Cambridge International AS Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

ENVIRONMENTAL MANAGEMENT **8291/21**

Paper 2 Hydrosphere and Biosphere **May/June 2018**

1 hour 30 minutes

Additional Materials: Answer Booklet/Paper

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

Section A
Answer **all** questions in this section.
Write your answers in the spaces provided on the question paper.

Section B
Answer **one** question from this section.
Write your answers on the separate answer paper provided.

At the end of the examination,
1.   fasten all separate answer paper securely to the question paper;
2.   enter the question number from Section B in the grid.

	For Examiner's Use
Section A	
1	
2	
Section B	
Total	

This document consists of **11** printed pages and **1** blank page.

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International Examinations

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Section A

Answer **all** questions in this section.

Write your answers in the spaces provided.

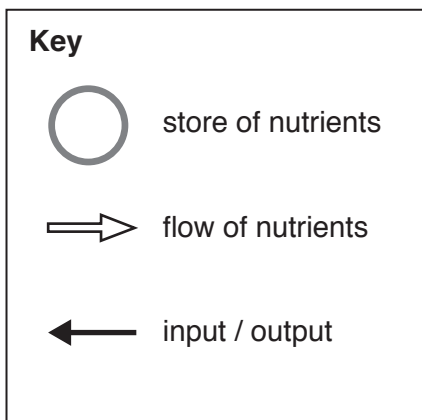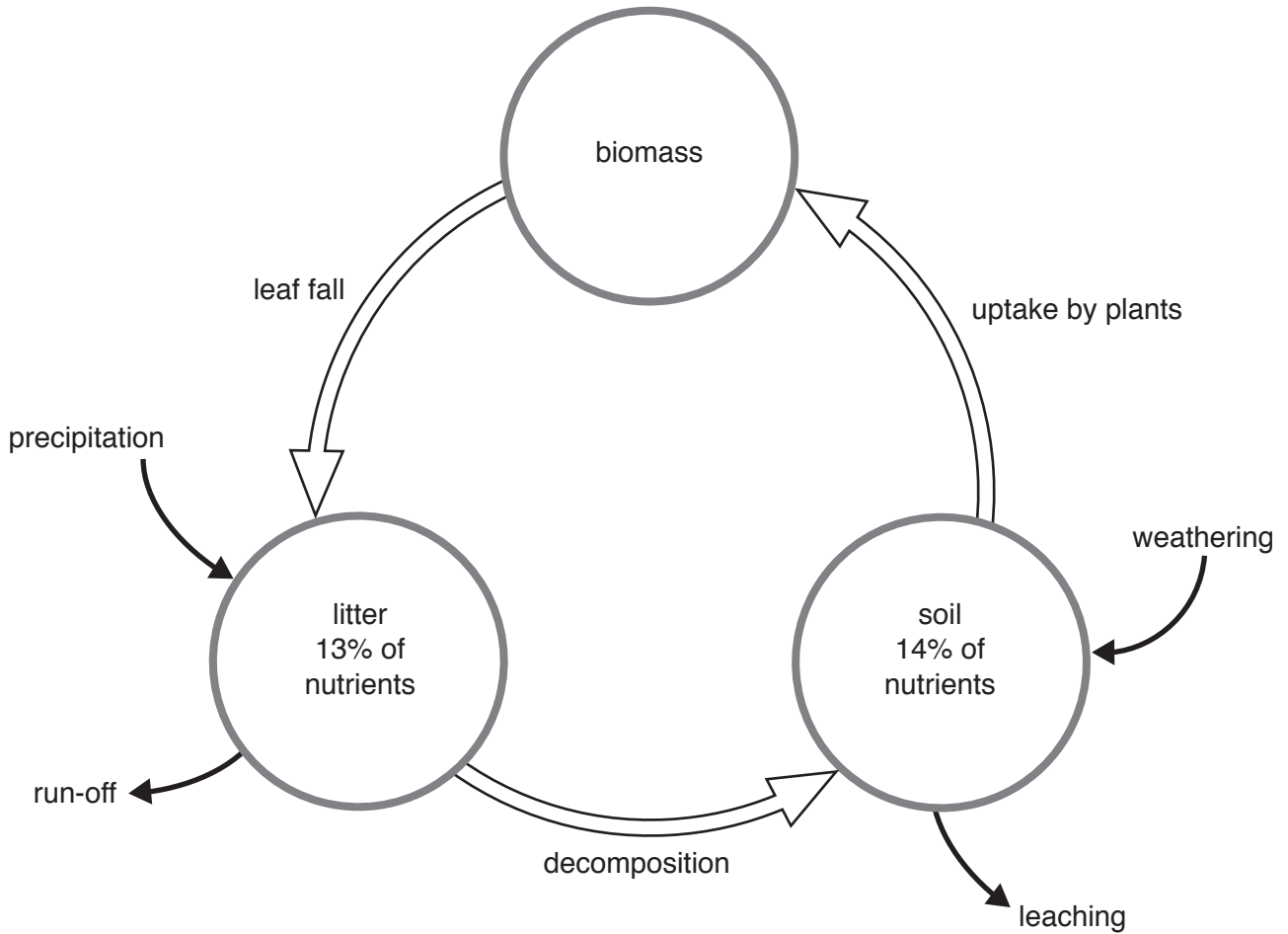**1 (a)** Fig. 1.1 shows the flows and stores of nutrients in a tropical rainforest ecosystem.

