



General Certificate of Secondary Education
2010–2011

Science: Single Award (Modular)

Human Activity and Health
Module 2

Higher Tier

[GSC22]



FRIDAY 20 MAY 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 six** 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.

Centre Number

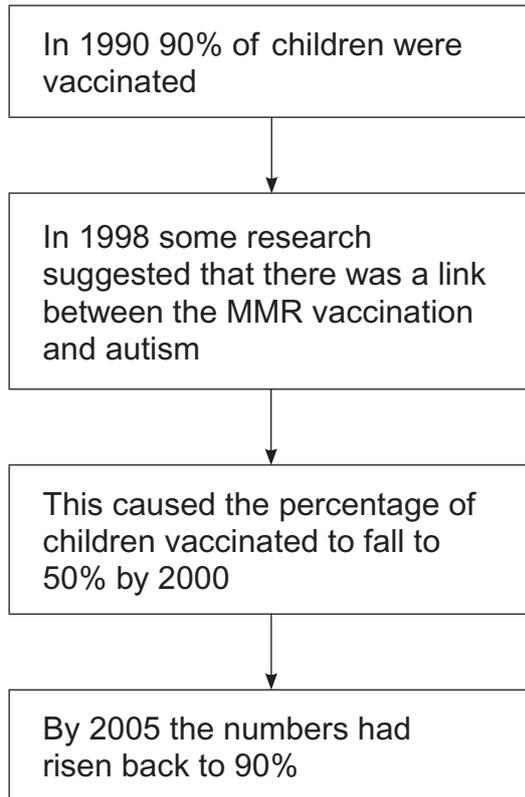
71

Candidate Number

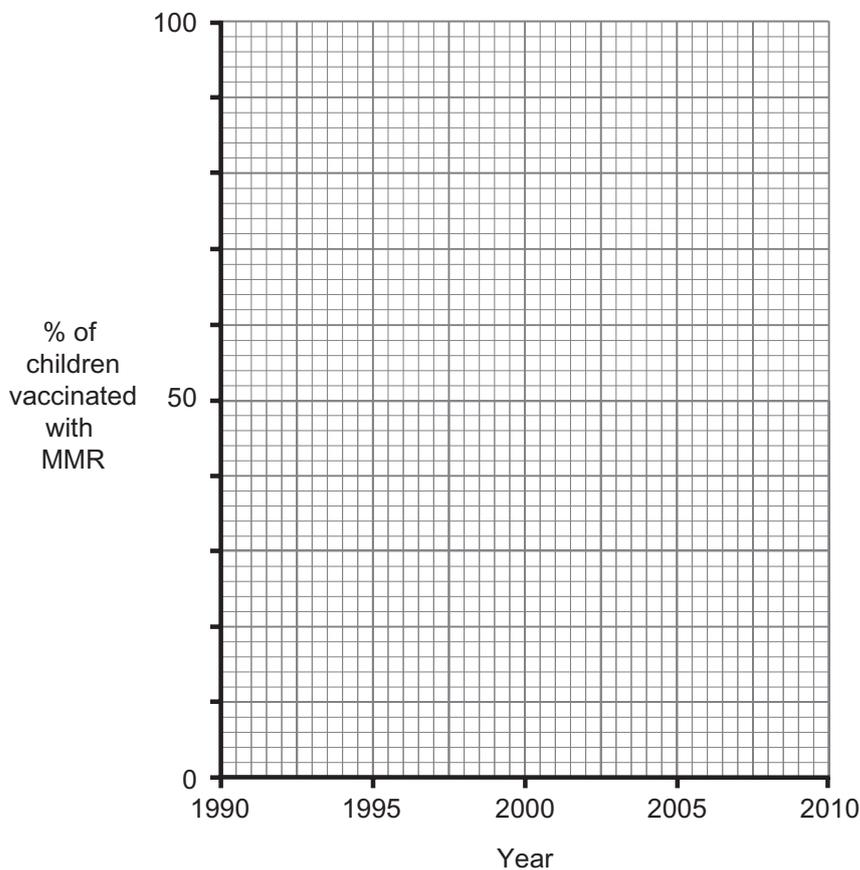
For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
Total Marks	



- 1 (a) The following flowchart outlines how the number of children being vaccinated for MMR changed between 1990 and the present.



- (i) Use the information provided to complete the graph below to show the change in percentage of children being vaccinated.



[2]

Examiner Only	
Marks	Remark

- 2 (a) The primrose plant used to be very common in Northern Ireland; it has pretty flowers and people picked them in large numbers. It grows best in natural unfertilised grassland where it is not in the shade of other plants.



Primula vulgaris

Its numbers have decreased for a number of reasons including the use of fertiliser to increase grass growth for cattle.

- (i) Explain fully how the widespread use of fertiliser could lead to a reduction in primroses.

