Version 1.1

Surname		Other Names									
Centre Number						Candidate Number					
Candidate Signature											

For Examiner's Use

General Certificate of Education
SPECIMEN UNIT
Advanced Subsidiary Examination

AQA
ASSESSMENT and QUALIFICATIONS ALLIANCE

ENVIRONMENTAL STUDIES **ENVS2**
Unit 2 The Physical Environment

Date and Time

You will need no other materials.
You may use a calculator.

Time allowed: 1 hour 30 minutes

Instructions
- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information
- The maximum mark for this paper is 90.
- The marks for questions are shown in brackets.
- You are reminded of the need for good English, clear presentation and appropriate use of specialist vocabulary.
  Question 9 (c) should be answered in continuous prose. Quality of Written Communication will be assessed in this answer.

For Examiner's Use			
Number	Mark	Number	Mark
1		6	
2		7	
3		8	
4		9	
5			
Total (Column 1) →			
Total (Column 2) →			
TOTAL			
Examiner's Initials			

The specimen assessment materials are provided to give centres a reasonable idea of the general shape and character of the planned question papers and mark schemes in advance of the first operational exams.

There are no questions printed on this page

LEAVE MARGIN BLANK

Answer **all** questions in the spaces provided

1 Complete the table by adding the appropriate terms or definitions.

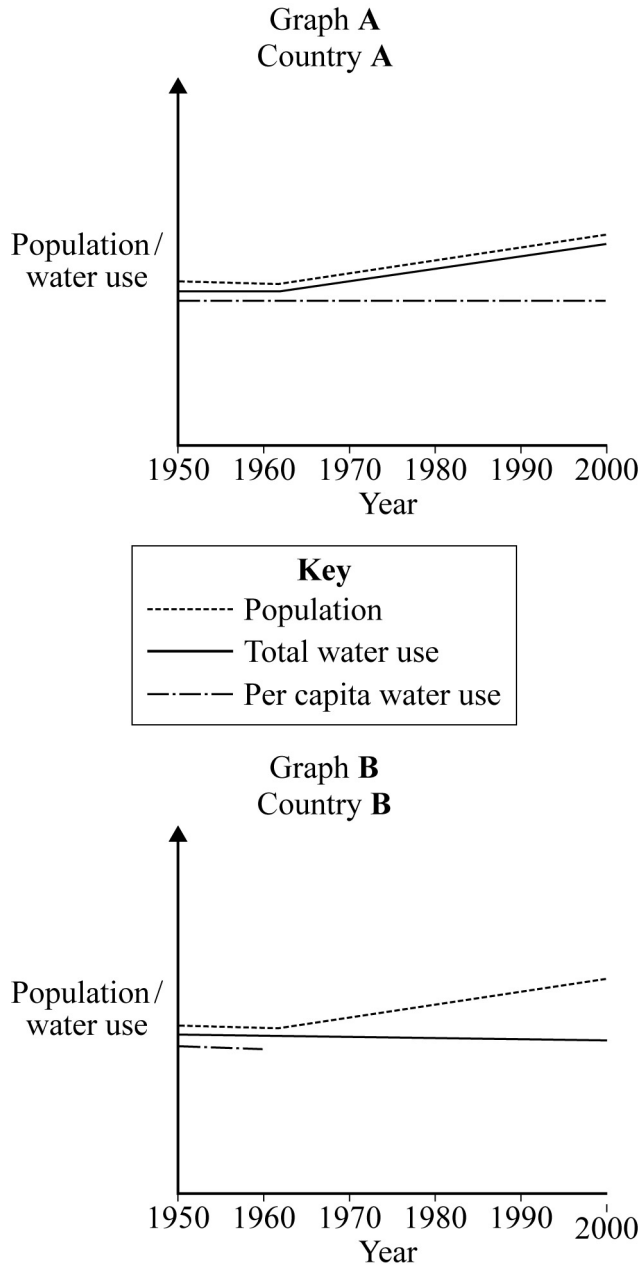
Term	Definition
	A rock formed by intense heat and pressure causing partial melting
Hydrothermal deposit	
	Mineral deposit left when the water from warm solution vaporises
Cut off ore grade	
	The amount of the mineral resource that can be exploited economically with existing technology

(5 marks)

5

Turn over for the next question

2 The graphs show some features of population, total water use and per capita (per person) water use in two countries.



2 (a) Continue the line on **Graph B** to show per capita water use between 1960 and 2000.

(1 mark)

2 (b) Explain why the per capita water use in a country may increase.

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(4 marks)

2 (c) (i) By reference to the amount of water in an aquifer, explain the principles of a dynamic equilibrium.

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(1 mark)

2 (c) (ii) Describe the likely consequences of the over-exploitation of an aquifer.

