

CANDIDATE
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ENVIRONMENTAL MANAGEMENT

8291/22

Paper 2 Hydrosphere and Biosphere

May/June 2015

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.
Write your answers in the spaces provided on the question paper.

Section B

Answer **one** question from this section.
Answer the question 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 opposite.

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

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

Section A

Answer **all** questions in this section.

Write your answers in the spaces provided.

1 (a) Fig. 1.1 shows a river valley before and after urbanisation.

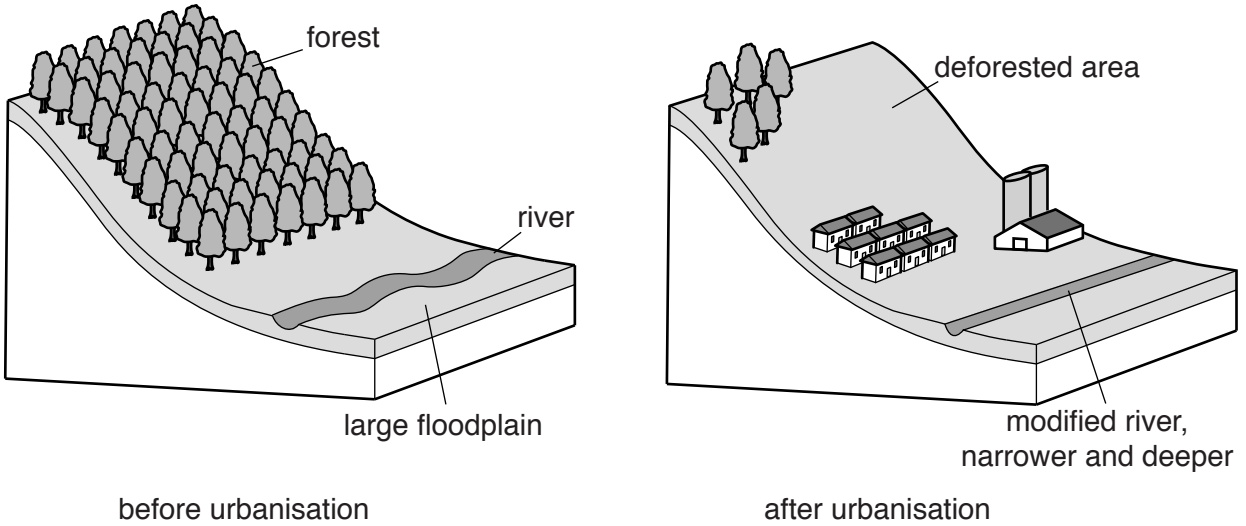


Fig. 1.1

(i) With reference to Fig. 1.1, describe the flows and stores of water in the river valley before urbanisation and after urbanisation.

before urbanisation

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after urbanisation

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[6]

(ii) Explain how urbanisation would increase the likelihood of flooding within a river valley.

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..... [3]

(iii) State **one** measure which can be used in a river valley to reduce the likelihood of flooding.

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..... [1]

(b) Fig. 1.2 shows the position of the Marina Barrage in Singapore. Fig. 1.3 shows how the barrage works.

