



General Certificate of Secondary Education  
2010–2011

Centre Number

71

Candidate Number

## Science: Single Award (Modular)

Human Activity and Health  
Module 2

Foundation Tier

[GSC21]



THURSDAY 24 FEBRUARY 2011, MORNING

### TIME

45 minutes.

### 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 45.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's  
use only

Question Number	Marks
1	
2	
3	
4	
5	
6	
7	

Total  
Marks

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- 1 (a) Cigarette smoke contains substances that have harmful effects on the body. Complete the following table.

Choose from:

**nitrogen : tar : is addictive**  
**causes bronchitis : carbon monoxide**

Substance	Harmful effect
nicotine	
	causes cancer
	lowers the level of oxygen in blood

[3]

- (b) (i) Complete the following sentences.

Choose from:

**eyes : liver : binge drinking : a hangover**

Drinking a lot of alcohol in a short period of time

is called \_\_\_\_\_.

People who drink too much alcohol for a long period of time risk

harming their \_\_\_\_\_.

[2]

- (ii) Apart from giving up alcohol, suggest two ways to reduce the harm that it can cause to the body.

1. \_\_\_\_\_

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

- (iii) State one way that excess drinking of alcohol can harm **society**.

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

Examiner Only	
Marks	Remark

2 (a) Complete the following flow chart.

Choose from:

**genes : cancer : measles**

**protein : gamma : UV**

Skin becomes tanned (burned)  
because of \_\_\_\_\_ rays from the Sun.



This can cause damage to  
the \_\_\_\_\_ in our skin cells.



Eventually this may cause \_\_\_\_\_.

[3]

(b) Suggest **one** reason why the number of cases of skin cancer in Northern Ireland is rising.

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

(c) Complete the following sentence.

Choose from:

**controlled cell division : uncontrolled cell division :**

**uncontrolled growth of cell size**

Cancer is \_\_\_\_\_ [1]

Examiner Only	
Marks	Remark

3 (a) Below is a picture of a corncrake in tall vegetation where it nests.



© Michael Callan/Frank Lane Picture Agency/CORBIS

A farmer noted the following information about corncrakes on his land.

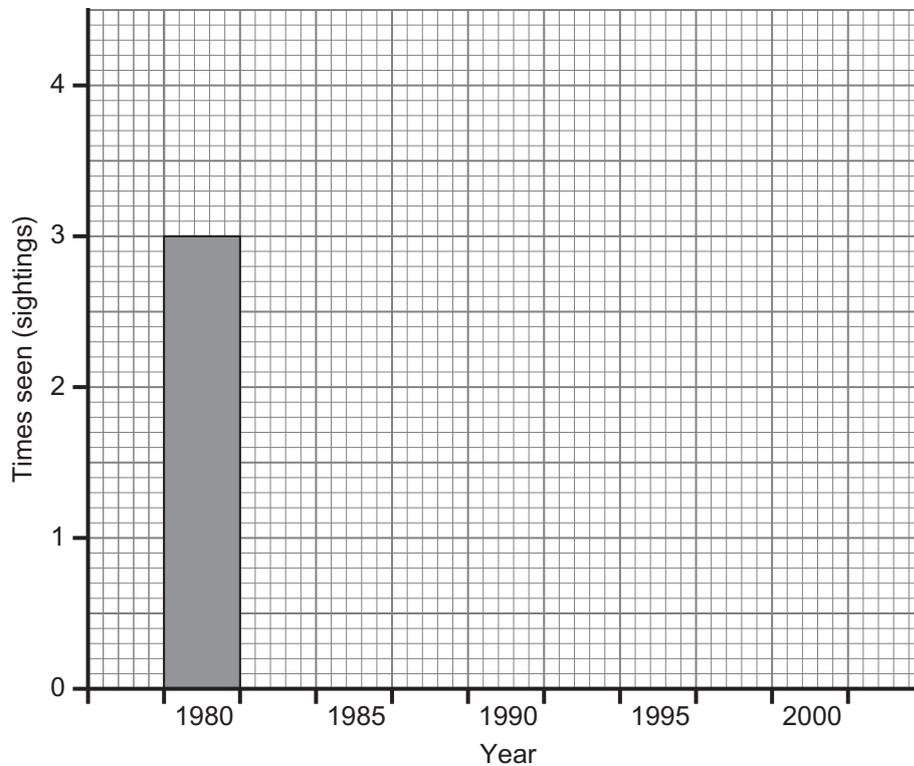
Year	Times seen (sightings)	Times heard (calls)
1980	3	12
1985	2	5
1990	2	6
1995	1	4
2000	1	4

Examiner Only

Marks Remark

Use the information provided and your knowledge to answer parts (i), (ii) and (iii) below.

- (i) Complete the following bar chart showing the number of sightings.



[2]

- (ii) Suggest **one** reason why the information shows that there were more corncrake calls than sightings.

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

- (iii) Give **one** piece of evidence that suggests that the corncrake is an endangered species.