Fig. 1.1

(i) Calculate the percentage of nutrients stored in biomass in the tropical rainforest ecosystem shown in Fig. 1.1.

.... % [1]

(ii) State what is meant by the term *biomass*.

....

.... [1]

(iii) With reference to Fig. 1.1, describe the interactions between the stores of nutrients within a tropical rainforest ecosystem.

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.... [3]

(iv) Explain how precipitation influences the stores and flows of nutrients in a tropical rainforest ecosystem.

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.... [4]

(v) Explain why more nutrients are stored in biomass than in the litter and soil in a tropical rainforest.

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.... [3]
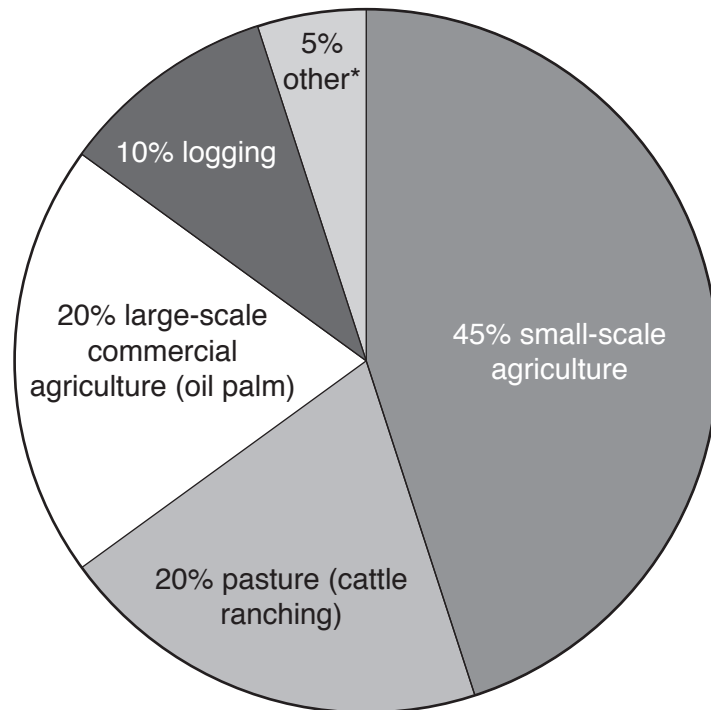
(b) Fig. 1.2 shows human activities that lead to deforestation of a tropical rainforest.

*other includes urbanisation, mining, construction of roads and dams

Fig. 1.2

(i) Describe the ways in which the human activities shown in Fig. 1.2 affect the nutrient cycle in the tropical rainforest shown in Fig. 1.1.

