UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

3516107402

ENVIRONMENTAL MANAGEMENT **0680/21**

Paper 2 **May/June 2010**

1 hour 45 minutes

Candidates answer on the Question Paper.

Additional Materials: Ruler

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 or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **both** questions.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

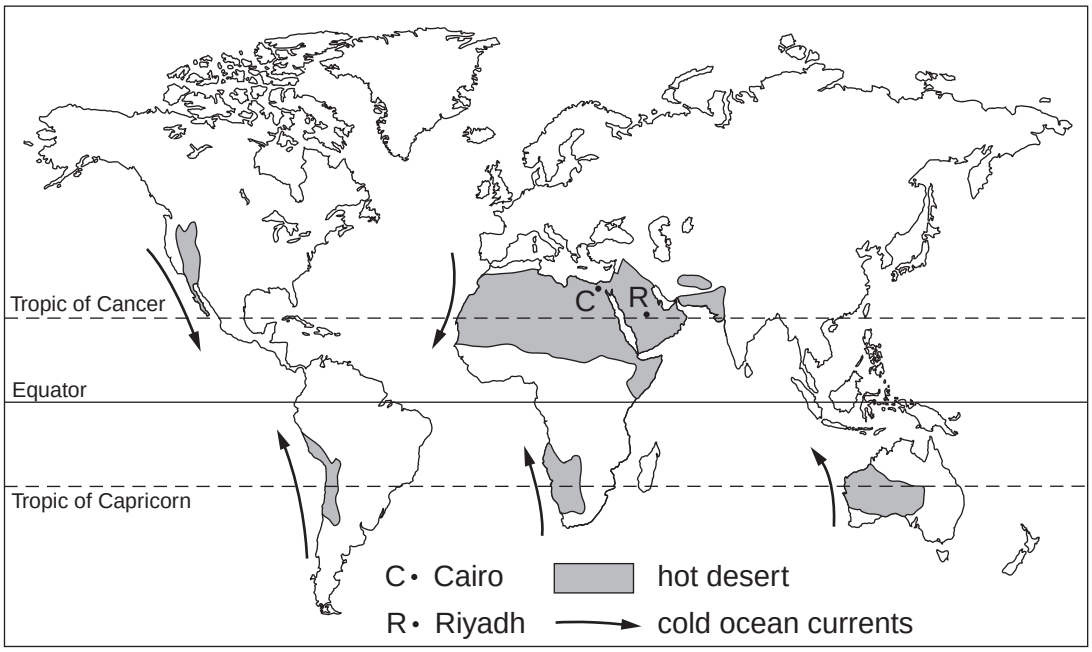
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1	
2	
Total	

This document consists of **14** printed pages and **2** blank pages.

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1 **(a)** Look at the world map showing the distribution of hot deserts.

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(i) Name the continent with the largest area of hot desert.

.....[1]

(ii) Use the map to suggest why the hot desert area is larger in this continent than in the others.

.....[1]

(iii) All the ocean currents shown on the map are cold. How can you work this out from the map?

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.....[1]

(iv) In El Nino years, how and why does the desert climate change along the coast of Peru?

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.....[2]

(v) Apart from the ocean currents, state **two** similarities of the location of hot deserts in the different continents.

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.....[2]

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(b) Climate data for Cairo and Riyadh is given in the table below. (Their locations are shown on the world map.)

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Climate data – temperature and precipitation

	J	F	M	A	M	J	J	A	S	O	N	D
Cairo, **Egypt**												
temperature (°C)	13	15	18	21	25	28	29	29	26	24	20	15
precipitation (mm)	5	5	5	3	3	0	0	0	0	0	3	5
Riyadh, **Saudi Arabia**												
temperature (°C)	15	16	21	25	30	34	34	33	31	25	21	15
precipitation (mm)	3	20	23	25	10	0	0	0	0	0	0	0

(i) Describe the evidence from the climate data that both places have a hot desert climate.

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.....

.....[2]

(ii) State the main differences in temperature and precipitation between the two places.

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.....[3]

(iii) Plants do not cover all the ground surface in desert areas due to the climate. Explain how both temperature and precipitation limit vegetation growth.