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

- (b) The corncrake is an example of a biotic factor that can be used to give information about the environment.

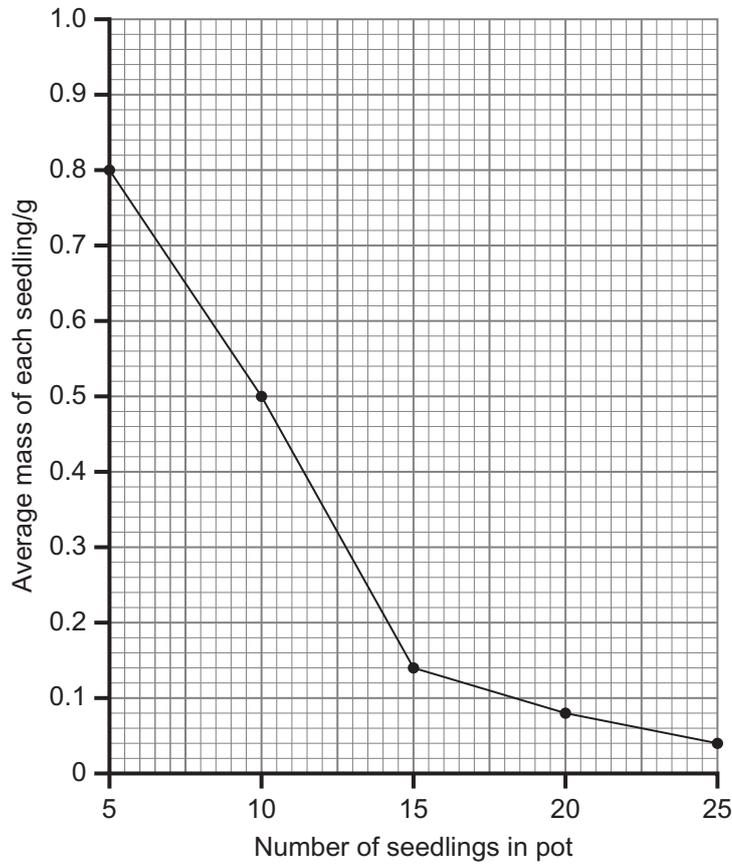
What is meant by a **biotic** factor?

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

Examiner Only

Marks Remark

- 4 (a) Jane was given five identical pots and a packet of seeds. She used these to investigate how the mass of seedlings was affected by the number growing in each pot. She planted the seeds and after three weeks weighed the seedlings. This is a graph of her results.



- (i) Calculate the total number of seedlings that Jane used.

Show your working.

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

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Marks	Remark

- (ii) Explain fully why the average mass of the seedlings decreased with more seedlings in each pot.

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

- (iii) From the information state two things Jane did to make her investigation valid (a fair test).

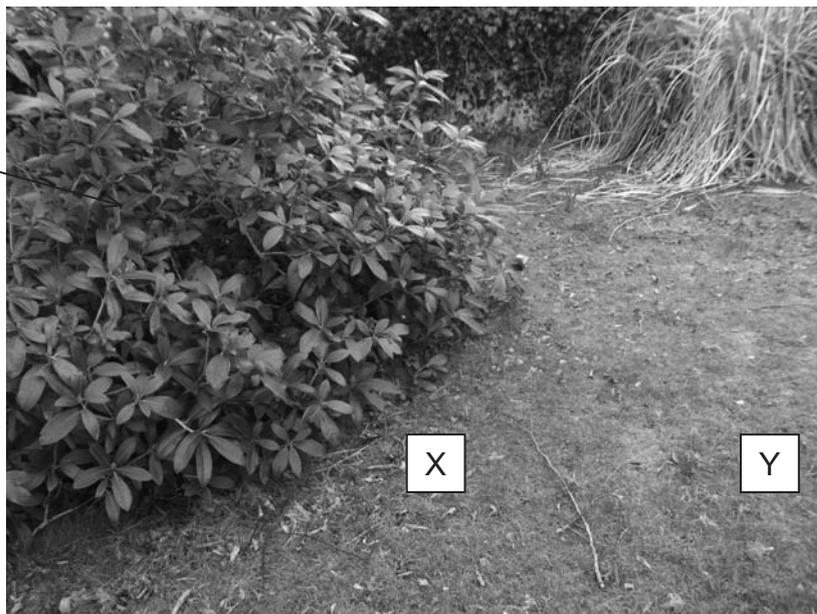
1. \_\_\_\_\_

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

- (b) The rhododendron is a competitive invasive species common in many gardens.

The following photograph shows a rhododendron in Ben's garden.

Rhododendron



- (i) Ben is hoping to plant some daffodils in his garden. Explain fully why he should plant them at position Y rather than X.