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.... [5]
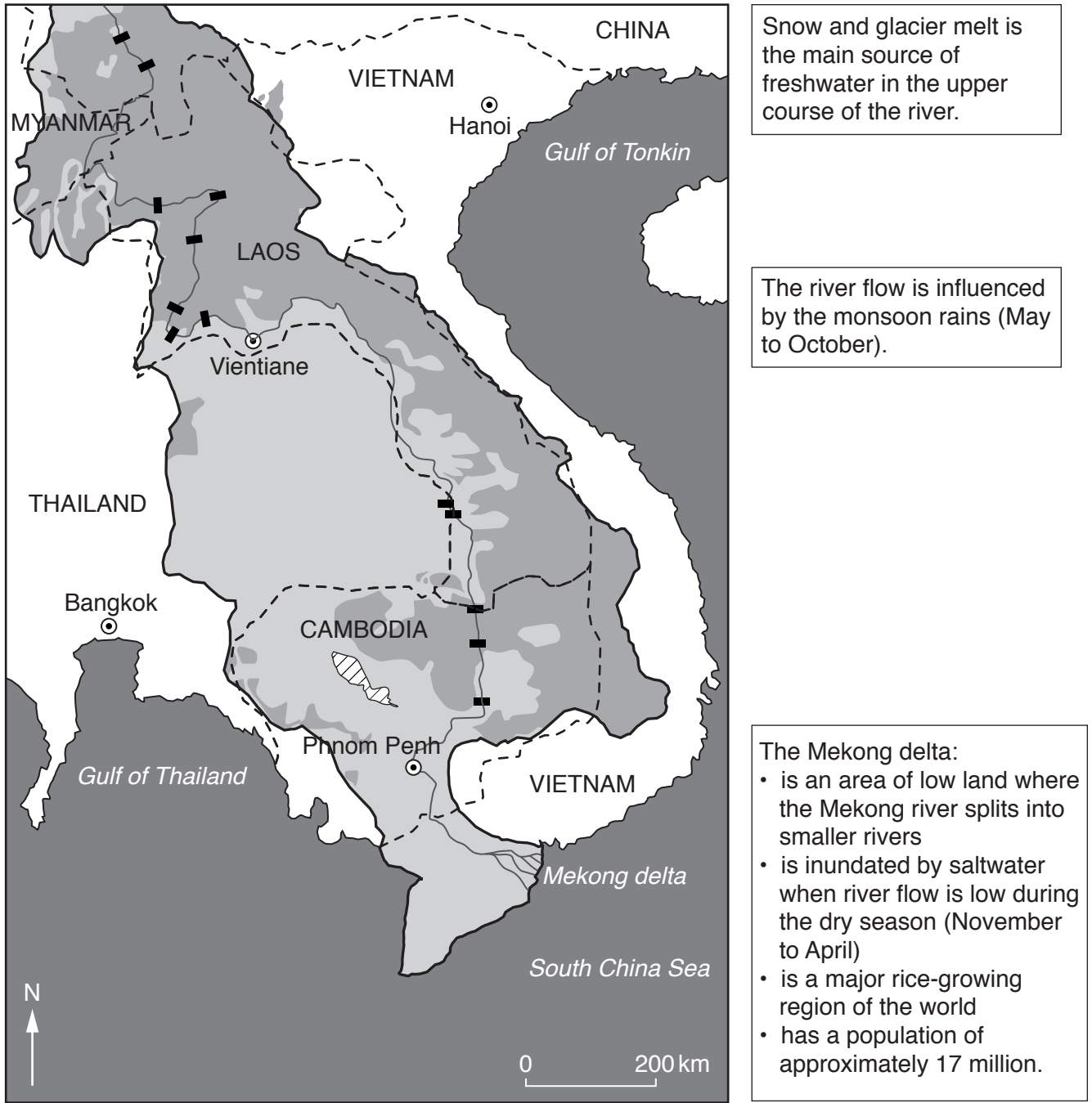
(ii) Suggest ways in which the impact of human activities on tropical rainforest ecosystems can be reduced.