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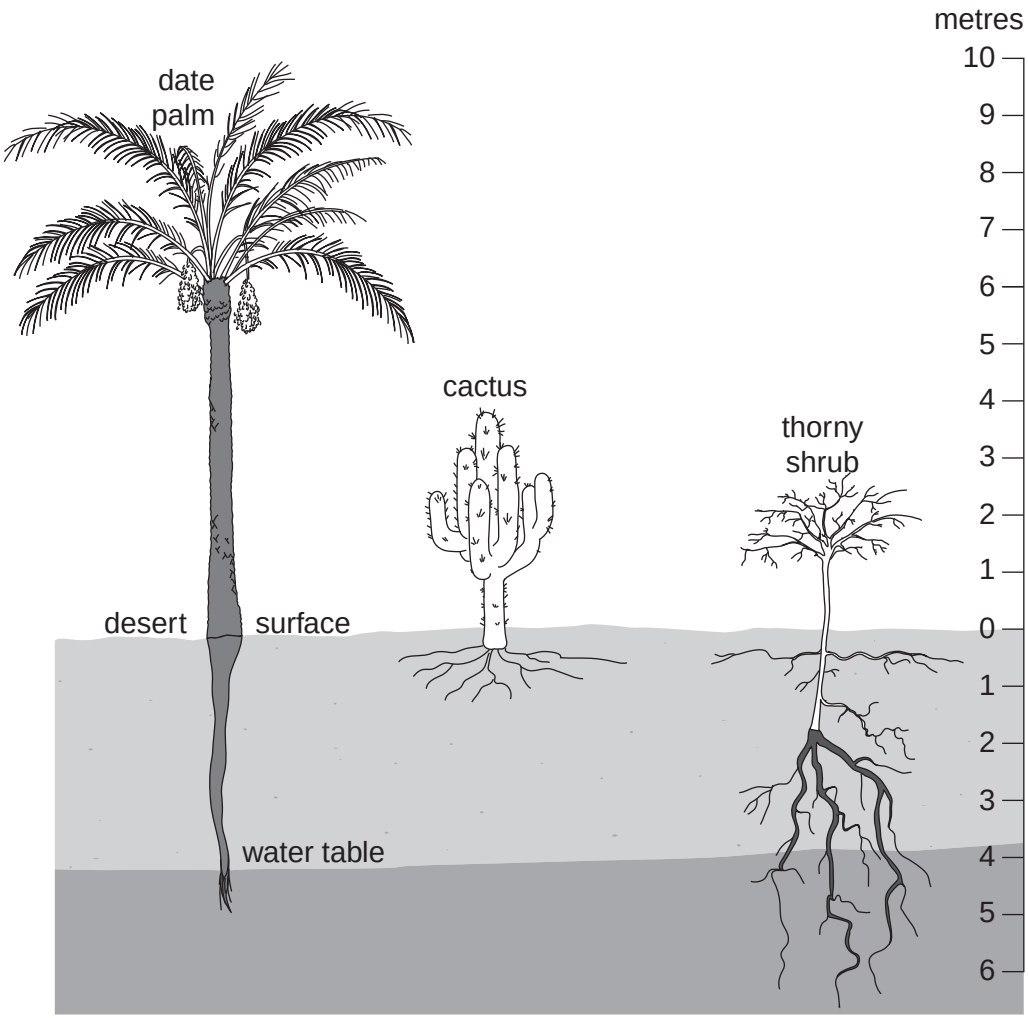
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[Turn over

(c) Look at the diagram which shows three plants with adaptations to allow them to survive the hot desert climate.

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(i) On the diagram, add labels to show the different ways plants are adapted to living in the difficult desert climate. [4]

(ii) Why is the root system of the cactus different from those of the other plants?

.....

.....

.....[2]

(d) Read the passage below about the traditional way of life of the Bedouin people in Arabia.

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The Bedouin wander the desert with herds of camels, sheep and goats. They are forced to move in search of new pasture for their animals. They move along routes across the desert which they have followed for centuries; these are controlled by the availability of water.

Of all the animals, the camel is considered the most valuable. The Bedouin make use of its milk, hide, hair and meat. Most importantly the camel is a beast of burden, the transport of the desert.

The camel is well adapted to desert conditions. Its hump made up of fat is a store of food. Its height keeps its head up above the normal height of wind-blown sand. Its broad feet allow it to walk better than any humans through sand.

The Bedouin exchange their animal products for food, such as wheat and dates, grown by oasis dwellers. They are traders as well as animal herders. In the southern part of Arabia a great network of trade routes grew up for the spice trade.

Today the Bedouin's traditional way of life is under threat, as Saudi Arabia and its neighbours have grown rich with oil extraction. Oil pipelines now cut across traditional lines of Bedouin movement. Urban settlements are expanding into the desert as are new areas of irrigation for food supply for the cities. Other types of work are now available at the oil wells and in the refineries. Some Bedouin are being attracted towards the cities, especially the young. Bedouin, who try to maintain traditional ways of living, no longer have the large empty areas through which to roam. Everything now favours settled agriculture rather than nomadic animal farming.

(i) The traditional type of Bedouin agriculture is known as pastoral nomadism. State the evidence from the passage for this type of agriculture.

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.....[2]

(ii) Give **two** different reasons why the Bedouin rely more on their camels than any of their other animals.

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.....[2]

(iii) The traditional Bedouin way of life was an example of sustainable living. Explain how and why.

For Examiner's Use

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.....[3]

(iv) Changes are now taking place in Arabia resulting from the discovery and extraction of oil. Describe some of the economic and likely social effects on the Bedouin people.

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.....[4]

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(e) Desertification is happening around the edges of many hot desert areas in Africa and Asia. Look at the flow diagram of causes of desertification below.

For Examiner's Use

population growth

↓

higher demand for food

↓

.....

↓

increased soil erosion

↓

desertification

(i) Complete the diagram by filling in the space between higher demand for food and increased soil erosion. [1]

(ii) Which factor in the diagram is the most important in causing desertification? Explain your answer.

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.....[2]

(iii) Explain why only slow progress is being made to reduce rates of population growth in many developing countries in Africa and elsewhere.

