2001	2002
Average area of ice/thousands km <sup>2</sup>	10.3	10.2	8.8	7.2	5.4

The picture below shows how a polar bear uses ice to hunt for food.



ice

© Design Pics / Thinkstock

(b) Use the information to suggest how global warming is affecting the polar bear.

---

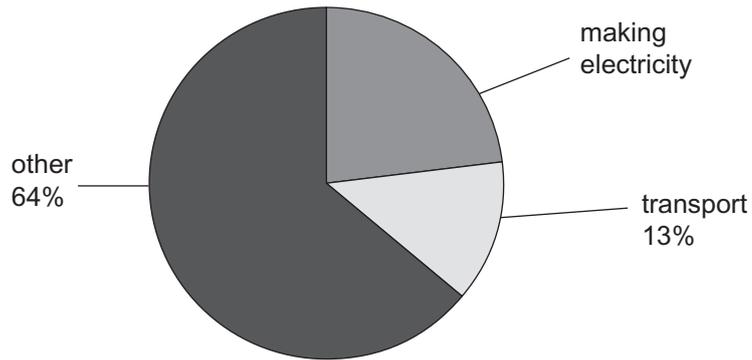


---

[2]

Examiner Only	
Marks	Remark

The pie chart shows some sources of carbon dioxide in the UK.



- (c) Calculate the percentage of carbon dioxide produced when making electricity.  
(Show your working out.)

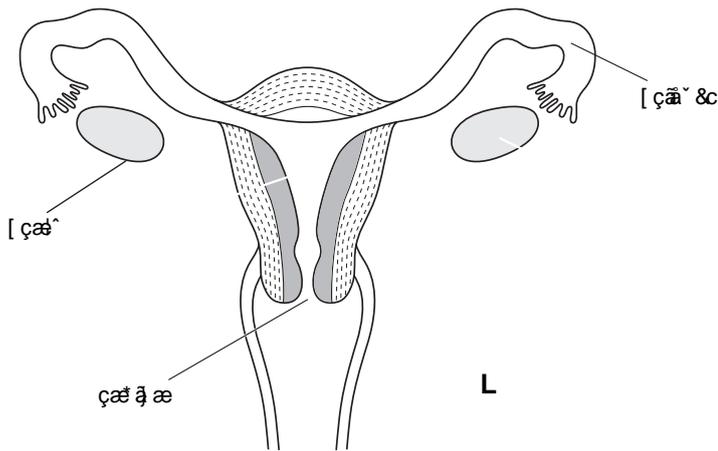
\_\_\_\_\_ % [2]

- (d) To reduce the carbon dioxide in the air more trees are being planted.  
Name the process by which trees remove carbon dioxide from the air.

\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

3 (a) The diagram shows the female reproductive system.



© Focus Educational Software

(i) On the diagram draw a line from X to the cervix. [1]

(ii) Name the part where sperm fertilises an ovum (egg).

\_\_\_\_\_ [1]

(iii) What is the function of the ovaries?

\_\_\_\_\_ [1]