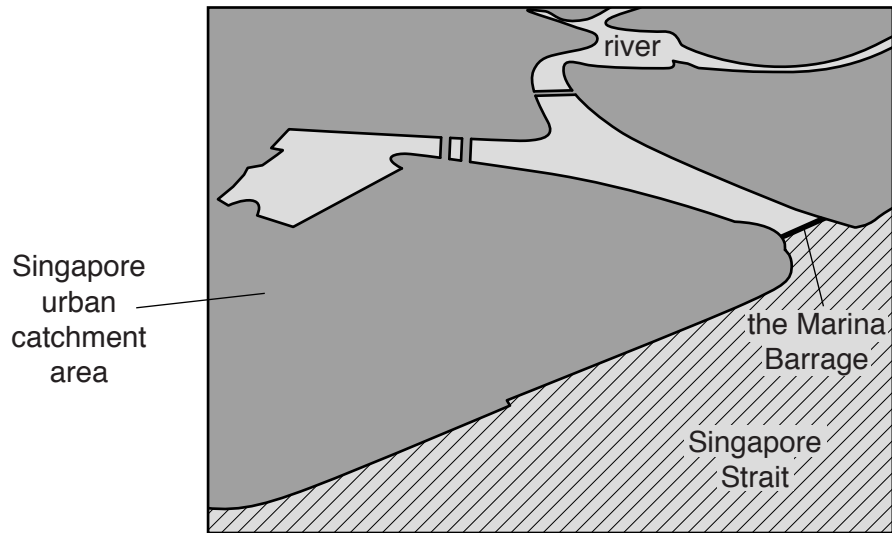


Fig. 1.2

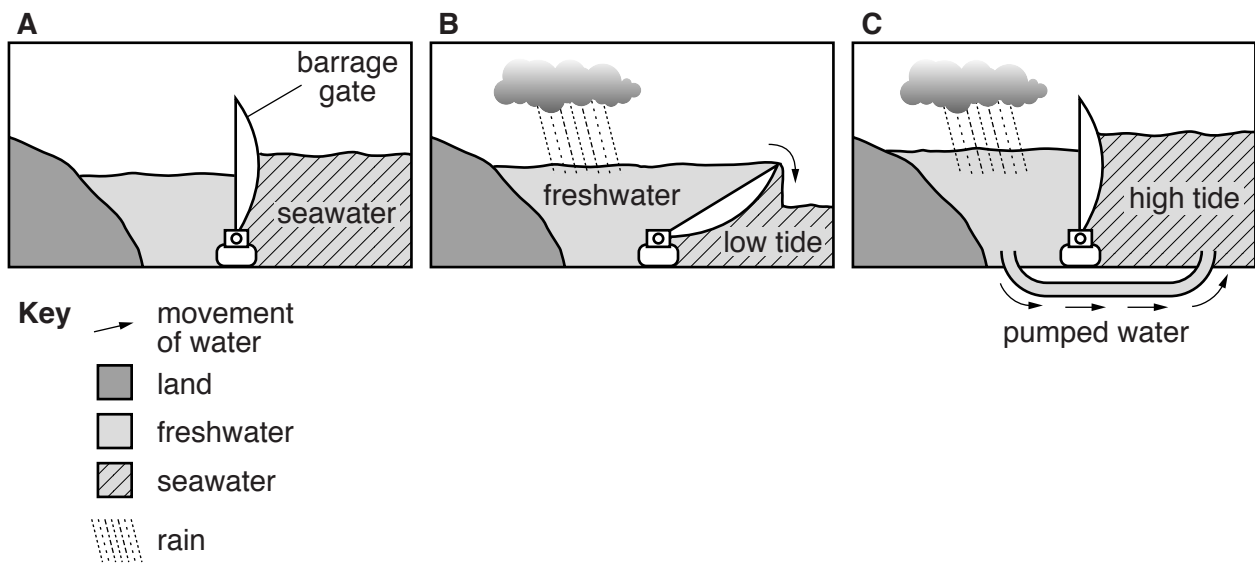


Fig. 1.3

(i) Using Fig. 1.2 and Fig. 1.3, explain how the Marina Barrage provides the following benefits:

- freshwater store
- flood prevention
- preventing the inundation of seawater.

freshwater store

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flood prevention

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preventing the inundation of seawater

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[8]

(ii) Suggest **one** environmental disadvantage of this type of barrage.

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[2]

[Total: 20]

2 (a) Fig. 2.1 shows information on a succession.

