CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

ENVIRONMENTAL MANAGEMENT   **8291/01**

Paper 1 Lithosphere and Atmosphere   **October/November 2009**

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 a soft pencil for any diagrams, graphs, tables or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

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 **12** printed pages.

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International Examinations

[Turn over

Section A

Answer **all** questions in this section

1 **(a)** In developed countries (MEDCs) and developing countries (LEDCs), land as a resource is under pressure from urban sprawl.

Explain what is meant by the term *urban sprawl*.

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....[2]

(b) Table 1.1 contains information on the percentage of people living in urban areas.

Table 1.1

	percentage of population in urban areas			estimated
Year	1950	1975	2000	2030
MEDCs	54.9	70.0	76.0	60.3
LEDCs	17.8	26.8	39.9	56.2

(i) Describe how the rate of change in urban population for MEDCs differs to that of LEDCs between 1950 and 2000.

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....[3]

(ii) Describe how the urban population of LEDCs and MEDCs is likely to change between 2000 and 2030.

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....[2]

(iii) Suggest **one** reason for the likely changes in the urban population between 2000 and 2030 for each group of nations.

MEDCs ....

....

LEDCs ....

....[2]

(c) With reference to MEDCs, describe **two** effects that urban sprawl has on the resources of agricultural land.

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....[4]

(d) Fig. 1.1 shows likely trends in the growth of population and loss of arable land per person in LEDCs between 1961 and 2030.

Fig. 1.1

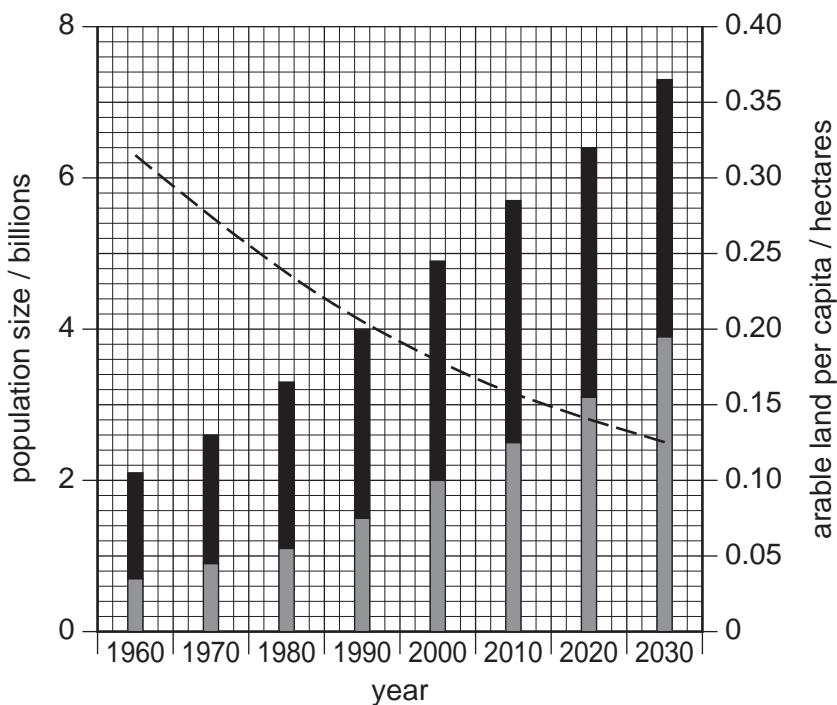**(i)** Describe the relationship between population size and arable land per capita shown in Fig. 1.1.

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....[3]

(ii) Suggest **two** reasons for the changes in the amount of arable land per capita shown in Fig. 1.1.

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....[4]

[Total: 20]

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2 Current patterns of climatic change and extreme weather are being attributed to the release of greenhouse gases and global warming.

(a) (i) What is meant by the term *global warming*?

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....[2]

(ii) State the name of **one** greenhouse gas commonly emitted from:

peat bogs, marshes and swamps ....

car exhausts ....[2]

(iii) Explain how greenhouse gases contribute to the process of global warming.