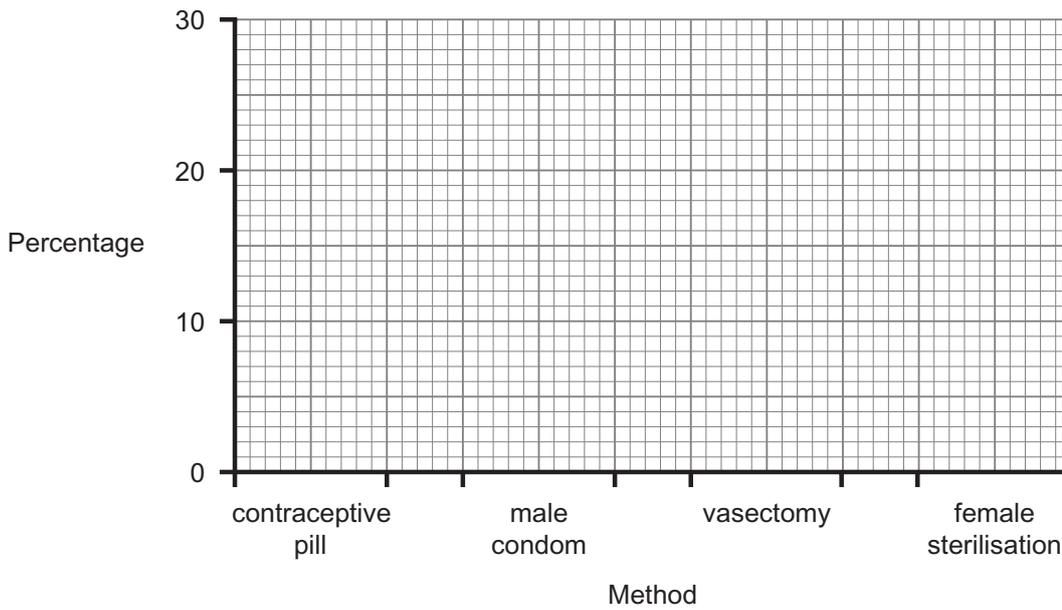
(b) The table below shows some methods of contraception used by 20 and 40 year olds.

Method	Percentage	
	20 year olds	40 year olds
contraceptive pill	27	22
male condom	22	18
vasectomy	8	20
female sterilisation	6	14

Examiner Only	
Marks	Remark

(i) On the grid below draw a **bar chart** showing the contraceptive methods used by 40 year olds.

Examiner Only	
Marks	Remark



[2]

(ii) State the method least used by **20 year olds** and suggest a reason for this.

---



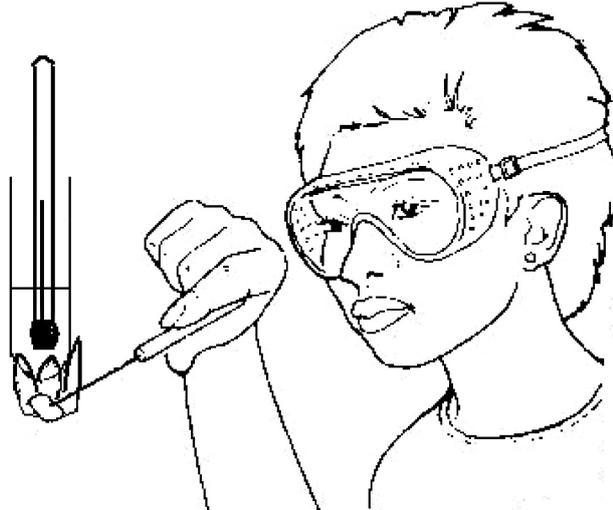
---



---

[2]

- 4 (a) Shown below is Doreen who is investigating the amount of energy in different foods.



© Science at work – Body Maintenance by L Mooney & A Rivers, published by Longman Publishing, 1992, reproduced by permission of Pearson Education Ltd. Further duplication other than for teaching and study is prohibited – Pearson Education Ltd, copyright holders.

- (i) State **two** things that have to be done to make this investigation valid (a fair test).

1. \_\_\_\_\_
2. \_\_\_\_\_ [2]

Doreen is given three foods labelled **A**, **B** and **C** to test. Her results are given below.

Food	Starting temperature/°C	Final temperature/°C	Temperature rise/°C
<b>A</b>	18	25	7
<b>B</b>	19	51	32
<b>C</b>	17	30	13

The three foods tested were:

Deep fried potato (chips)  
Baked potato  
Boiled cabbage

- (ii) Use the list to state which of the three foods was labelled **B** and explain your choice.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [2]

Examiner Only	
Marks	Remark

--	--

(b) Below are some statements about food. Place a tick (✓) beside one statement which is correct for **protein**.