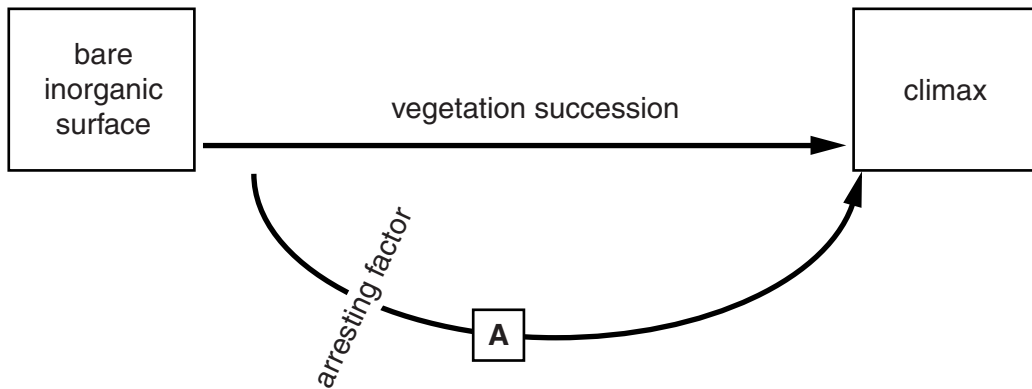


Fig. 2.1

(i) With reference to Fig. 2.1, state what is meant by the term a *vegetation succession*.

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..... [2]

(ii) State the name given to the type of climax at **A** in Fig. 2.1, that results from an arresting factor.

..... [1]

(iii) Outline **two** ways in which human activity can arrest a vegetation succession.

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..... [4]

(iv) Describe the impact of a natural event on a vegetation succession.

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..... [2]

(v) Fig. 2.2 shows changes which have occurred in an area, following the removal of an arresting factor.

years after the removal of an arresting factor

0 grassland

10 woody shrubs

30 trees

70 mixed woodland

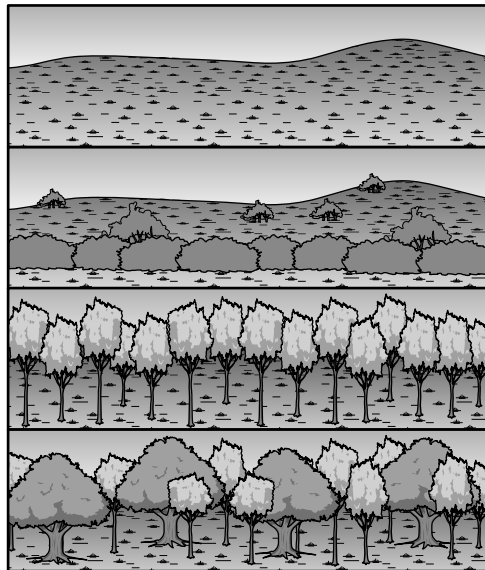


Fig. 2.2

Explain the changes shown in the area in Fig. 2.2 after the human arresting factor was removed.

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..... [5]

(b) Fig. 2.3 shows a management plan for a developing conservation area.

