



General Certificate of Secondary Education
2011–2012

Science: Single Award (Modular)

Human Activity and Health
Module 2
Foundation Tier
[GSC21]

MONDAY 27 FEBRUARY 2012
11.00 am–11.45 am



Centre Number

71

Candidate Number

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

--



BLANK PAGE

- 1 (a) Given below are two examples of pollution. Using lines, link the example of pollution to a suitable method of reducing its effect.

Example of pollution

Method to reduce effect

acid rain

bigger bins

household waste

recycling

filters on chimneys

[2]

- (b) Complete the following sentence.

Choose from:

oxygen : nitrate : untreated sewage : carbon dioxide

A chemical called _____ is found
in _____ and can cause water pollution
when it gets into rivers.

[2]

Examiner Only	
Marks	Remark

2 (a) The following table provides information about some pupils in a class.

Pupil	Characteristic		
	Height/cm	Eye colour	Can roll tongue
Jane	155	Blue	Yes
Tom	157	Blue	No
Orla	141	Brown	No
Jack	150	Blue	Yes
Brendan	149	Brown	Yes

(i) How many pupils had blue eyes **and** could roll their tongues?

[1]

(ii) Which characteristic shows continuous variation?

[1]

(b) Human body cells normally have 46 chromosomes.

(i) How many chromosomes are in each cell of someone with Down's syndrome?

Circle the correct answer.

23

46

47

[1]

(ii) What are changes to chromosome number or structure called?

Choose from:

UV light : **mutations** : **infections**

_____ [1]

Examiner Only	
Marks	Remark

3 (a) The tar in tobacco smoke is very harmful to the body.

(i) State two effects that **tar** in tobacco smoke has on the body.

Choose from:

causes emphysema : is addictive

causes cancer : affects heart rate

1. _____

2. _____ [2]

(ii) Suggest what passive smoking is.

_____ [1]

(b) Alcohol can also be harmful to the body. Mrs. Smith is giving her Year 11 class a talk about 'responsible' alcohol consumption.

(i) State two things she could recommend as part of 'responsible' alcohol consumption.

1. _____

2. _____ [2]

(ii) Many bars and clubs remain open much later than they used to and in the city centre do not all close at the same time.

Suggest **one** way this could help reduce alcohol-related violence.

_____ [1]

Examiner Only

Marks Remark

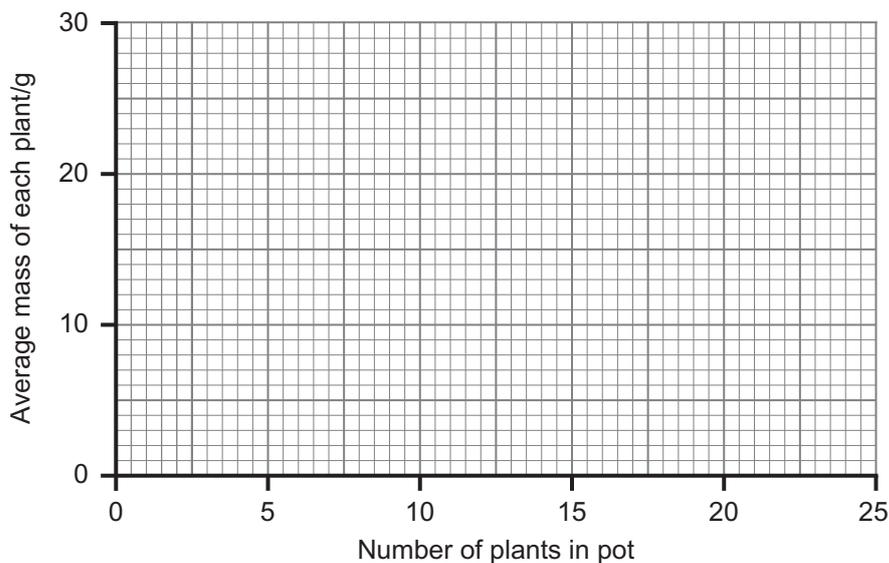
- 4 Niamh carried out an investigation to check if the number of plants in a pot affected the growth of the plants.

The table below shows some of her results.

Number of plants in the pot	Average mass of each plant/g	Total mass of all the plants in each pot/g
5	28	140
10	22	220
15	17	255
20	9	180
25	4	

- (a) (i) Complete the table above. [1]

- (ii) On the grid below, plot a line graph for the **average mass** of each plant against the number of plants in the pot.



[2]

- (iii) Complete the following sentence to give a trend shown by the results.

As the number of plants in the pot increases

the _____ decreases. [1]

Examiner Only

Marks Remark

(iv) Explain fully the trend described in part (iii).

_____ [2]

(b) Productivity is a term that describes plant growth. In this experiment it is the total mass of plant material in each pot.

In which planting density (pot) is there the greatest productivity?

Circle the correct answer.

5 10 15 20 25

[1]

(c) (i) State two things that Niamh would have done during her investigation to make sure her results were valid (a fair test).

