



General Certificate of Secondary Education
2012

Centre Number

71

Candidate Number

Science: Single Award (Modular)

Human Activity and Health

Module 2

Foundation Tier

[GSC21]



MONDAY 12 NOVEMBER 2012, AFTERNOON

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) Complete the table below about pollution.

Choose from:

better storage on farms : filters on chimneys :

wind : smaller oil tankers : land

Type of pollution	Example	Method to reduce effect
air	acid rain	
	household refuse	recycling
water	slurry run-off (animal waste)	

[3]

(b) Smoking cigarettes can also cause air pollution. Complete the following sentences.

Choose from:

addiction : water : tar :

nitrogen : carbon monoxide : cancer

Harmful substances in cigarette smoke include _____

and _____. Nicotine is another harmful substance in

cigarette smoke and it causes _____. [3]

Examiner Only	
Marks	Remark

- (c) The following table shows the number of cases of skin cancer being treated in one local hospital over a ten year period.

Year	Number of cases of skin cancer
2000	46
2002	49
2004	54
2006	52
2008	59
2010	63

- (i) Calculate the increase in the number of people treated for skin cancer from the year 2000 to 2010.

_____ [1]

- (ii) Suggest **one** reason why the number of cases of skin cancer has increased.

_____ [1]

- (d) The NHS has a number of screening programmes to detect cancer in the very early stages.

Suggest **one** reason why skin cancer is more likely to be detected at an earlier stage than lung cancer.

 _____ [1]

Examiner Only	
Marks	Remark

- 3 An experiment investigated how the number of plants in a pot affected their growth. Different numbers of plants were put in each pot containing the same type of compost and given the same amount of water each day.

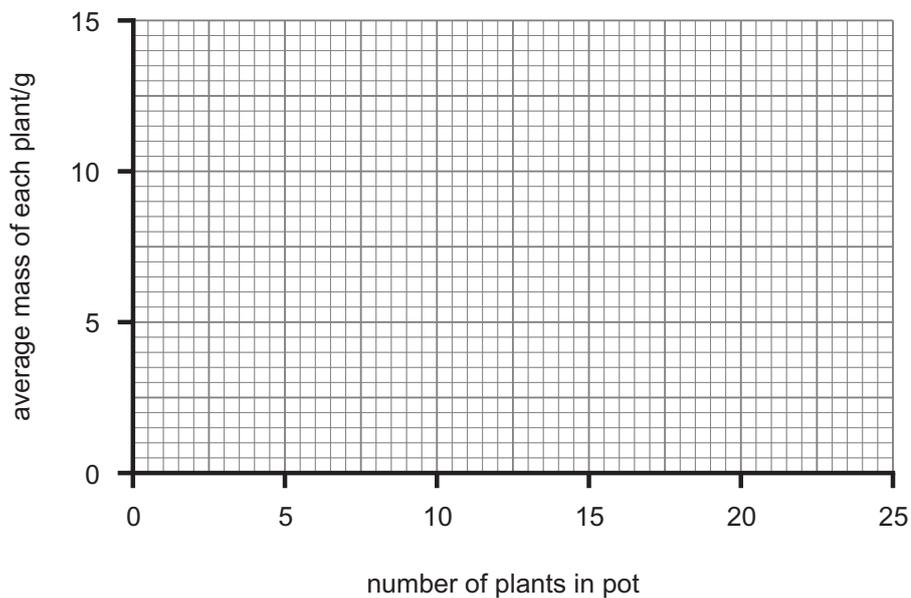
(a) State one **other** thing that must be done to make the results valid (fair test).

_____ [1]

(b) The results of the investigation are given below.

Number of plants in pot	Average mass of each plant/g
5	13
10	8
15	6
20	5
25	4

(i) Plot a **line graph** of this information on the grid below.



[2]

Examiner Only	
Marks	Remark

(ii) Complete the sentence below to describe the trend shown by the results.

As the number of plants in the pot increased the _____
_____. [1]

(iii) Fully explain the results of this experiment.

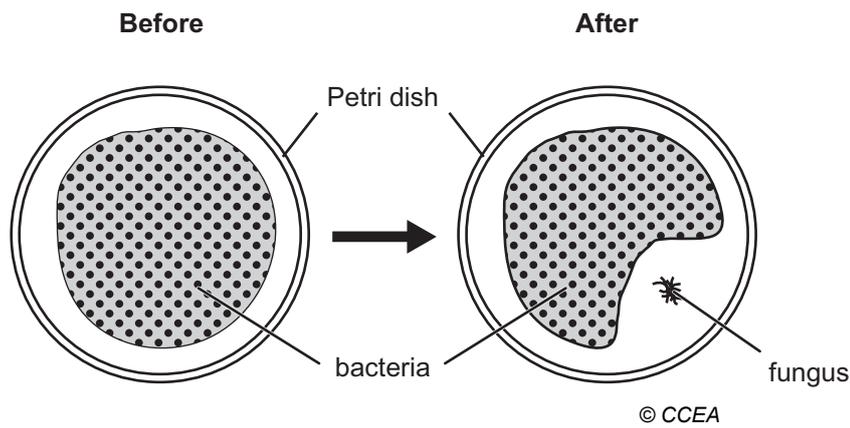
_____ [2]

(iv) Suggest what would happen if there were 50 plants in a pot.