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(4 marks)

10

Turn over ►

3 The table shows the composition of the atmosphere.

3 (a) Complete the table by including the appropriate component, formula or abundance.

Component	Chemical formula	Abundance by volume / %
	N_2	78.08
Oxygen	O_2	
Argon	Ar	0.93
Water vapour	H_2O	Variable
Carbon dioxide	CO_2	
Methane	CH_4	Variable
Carbon monoxide	CO	0.000002
Ozone		0.000007

(2 marks)

3 (b) Describe how the atmosphere naturally prevents most ultraviolet light (UV) from the sun reaching the Earth's surface.

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(3 marks)

3 (c) Describe how pollutants released by human activities may result in more UV light reaching the Earth's surface.

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(5 marks)

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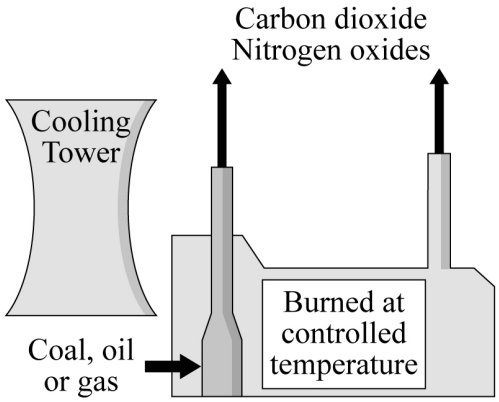
Turn over for the next question

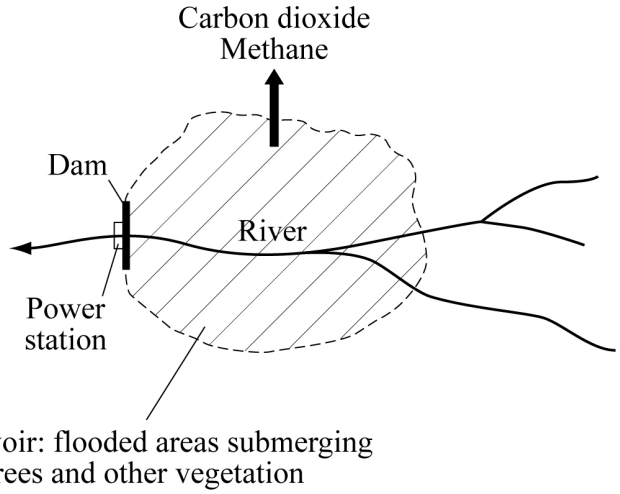
4 Many tropical countries have developed hydroelectric power stations by creating dams and flooding previously forested areas to form reservoirs. One aim was to reduce the amount of energy generated from fossil fuel power stations and so reduce greenhouse gas emissions. Recently, some scientists have argued that such reservoirs actually emit more greenhouse gases than fossil fuel power stations.

The diagrams show the processes involved.

Fossil fuel power station



Hydroelectric plant with dam on previously forested area



4 (a) Gaseous emissions from power station chimneys are measured via sensors placed in the chimneys. Gaseous emissions from reservoirs are electronically measured via plastic chambers that float on the surface.

Outline the difficulties which may be faced by scientists trying to compare fairly the annual volume of greenhouse gases emitted from a fossil fuel power station and that from a tropical reservoir.

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(4 marks)

4 (b) Outline how global climate change may be influenced by:

4 (b) (i) a negative feedback mechanism

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(3 marks)

4 (b) (ii) a positive feedback mechanism.

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(3 marks)

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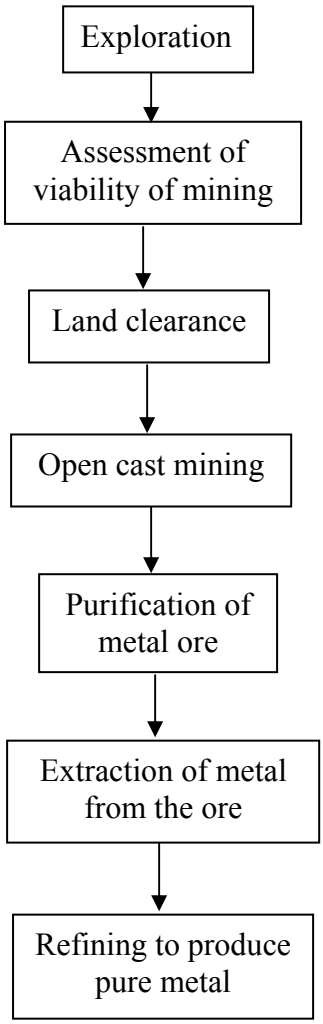
5 (a) The flow diagram shows the stages in the production of pure metal.