1. _____

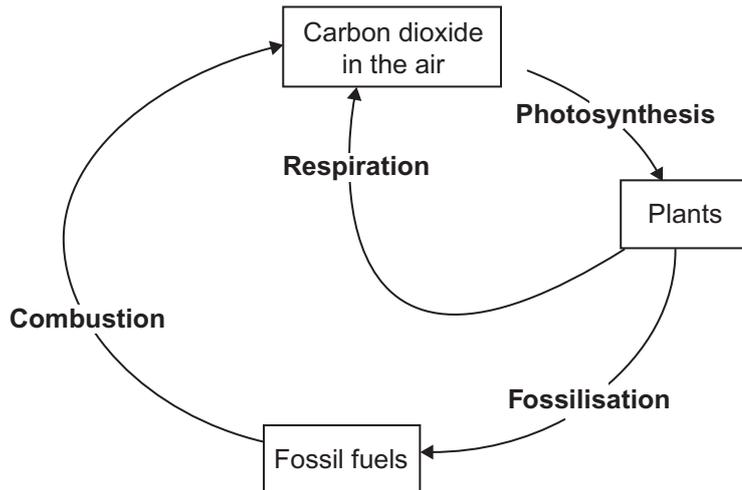
2. _____ [2]

(ii) Niamh decided to repeat the experiment. Suggest why it is good science to do this.

_____ [1]

Examiner Only	
Marks	Remark

5 (a) The following diagram shows part of the carbon cycle.



- (i) Use the information provided and your knowledge to give **two** reasons why the level of carbon dioxide in the air has **increased** in recent years.

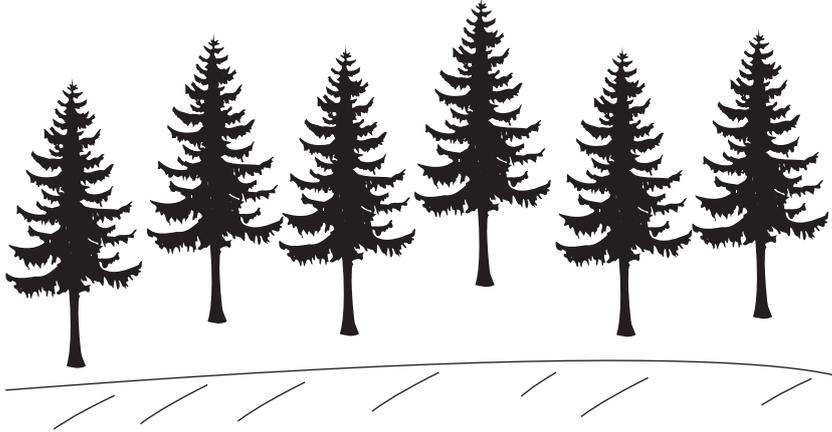
[2]

- (ii) Name the environmental problem caused by increasing carbon dioxide levels.

[1]

Examiner Only	
Marks	Remark

(b) The following diagram shows some pine trees growing in a forest.



Pine trees keep their leaves all year round and can be grown on poorer quality soils than many of our native trees.

- (i) Use the information provided and your knowledge to describe and explain **one** environmental advantage of planting pine forests.

 [2]

- (ii) Unlike pine trees, oak and ash trees only have leaves in the Summer months. Suggest why pine forests have very few Spring plants such as bluebell compared to forests of oak or ash.

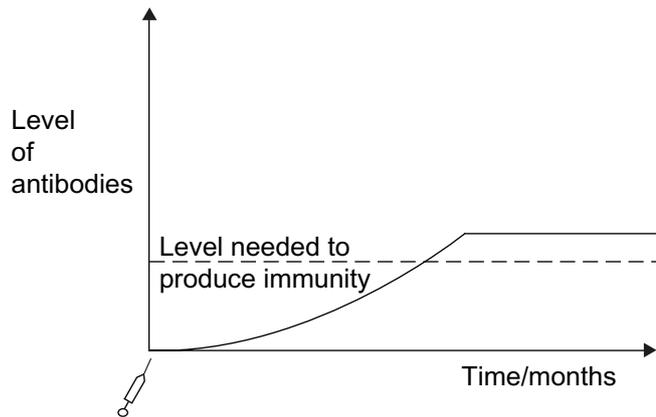
 [1]

Examiner Only

Marks

Remark

- 6 (a) The following graph shows how the levels of antibody change in the blood following a vaccination.



Use **only** the information provided to answer parts (i) and (ii).

- (i) Give **one** reason why vaccinations for common illnesses are given to babies and young children many months before they are likely to come in contact with infections.

_____ [1]

- (ii) What is the evidence that vaccinations provide long-term protection?

_____ [1]

- (b) Colin got the flu vaccination in September. He gets infected with the flu virus in February. Explain how the vaccination stops him getting ill.

 _____ [4]

Examiner Only	
Marks	Remark

- 7 (a) Zebra mussels are an example of a competitive invasive species.



© Crown Copyright – Department of the Environment
<http://archive.nics.gov.uk/env/050701b-env.htm>

They have spread across most of the major waterways in Northern Ireland and are damaging natural habitats. Zebra mussels were accidentally introduced into Ireland as a result of human activity. They produce a sticky substance that allows them to attach to hard objects such as rocks and the bottom of boats.

- (i) Suggest **one** way that man has helped zebra mussels spread to Ireland.

_____ [1]

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

_____ [1]

- (iii) State **two** characteristics of competitive invasive species.

 _____ [2]

- (b) We can monitor the health of the environment by using abiotic and biotic information.

- (i) What is meant by a biotic factor?

_____ [1]

- (ii) Name **one** organism that can be used to monitor pollution levels.

_____ [1]

Examiner Only	
Marks	Remark

THIS IS THE END OF THE QUESTION PAPER

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.