_____ [1]

Examiner Only	
Marks	Remark

- 4 (a) The following diagram shows what happened when bacteria grown in a Petri dish by Alexander Fleming was contaminated by a fungus.



- (i) Describe the effect fungus had on the bacteria.

_____ [1]

- (ii) Name the antibiotic that was eventually produced following this observation.

_____ [1]

- (b) Superbugs such as MRSA are difficult to treat because they have become resistant to antibiotics. State **one** way that the spread of MRSA may be reduced in hospitals.

_____ [1]

Examiner Only	
Marks	Remark

(c) Alcohol is another type of drug used by humans.

(i) State **one** way that alcohol:

1. harms an individual. _____

2. harms society. _____

_____ [2]

(ii) What is meant by the term **binge drinking**?

_____ [1]

(iii) Apart from giving up drinking alcohol, state **two** things that an individual can do to reduce the harm caused by alcohol.

1. _____

2. _____ [2]

Examiner Only

Marks Remark

- 5 (a) Many species of farmland birds are endangered and at risk of extinction because of farming activity.

The graph below shows the number of different types of birds found in the hedgerows of ten farms.



- (i) Describe the trend shown by the graph.

_____ [1]

- (ii) Suggest **one** reason for the trend shown.

_____ [1]

- (b) Apart from farming activities, give **two** other ways in which humans can cause extinction of species.

1. _____

2. _____ [2]

Examiner Only	
Marks	Remark

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(Questions continue overleaf)

6 MMR is a combined vaccination that protects against mumps, measles and rubella.

(a) Explain fully why antibiotics are not used to treat measles, mumps or rubella.

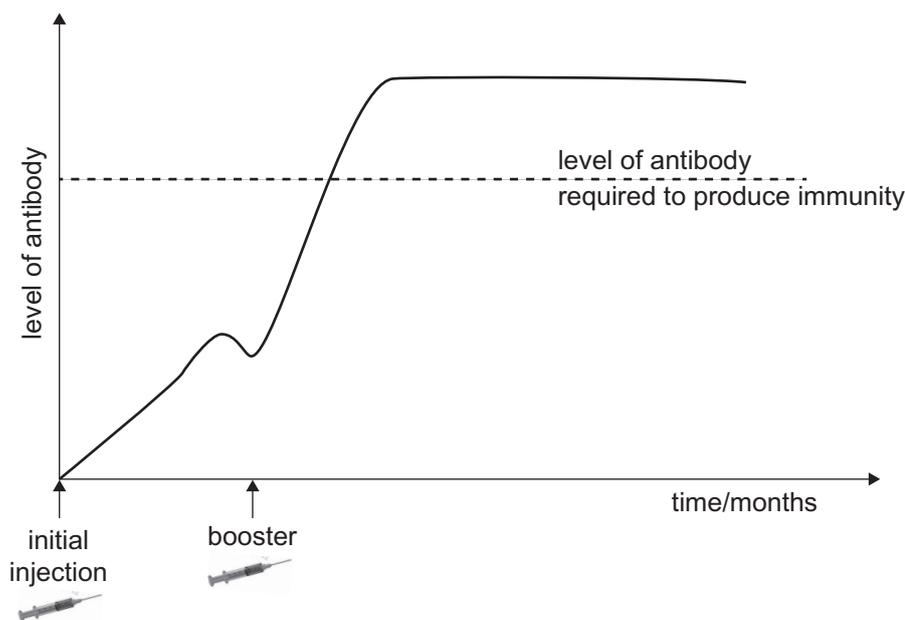
 [2]

In 1998 it was reported that there could be a link between taking the MMR vaccination and developing autism.

(b) Describe and explain how this would have affected the number of children catching measles in the years following 1998.

 [2]

(c) MMR and many other vaccinations are given in two stages – an initial vaccination followed by a booster some time later. The following diagram shows the antibody level following an initial vaccination and a booster.



Examiner Only

Marks Remark

(i) Use the graph to explain why a booster is necessary.

[2]

(ii) Explain why the immunity produced by vaccinations is described as **active** immunity.

[1]

(iii) Use the graph to give **one** feature of active immunity.

[1]

Examiner Only	
Marks	Remark

- 7 (a) The following photograph shows a plantation of willow.



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- (i) Give **one** piece of evidence from the photograph that suggests that the willow has been planted by man rather than growing naturally.

_____ [1]

Willow grows very rapidly and can be harvested as a biofuel after just three year's growth. Overall the use of willow as a biofuel has little effect on atmospheric levels of carbon dioxide and it is therefore described as being a carbon-neutral fuel.

- (ii) Explain fully why the growing of willow as a biofuel is described as being **carbon-neutral**.

 _____ [3]

Examiner Only	
Marks	Remark

(b) (i) Suggest why the Government encourages farmers to grow willow as a biofuel.

_____ [1]

(ii) Suggest **one** way the Government does this.

_____ [1]

Examiner Only	
Marks	Remark

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