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.... [3]

[Total: 20]

2 Fig. 2.1 contains information about the Mekong river basin in Southeast Asia and the sites of some dam-building projects.

Fig. 2.1

(a) (i) With reference to the information in Fig. 2.1, explain why the Mekong delta is prone to flooding.

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.... [4]

(ii) Explain how global warming could impact on the environment **and** on the population in areas such as the Mekong delta.

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.... [6]

(b) (i) Outline **two** benefits of dam-building projects, such as those shown in Fig. 2.1.

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.... [4]

(ii) Suggest the negative impacts of constructing dams on the Mekong river. Refer to Fig. 2.1 in your answer.

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.... [6]

[Total: 20]

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Section B

Answer **one** question from this section.

Write your answers on the separate answer paper provided.

3 Fig. 3.1 shows the number of major oil spills from tankers in the world's oceans in four successive decades.
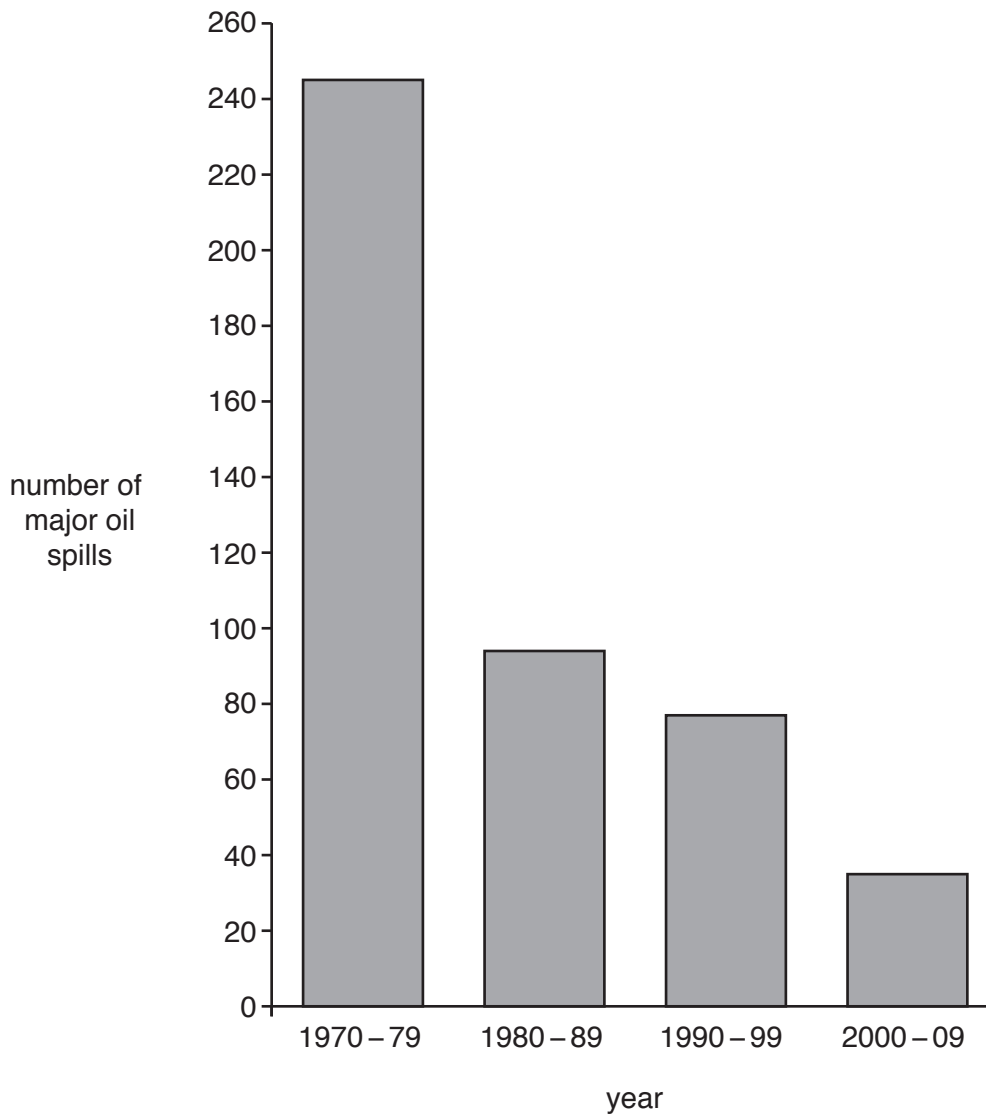
Fig. 3.1