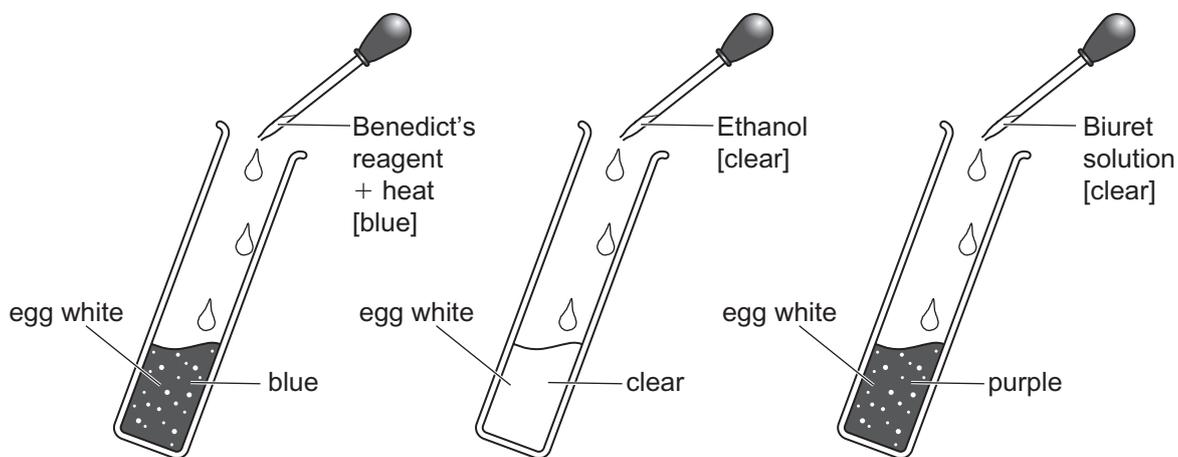
Lemons and oranges are a good source

It is used for growth and repair

Too much can block coronary arteries

[1]

(c) Egg white was tested with three different chemicals to determine the main food type it contained. The colour before and after each test is given in the diagram below.



Use the diagram and your knowledge to answer the questions below.

(i) Name the chemical used to test for sugars.

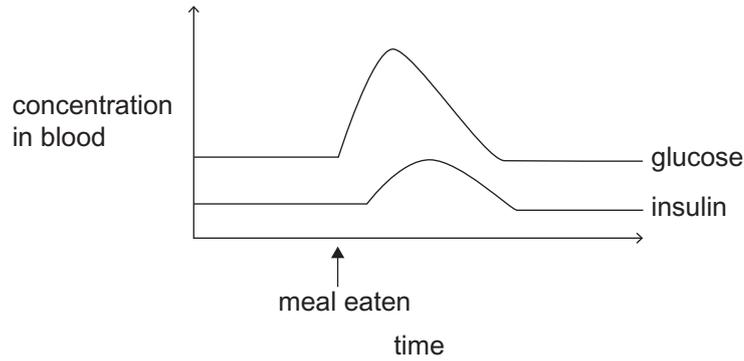
\_\_\_\_\_ [1]

(ii) Name the main food type in egg white. Explain your answer.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [2]

Examiner Only	
Marks	Remark

5 (a) The graph shows the levels of insulin and glucose in the blood.



(i) Use the graph to describe **one** difference between the concentration of glucose and the concentration of insulin in the blood.

\_\_\_\_\_ [1]

(ii) Explain how the graph suggests that insulin is released into the blood because of an increase in glucose.

\_\_\_\_\_  
 \_\_\_\_\_ [1]

(b) Insulin is a chemical messenger carried in the blood to the liver. What general name is given to chemical messengers?

Choose from:

**antibodies**      **phagocytes**      **hormones**

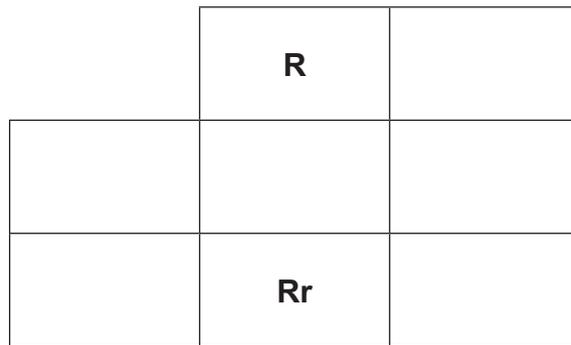
\_\_\_\_\_ [1]

Examiner Only	
Marks	Remark



6 (a) The ability to roll your tongue is caused by a dominant allele (R).