_____ [2]

- (ii) Apart from reducing the use of fertiliser on grassland, suggest **two** things that can be done to help protect the primroses from extinction.

 _____ [2]

- (b) Name **one** other endangered species and suggest one reason why it is at risk of extinction.

 _____ [2]

Examiner Only	
Marks	Remark

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(Questions continue overleaf)

- 3 The environment can be monitored through counting the number of lichens growing on trees.

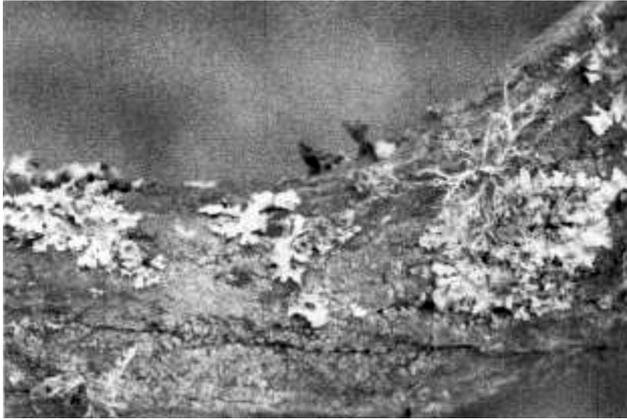


Figure 1: Lichens growing on a tree trunk.

Lichen is an example of a biotic factor.

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

_____ [1]

- (b) John investigated the number of lichen plants on ash trees at different distances from two towns (Leafyacre and Coalville). He only counted lichens up to 2 metres from ground level and only 5 trees at each distance.

His results are shown in the table below.

Distance from town centre/km	Average number of lichens on each tree	
	Leafyacre	Coalville
0	8	0
5	7	2
10	9	3
15	8	4
20	9	5

Lichens do not grow in very industrial (polluted) areas and grow best when pollution levels are low.

Examiner Only

Marks Remark

- (i) Describe the results for Coalville and give a suggested explanation.

_____ [2]

- (ii) Describe the results for Leafyacre and give a suggested explanation.

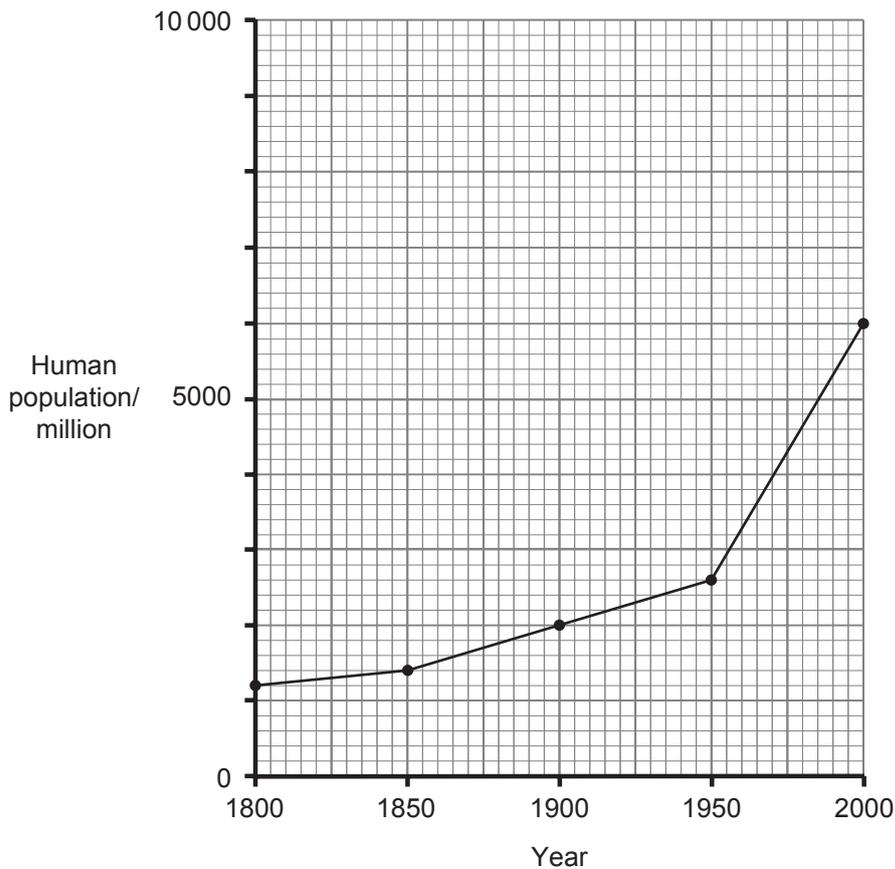
_____ [2]

- (iii) State two things John could have done to increase the reliability of his results.

1. _____ [2]
2. _____

Examiner Only	
Marks	Remark

- 4 (a) The following graph shows how the world human population has risen over the last 200 years.