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....[3]

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(b) Fig. 2.1 contains information on global warming.
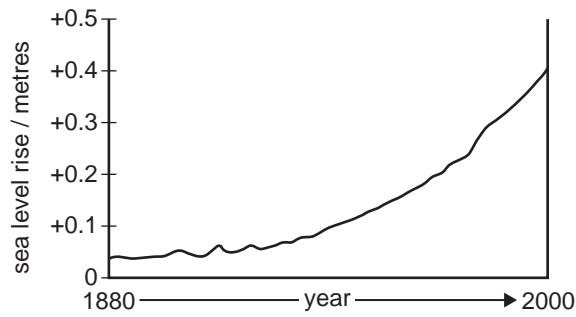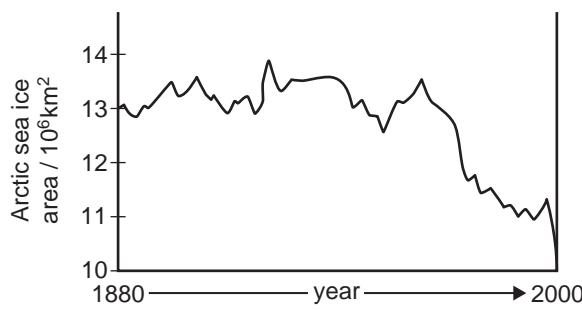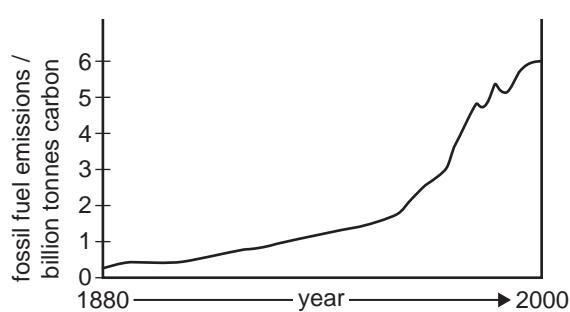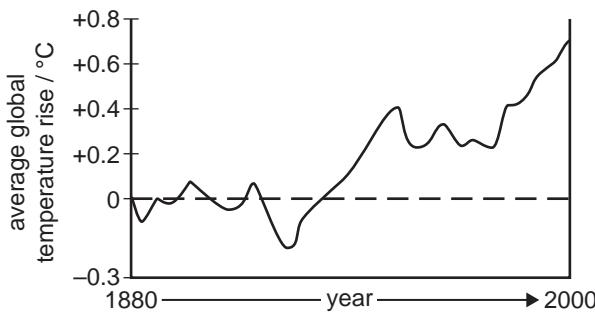
Fig. 2.1

Describe and suggest reasons for the relationship between the graphs shown in Fig. 2.1.

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.... [6]

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(c) Fig. 2.2 shows fluctuations in sea surface temperature and the energy released from tropical storms in the tropical part of the Atlantic Ocean.
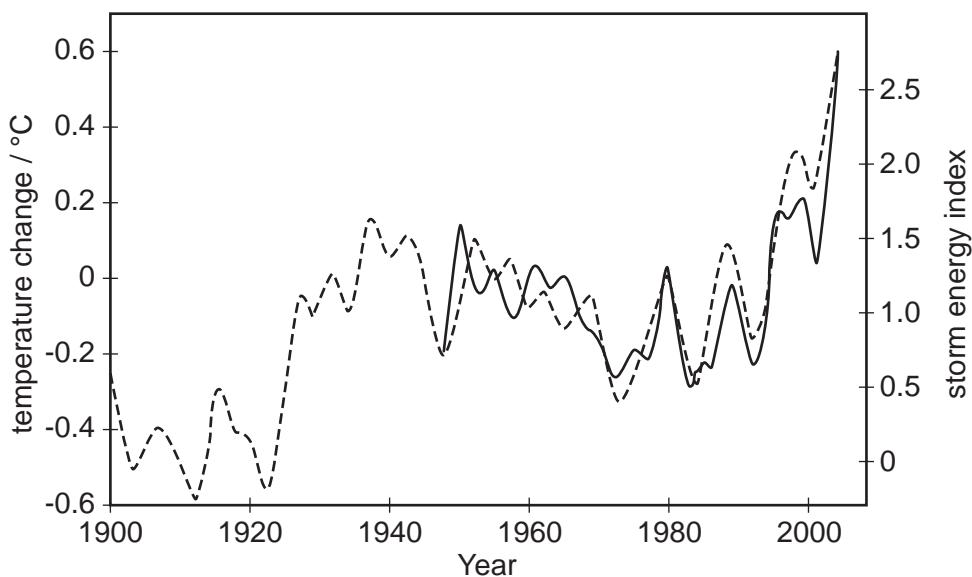
Key: - - - - change in tropical Atlantic Sea surface temperature
―― energy released from tropical storms (no data prior to 1950)

Fig. 2.2

(i) Describe the relationship between average sea surface temperature and the energy of tropical storms shown in Fig. 2.2.