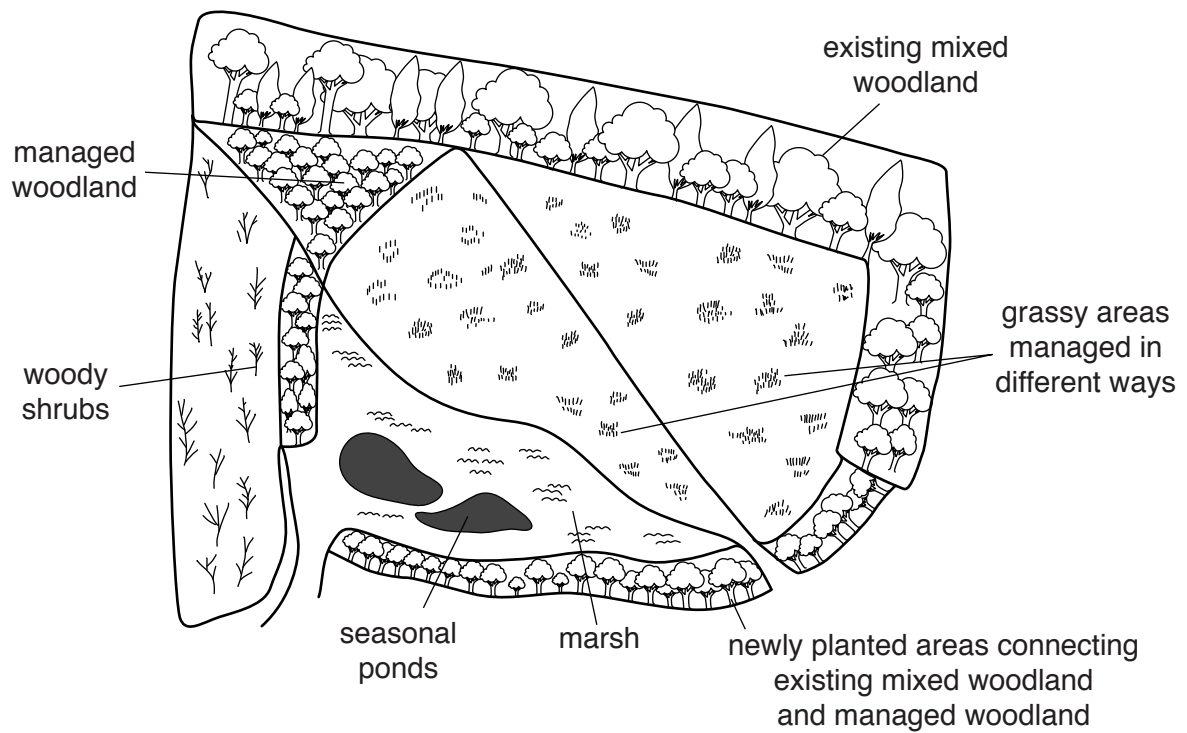


Fig. 2.3

With reference to Fig. 2.3, describe ways in which biological diversity is being conserved.

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[Total: 20]

Section B

Answer **one** question from this section.

- 3 (a) Fig. 3.1 shows groundwater withdrawals in cubic metres per person per year.