Most governments are becoming concerned about the potential conflict between human population growth and harm caused to the planet.

- (i) State two ways in which the human population growth harms the planet.

1. _____ [1]

2. _____ [1]

Many governments are trying to reduce the rate of increase in human population growth, but without real success.

- (ii) Suggest **one** reason why it is proving very difficult to slow down the increase in human population.

_____ [1]

Examiner Only	
Marks	Remark

(b) Higher human populations are putting great stress on the ability of governments to produce enough food for their people. Using wheat as an example, explain why artificial selection increases food yields.

[2]

Examiner Only	
Marks	Remark

- (c) The development of medicines and drugs involve a number of stages. These include:

clinical testing : in vitro testing : licensing : animal testing

- (i) Place the stages in the correct order.

[1]

- (ii) Apart from ethical considerations give **one** argument for and **one** argument against testing new drugs on animals.

For _____

_____ [1]

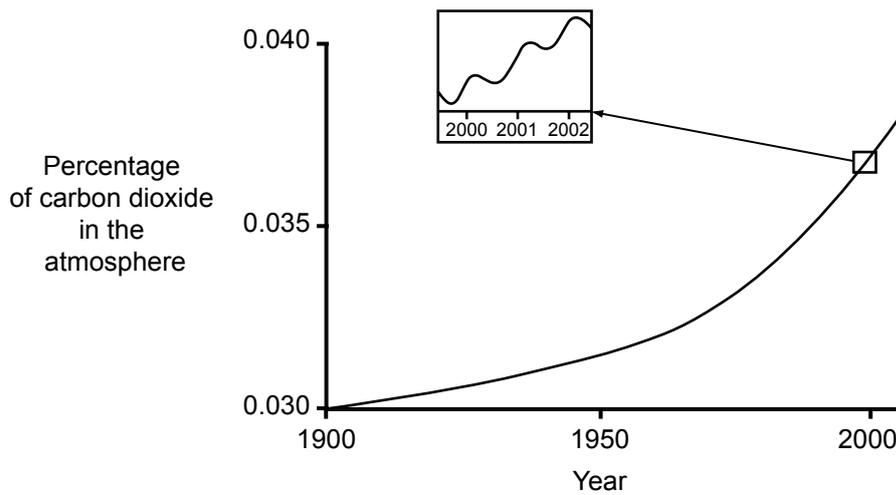
Against _____

_____ [1]

Examiner Only

Marks Remark

- 6 (a) The following graph shows how atmospheric carbon dioxide levels are rising.



- (i) Give **one** reason for the increase in the **rate** of atmospheric carbon dioxide build-up.

_____ [1]

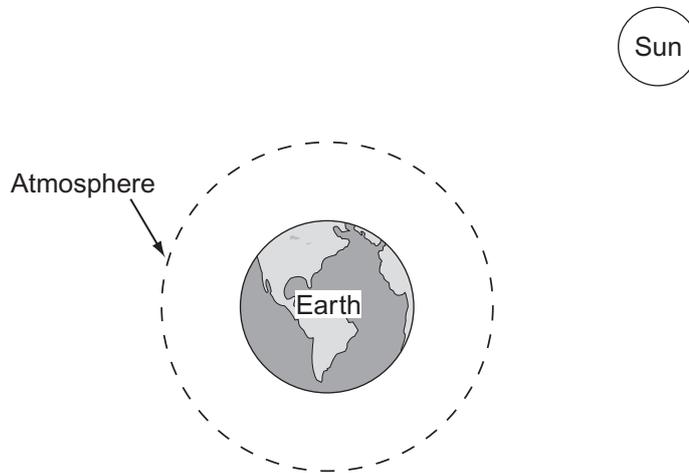
- (ii) Suggest an explanation for seasonal fluctuations in carbon dioxide levels as shown between 2000–2002.

 _____ [2]

Examiner Only	
Marks	Remark

(b) Global warming is caused by heat radiation from the Sun being trapped in the 'greenhouse blanket' created due to the build-up of carbon dioxide.

(i) Complete the diagram below to show how heat radiation from the Sun is trapped within the Earth's atmosphere.



[1]

(ii) The Kyoto agreement was an attempt by governments to reduce global warming.

Explain fully why there have been recent attempts to replace the Kyoto agreement.

_____ [2]

(c) Most scientists argue that global warming is harming the biodiversity on Earth.

(i) Explain what is meant by the term biodiversity.

_____ [1]

(ii) Explain fully how global warming can reduce biodiversity.

_____ [2]

Examiner Only	
Marks	Remark

(d) Some landowners convert part of their agricultural land to woodland as a conservation measure. Describe and explain **one** way in which this is of benefit to the environment.

[2]

Examiner Only	
Marks	Remark

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