Describe the factors that influence the viability of mining a metal ore deposit.

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(3 marks)

5 (b) (i) Describe **two** harmful environmental impacts of ore mining.

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(2 marks)

5 (b) (ii) Describe how the environmental problems caused by spoil can be reduced.

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(3 marks)

5 (c) Describe a named technique that may be used to increase metal supplies as current mines become exhausted.

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(2 marks)

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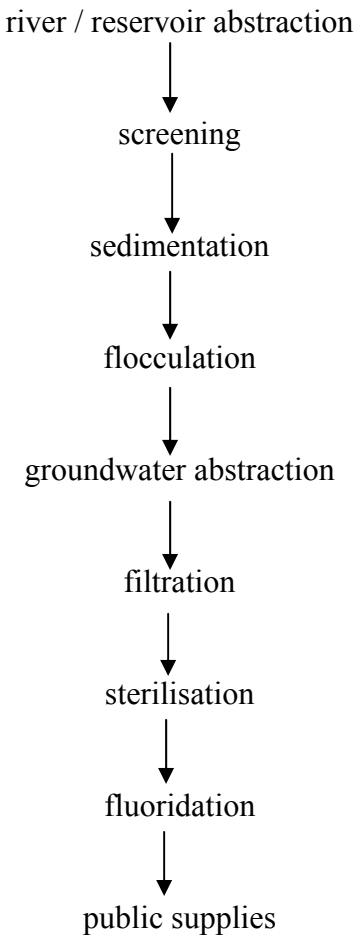
Turn over for the next question

6 The flow diagram shows some of the processes which are used to produce water for public supplies.



6 (a) What are the purposes of:

6 (a) (i) sedimentation

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(1 mark)

6 (a) (ii) sterilisation?

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(1 mark)

6 (b) Describe the process of flocculation.

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(2 marks)

6 (c) Describe the methods that may be used to reduce the domestic demand for water.

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(4 marks)

6 (d) Explain why river water and groundwater are likely to have different levels of:

6 (d) (i) dissolved oxygen

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(1 mark)

6 (d) (ii) turbidity.

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(1 mark)

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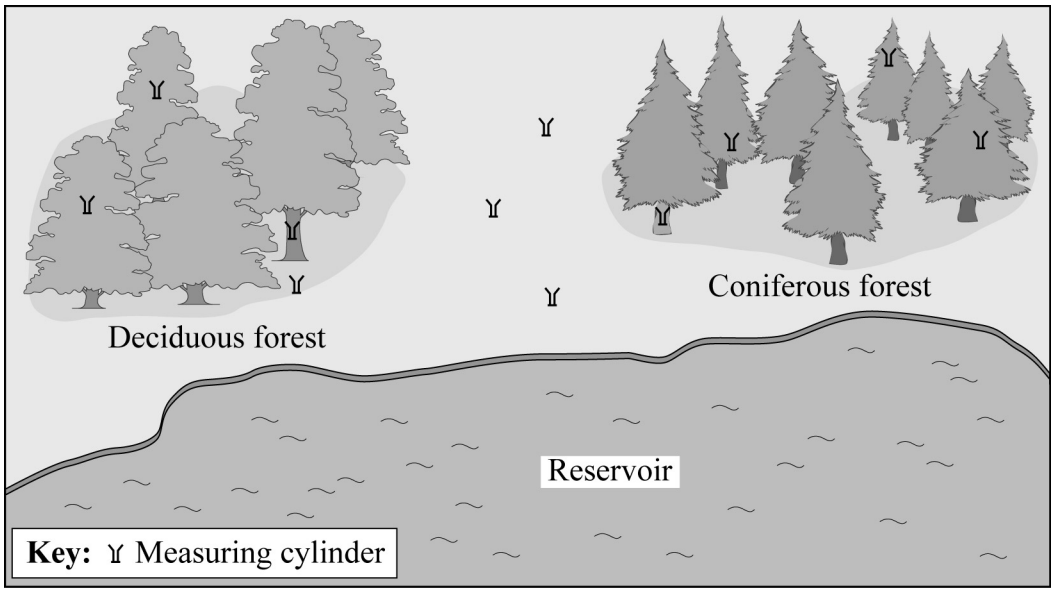
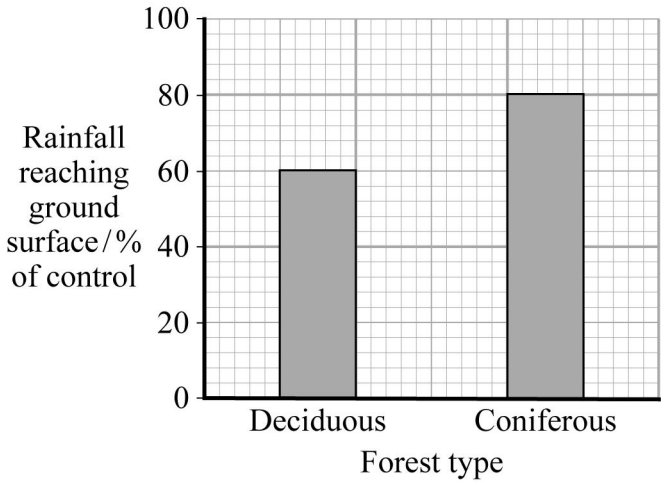
7 A student compared the interception of rainfall by coniferous (evergreen) and broadleaf (deciduous) forests surrounding reservoirs. Rainfall was collected in measuring cylinders in open grassland areas and at various heights in each forest type, as shown in the diagram.