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

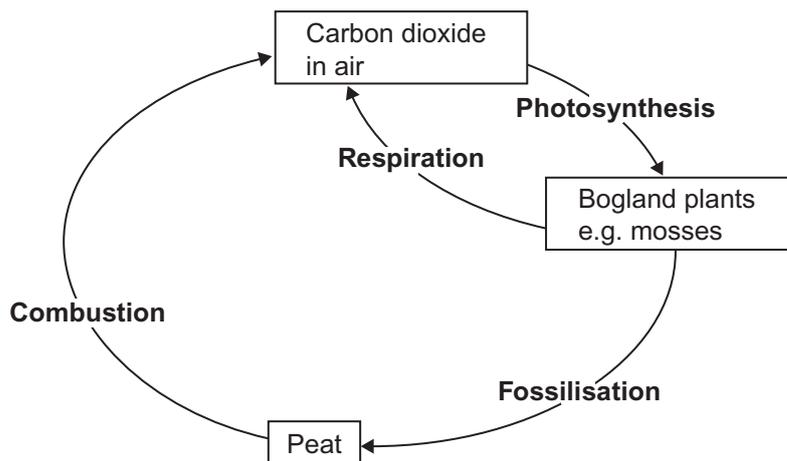
- (ii) Name **one** other competitive invasive species.

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

Examiner Only	
Marks	Remark



- 6 The following diagram shows the role peat (a fossil fuel) plays in the carbon cycle.



- (a) Name **two** processes in the diagram that return carbon dioxide to the air.

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

- (b) Using the diagram and your knowledge explain what causes global warming.

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

Another fuel is the willow plant which grows rapidly and can be harvested after three years.

- (c) Use the information provided and your knowledge to explain why using willow, rather than peat, is better for the environment.

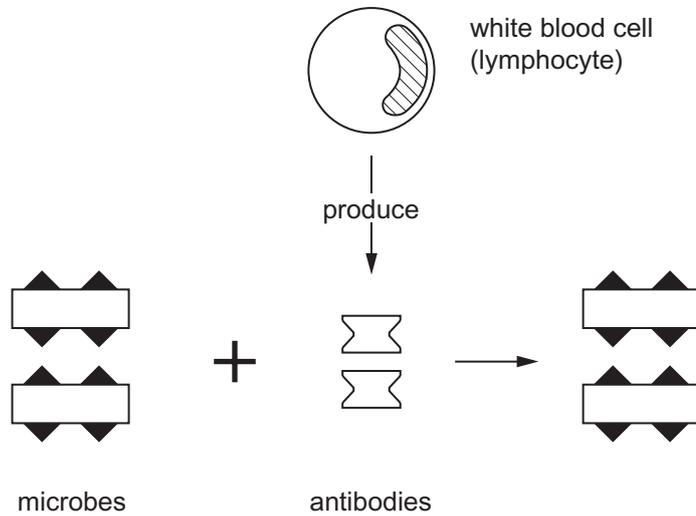
\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [3]

Examiner Only

Marks Remark

- 7 (a) When microbes enter our body some blood cells produce antibodies. The antibodies work by clumping the microbes together and immobilising them. This is called active immunity.

- (i) Complete the diagram to show how the antibodies cause the microbes to clump together.



[1]

- (ii) Name the process by which the clumped microbes are destroyed.

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

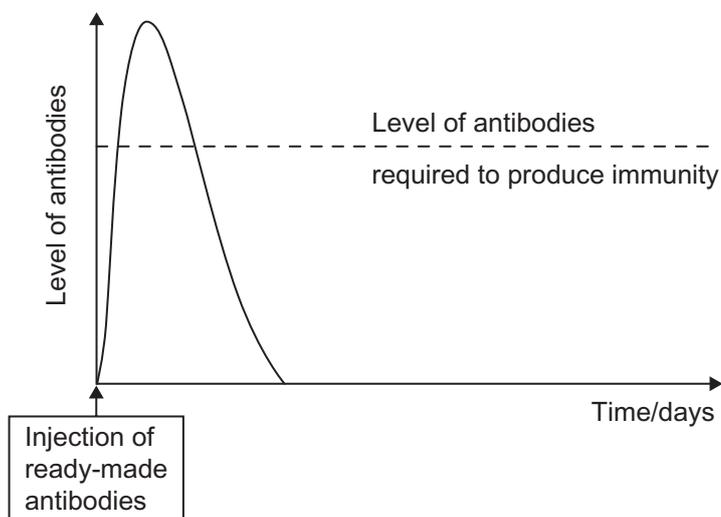
- (iii) Suggest why we have different antibodies for each type of disease.

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

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Marks	Remark

- (b) We can also protect ourselves by having antibodies injected directly into the body. This will give us **passive** immunity.

The following graph shows how the number of antibodies in the blood changes during passive immunity.



Use the graph and your knowledge to describe two ways in which passive immunity differs from active immunity.

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

- (c) Many people in Britain have an annual flu vaccination at the start of winter. This is to prevent them catching the flu over the winter season.

Explain fully why a vaccination is used rather than having the antibodies injected directly into the body.

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

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

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Examiner Only	
Marks	Remark

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