(a) With reference to Fig. 3.1, describe the change in the number of major oil spills and suggest reasons for this change. [10]

(b) Briefly describe the main sources of marine pollutants other than oil spills.

Using examples, explain to what extent the pollution of the marine environment can be managed by individual countries. [30]

[Total: 40]

4 Fig. 4.1 shows two examples of an ecological island.

ecological island

entrance   pest-proof
                fence

Maungatautari
New Zealand

ecological island

access   sea

Sipopo
Equatorial Guinea
Africa
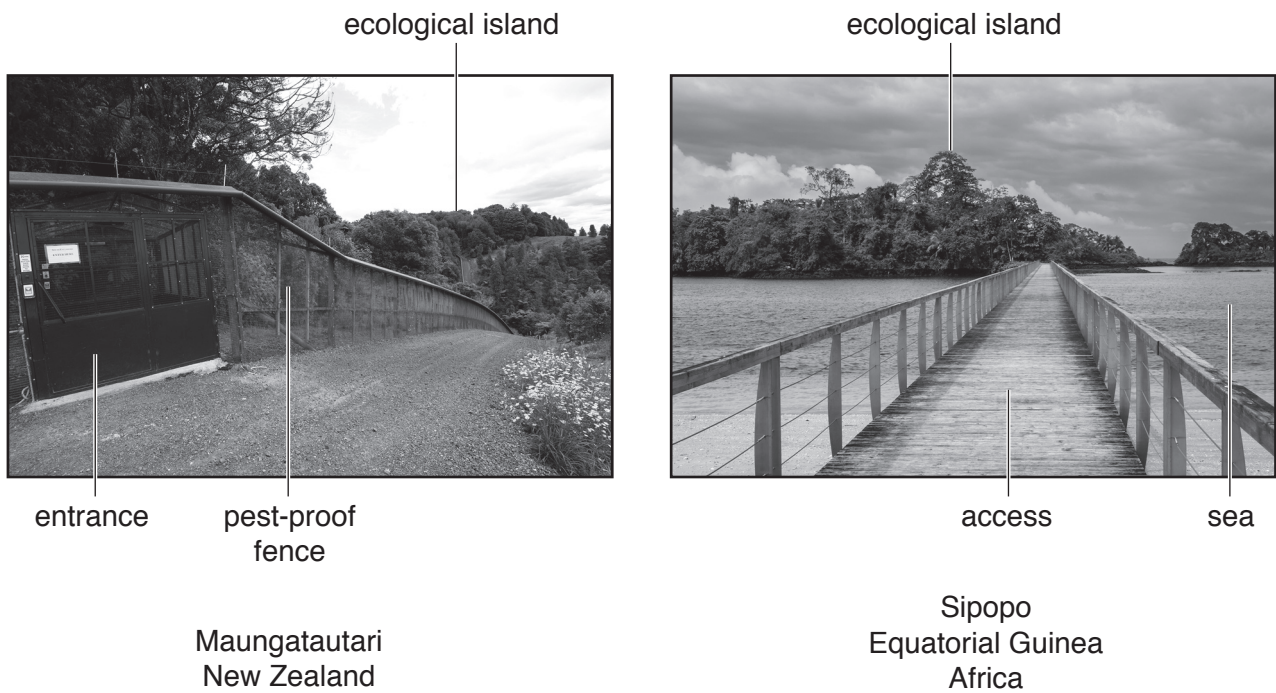
Fig. 4.1

(a) Describe and explain what is meant by an ecological island. Refer to Fig. 4.1 in your answer.
[10]

(b) 'The most effective methods for the conservation of ecosystems exclude all human activity.'