The results were presented as the bar chart below.



7 (a) (i) What was the control in this investigation?

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(1 mark)

7 (a) (ii) Describe how **two** precautions that the student should have taken would have given more reliable results.

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(4 marks)

7 (b) Explain why the student should have calculated a Standard Deviation for each set of results.

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(1 mark)

7 (c) Soil organic matter is another factor that would affect the water flowing into the reservoir.

Describe a method that could be used to estimate the organic matter content of the soil in the two areas of woodland.

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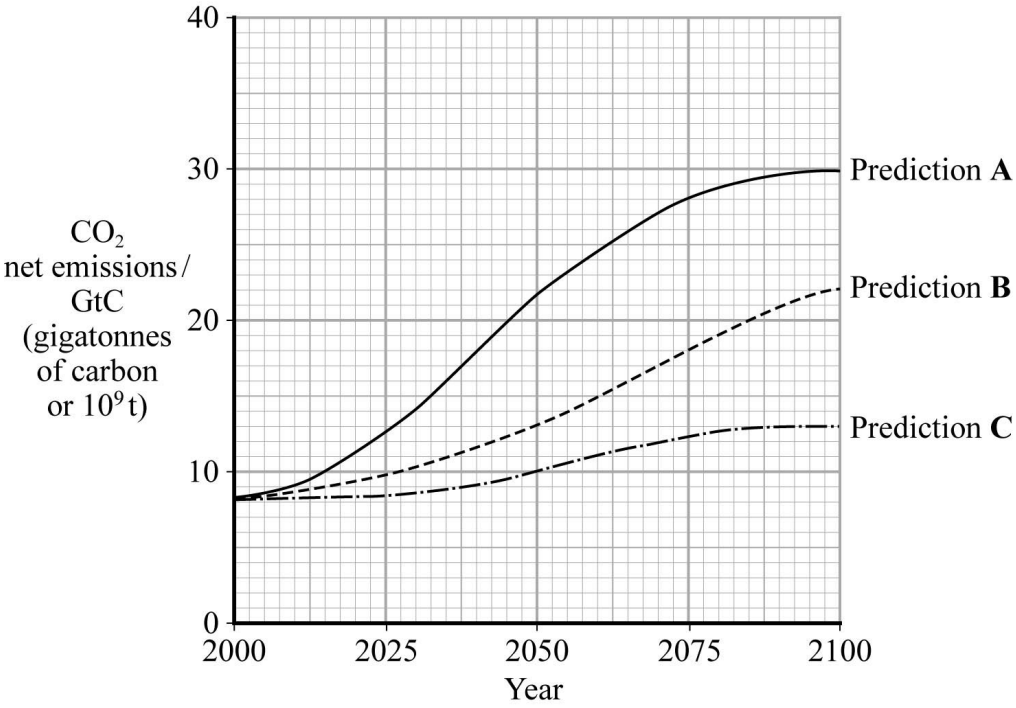
(4 marks)

8 Most scientists agree that human activities are causing global climate change, but there is still much debate about the processes involved and the amount of future change.

The graph shows three predictions of global carbon dioxide emissions.



8 (a) Explain why governments want to have accurate predictions of future levels of greenhouse gases.

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(2 marks)

8 (b) Suggest why it is difficult to predict accurately the amount of carbon dioxide that will be released by future human activities.

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(4 marks)

8 (c) Outline the methods that may be used by a government to reduce the causes of global climate change.

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(4 marks)

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9 (a) Phosphorus is an essential component of all living organisms.

Describe how the chemical properties of phosphorous often cause it to be the limiting factor for plant growth.

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(2 marks)

9 (b) Describe how a surplus of phosphates washed into a lake may cause pollution problems.

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(3 marks)

9 (c) How can farmers use a knowledge of biogeochemical cycles and soil properties to maintain soil fertility?

Quality of Written Communication will be assessed in this answer.

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(10 marks)

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END OF QUESTIONS

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