(i) Complete the diagram below to show how two parents who are tongue rollers can have a child who cannot roll his/her tongue.



[3]

(ii) What is the probability that they will have a child who cannot roll his/her tongue?

\_\_\_\_\_ [1]

(b) Tongue rolling is an example of discontinuous variation.

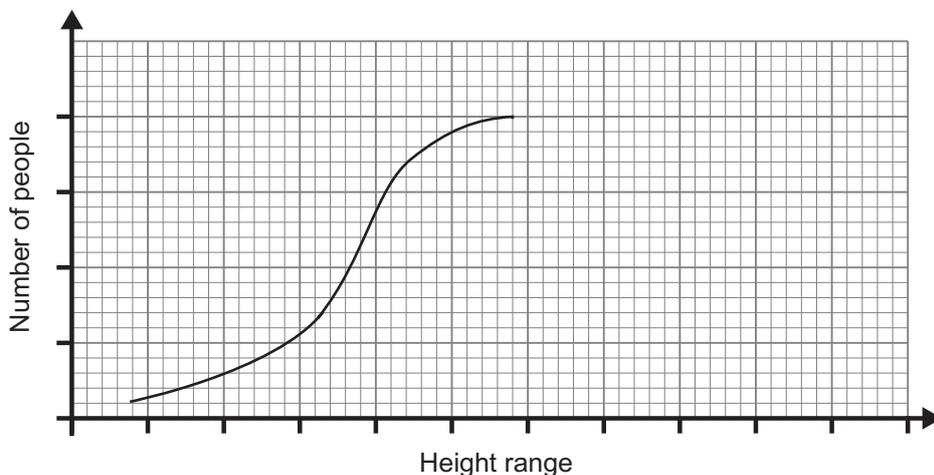
(i) What is meant by the term **discontinuous**?

\_\_\_\_\_ [1]

(ii) Suggest **one** other example of discontinuous variation.

\_\_\_\_\_ [1]

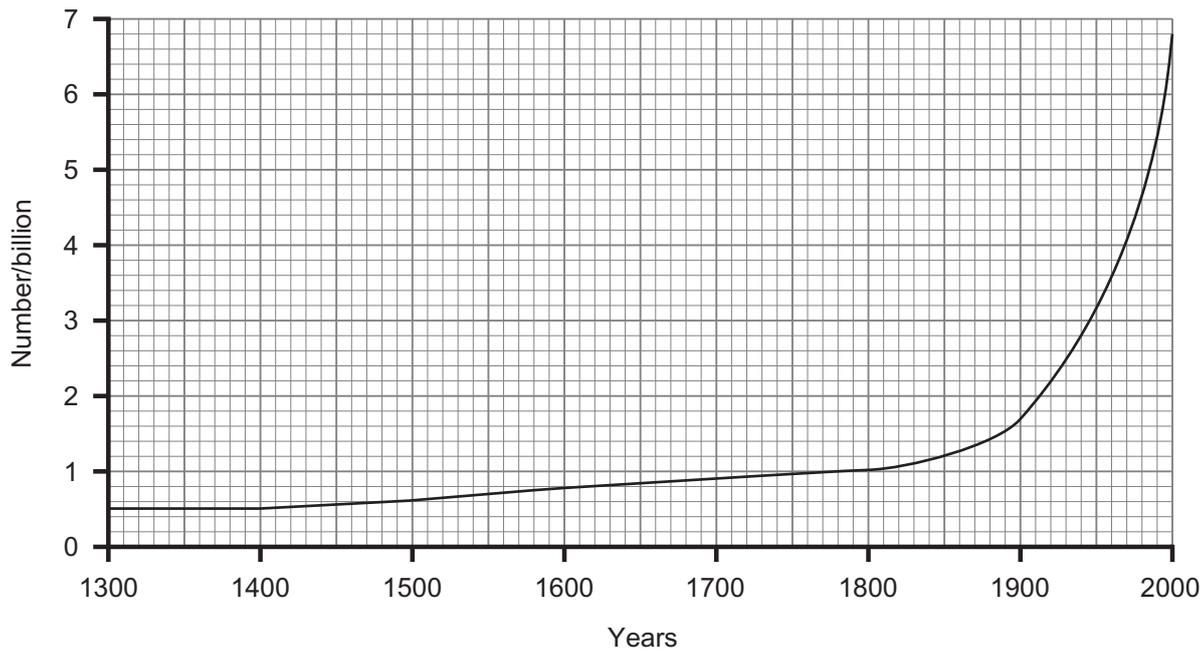
(c) The graph shows the result of recording the heights of a very large number of people. Complete the sketched line in the graph below.