Using examples of different methods of conservation of ecosystems, discuss how far you agree with this statement. [30]

[Total: 40]

5 Fig. 5.1 shows the total global population and its percentage annual growth rate, from 1900 to 2015.
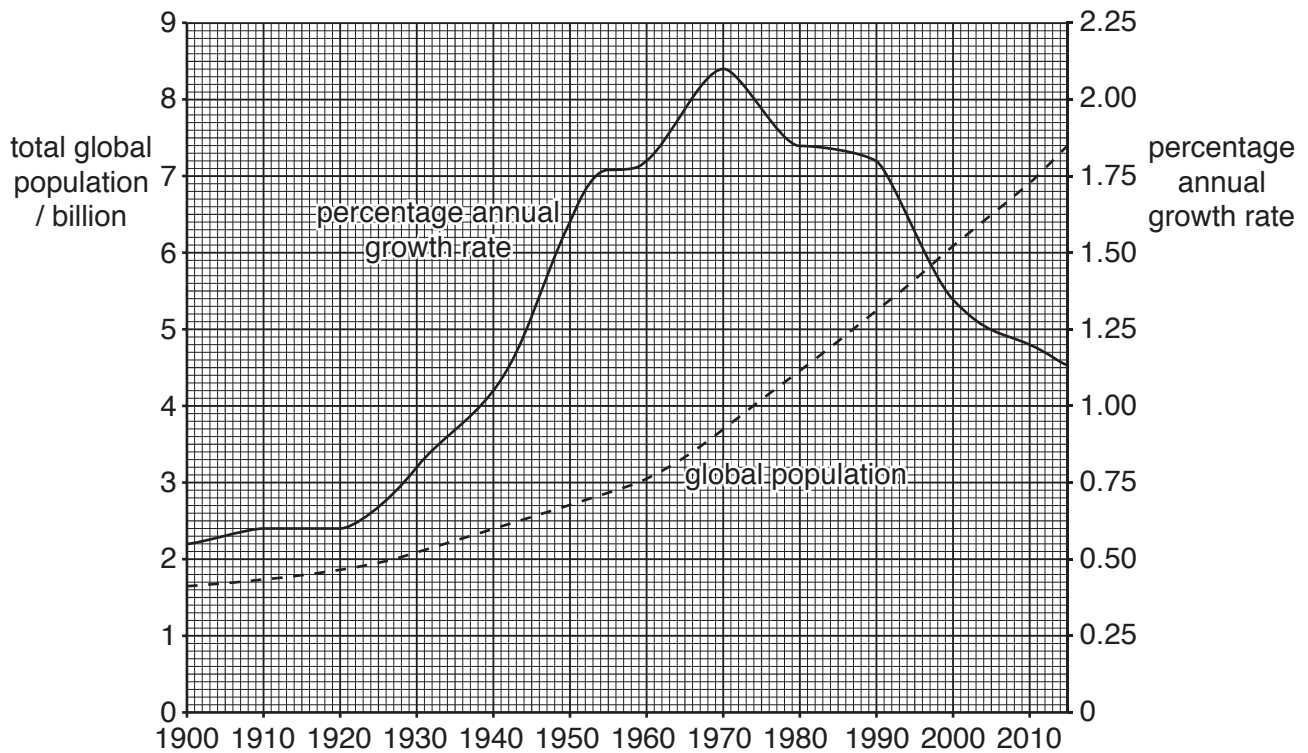
Fig. 5.1

(a) Briefly describe the changes in the percentage annual growth rate of the global population from 1900 to 2015. Suggest reasons for these changes. [10]

(b) Using examples from countries at contrasting levels of economic development, describe the impact of population change on resources. [30]

[Total: 40]