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....[2]

(ii) Suggest **one** reason for this relationship.

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....[2]

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(iii) With reference to a named example, describe **one** form of extreme weather, other than tropical storms, that has been attributed to global warming.

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....[3]

[Total: 20]

Section B

Choose **one** question from this section

3 **(a)** Fig. 3.1 is a simplified model showing the movement of tectonic plates.
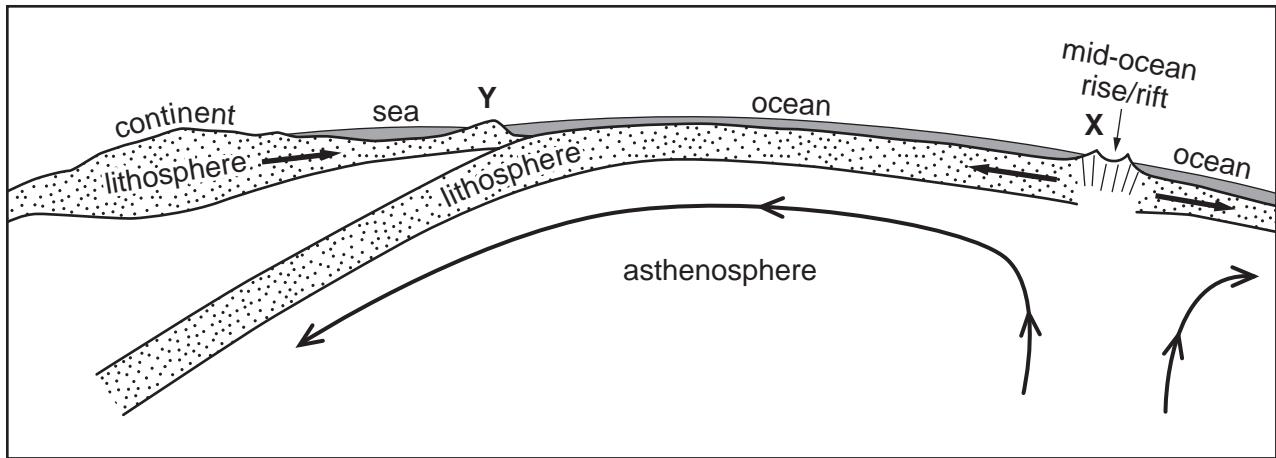
Fig. 3.1

(i) Describe **one** mechanism that causes these plates to move in the directions shown in Fig. 3.1. [2]

(ii) How does the plate movement shown in Fig. 3.1 help to explain the type of tectonic activity that occurs at points **X** and **Y**? [8]

(b) Select **one** major earthquake or volcanic event with which you are familiar. Describe the effects of the event on the area it affected and evaluate the extent to which its effects were managed. [30]

[Total: 40]