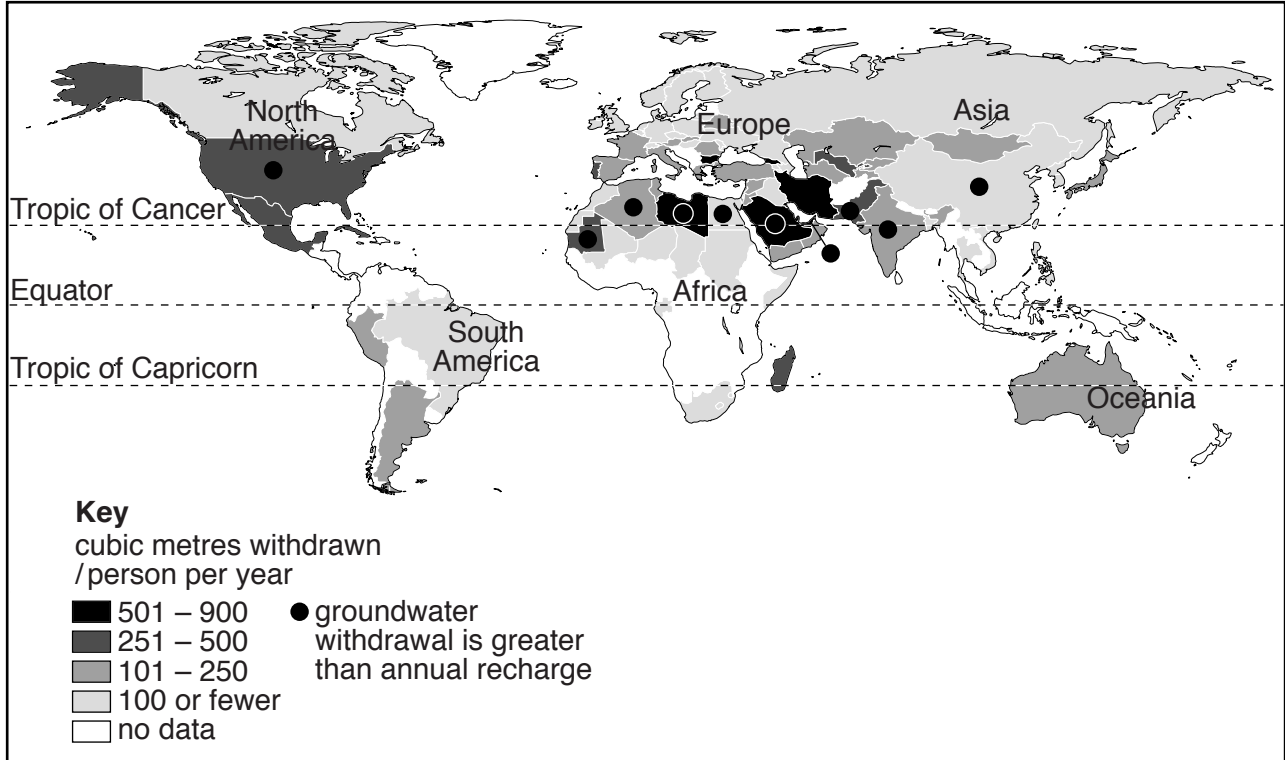


Fig. 3.1

With reference to Fig. 3.1, briefly describe and explain the regional variation in the quantities of water withdrawn from groundwater. [10]

- (b) There are growing concerns regarding the consequences of the depletion and degradation of groundwater supplies due to increasing human demand on groundwater.

Explain the risks to groundwater supply and the issues arising from their depletion and degradation. Using examples with which you are familiar, assess to what extent measures taken to manage these problems are effective. [30]

[Total: 40]

- 4 (a) Fig. 4.1 shows the results of research into the mass of fish caught and dissolved oxygen concentrations, for Chesapeake Bay (United States of America).