[2]

Examiner Only	
Marks	Remark

7 The graph below shows the human population from the year 1300 to the year 2000.



Use this graph and your knowledge to explain why there is concern that the human population size is putting planet Earth at risk.

**In this question you will be assessed on your written communication skills including the use of specialist scientific terms.**

---

---

---

---

---

---

---

---

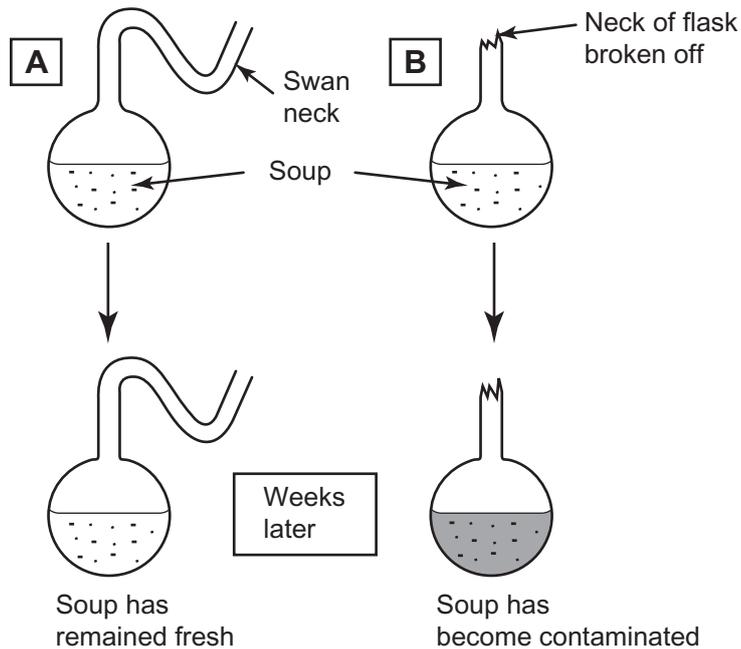
---

---

[6]

Examiner Only	
Marks	Remark

- 8 (a) The following diagram shows the apparatus Louis Pasteur used to show that contamination of food was caused by microorganisms from the air.



- (i) Explain fully why the soup in **A** stayed fresh and the soup in **B** did not.

---



---



---



---

[3]

- (ii) Suggest **one** reason why there were less deaths from open wounds after Pasteur's discovery.

---

[1]

- (b) (i) Explain fully why diseases such as flu cannot be treated with antibiotics.

---



---



---

[2]

- (ii) Give **one** example of a disease that can be treated by antibiotics.

---

[1]

Examiner Only	
Marks	Remark

- 9 (a) Complete the table to show the differences between a voluntary and a reflex action.

Choose from:

**varies : fast : always the same : slow**

Differences	Voluntary	Reflex
speed of response		
response to stimulus		

[2]

- (b) Describe the pathway taken when we respond to the stimulus of a loud noise by covering our ears with our hands. Include **three** structures of the nervous system in your answer.

---



---



---



---

[3]

- (c) Describe the effect on the speed of reactions of:

alcohol. \_\_\_\_\_

---

cocaine. \_\_\_\_\_

---

[2]

---

**THIS IS THE END OF THE QUESTION PAPER**

---

Examiner Only	
Marks	Remark

Permission to reproduce all copyright material has been applied for.  
In some cases, efforts to contact copyright holders may have been unsuccessful and CCEA  
will be happy to rectify any omissions of acknowledgement in future if notified.