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4 **(a)** Fig. 4.1 is a scatter plot of Gross Domestic Product (GDP) per capita and emissions of sulphur dioxide per capita for selected developed countries (MEDCs) and selected developing countries (LEDCs).
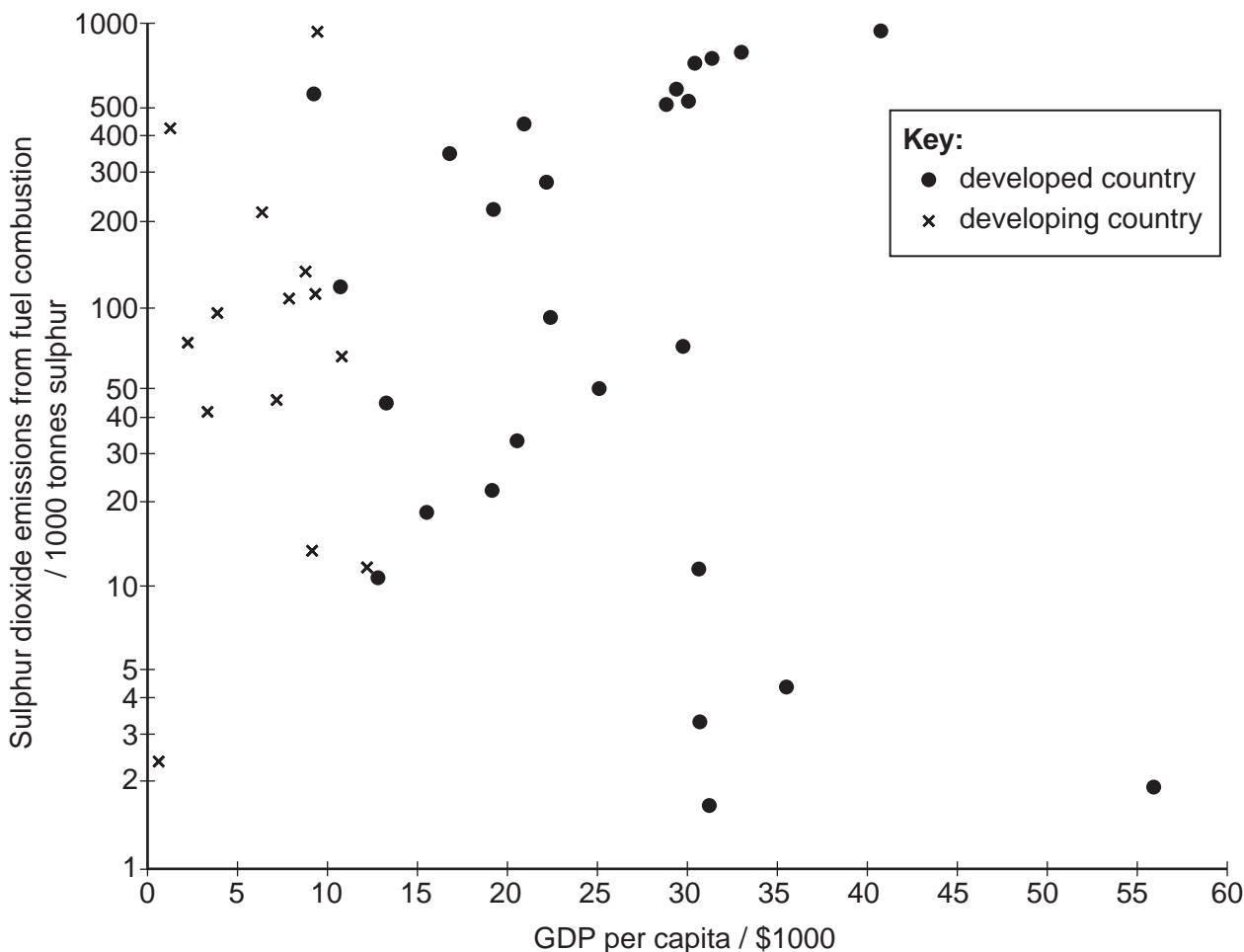
Fig. 4.1

Compare the data for the two types of countries (MEDCs and LEDCs).
Suggest reasons for the differences between the two sets of data.   [10]

(b) With reference to actual examples, explain why atmospheric pollution is regarded as an international problem. Assess the extent to which meetings between governments and international protocols on pollution have been unsuccessful.   [30]

[Total: 40]

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5 (a) Fig. 5.1 contains information on energy consumption for the European Union in 2003.

Table 5.1

	coal	oil	gas	nuclear	renewables	others	total
total energy consumption / millions of tonnes of oil equivalent	241	646	408	251	102	77	1725
percentage of energy that is imported / %	46	85	53	0	0.29	0.8	51

      (i) Briefly describe the data on energy consumption shown in Fig. 5.1.   [5]

      (ii) Discuss the import of energy by the European Union in the light of the data for energy consumption shown in Table 5.1.   [5]

(b) Discuss the extent to which the priorities of developed nations (MEDCs) towards the replacement of fossil fuels by renewable sources might be different to those of developing nations (LEDCs).
Your answer should refer to examples from both LEDCs and MEDCs.   [30]

[Total: 40]