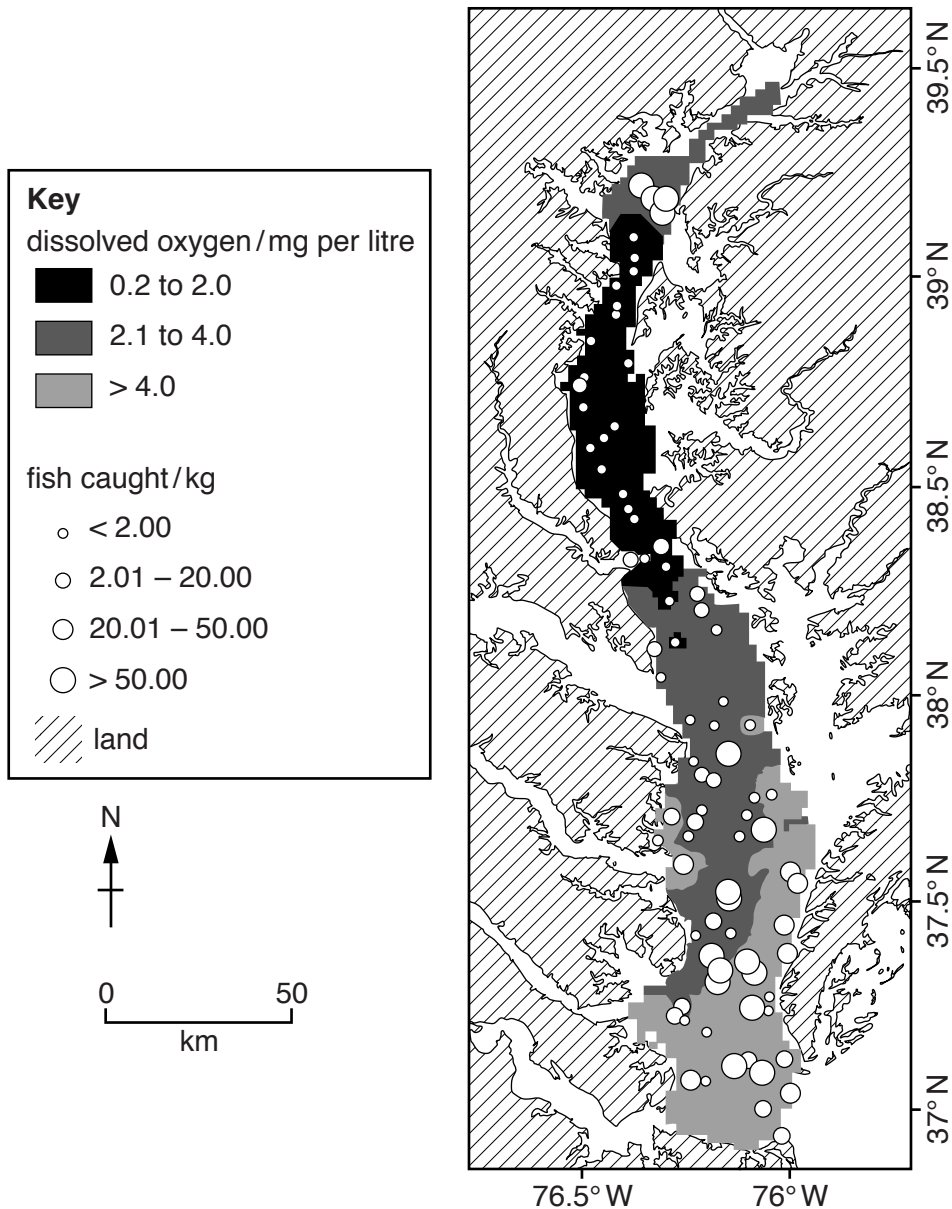


Fig. 4.1

With reference to Fig. 4.1, briefly describe and explain the relationship between the mass of fish caught and dissolved oxygen concentrations. [10]

- (b) Using an example of an ecosystem with which you are familiar, describe and evaluate the measures that have been used to reduce the ecological impact of human activity by preventing and controlling pollution. [30]

[Total: 40]

- 5 (a) Fig. 5.1 shows a relationship between the resources used by a population over time and the carrying capacity.

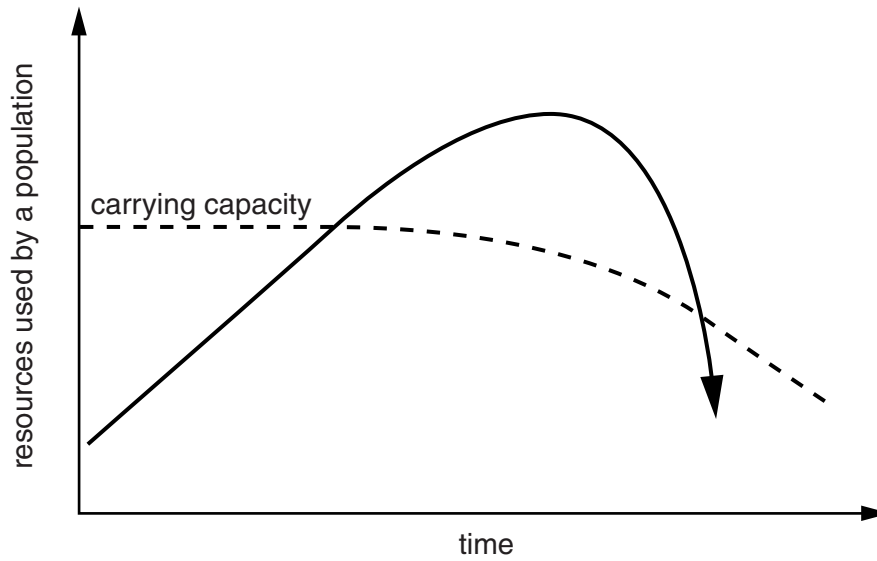


Fig. 5.1

With reference to Fig. 5.1, describe and explain the relationship between the use of resources by a population and the carrying capacity. [10]

- (b) With reference to examples from both LEDCs and MEDCs, evaluate policies that aim to achieve a balance between population size and a country's resources. [30]

[Total: 40]

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