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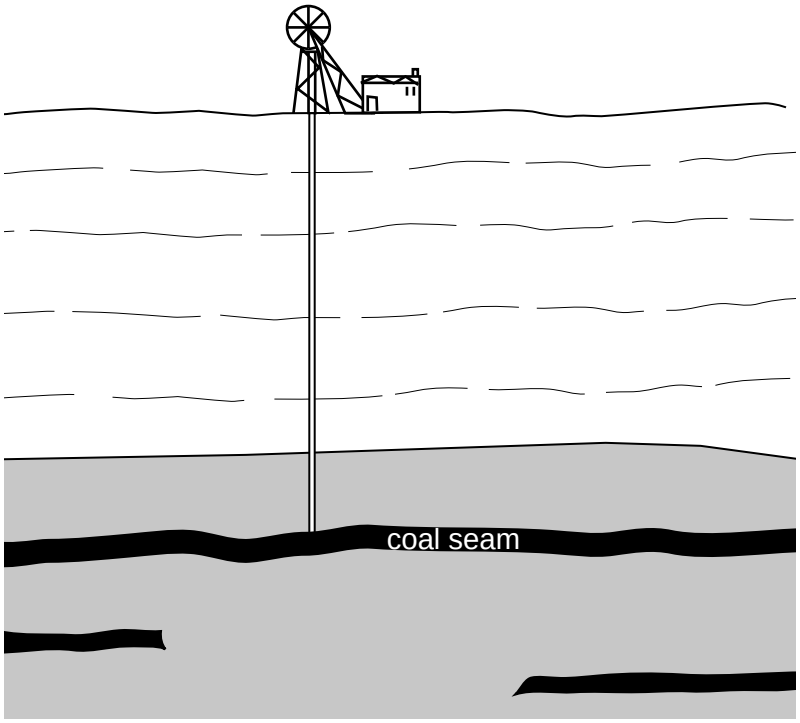
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2 **(a)** The coal that is mined today was formed millions of years ago.

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300 million years ago





(i) Explain how coal is formed.

For Examiner's Use

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.....[3]

(ii) State **two** reasons why coal is called a fossil fuel.

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.....[2]

(iii) Why is carbon dioxide released into the atmosphere when coal is burnt?

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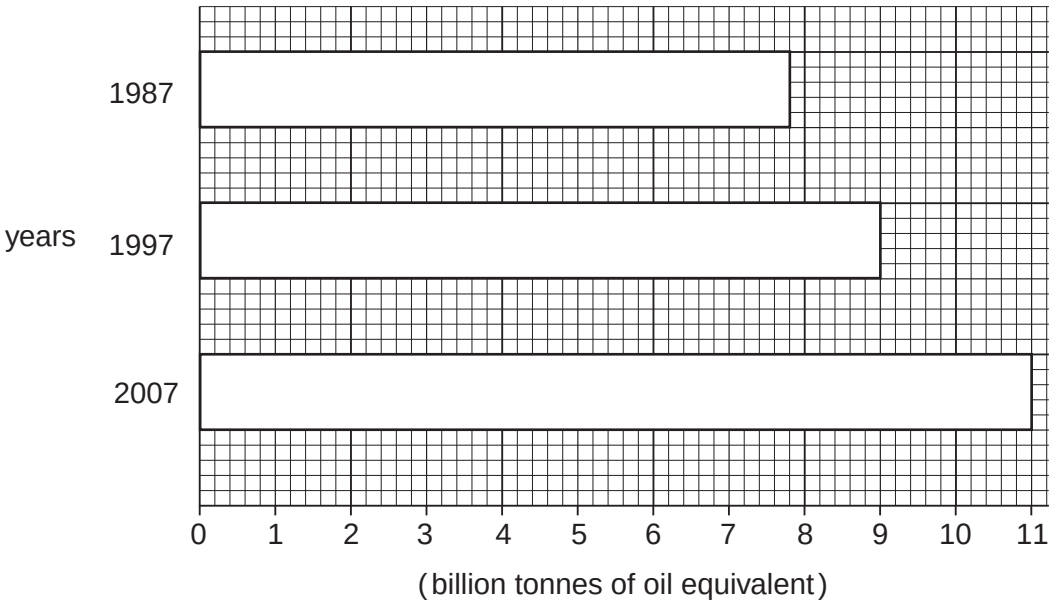
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(b) The bar graph shows total world energy consumption in 1987, 1997 and 2007.

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key

oil coal

natural gas HEP nuclear

(i) World energy consumption in 2007
(billion tonnes of oil equivalent)

Oil	4.0
Coal	3.1
Natural gas	2.6
HEP	0.7
Nuclear	0.6

Divide up the bar for 2007 to show the values of these five different energy sources.
Complete the key to show the shading or colours used. [4]

(ii) Describe how the bar graph shows total world energy consumption has changed since 1987.

.....

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.....[2]

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(iii) How do the values for 2007 show the great importance of fossil fuels in world energy supply?

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.....[3]

(c) Describe the advantages of oil over coal for

(i) extraction from the ground,

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(ii) transporting to place of use,

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(iii) ease of use.

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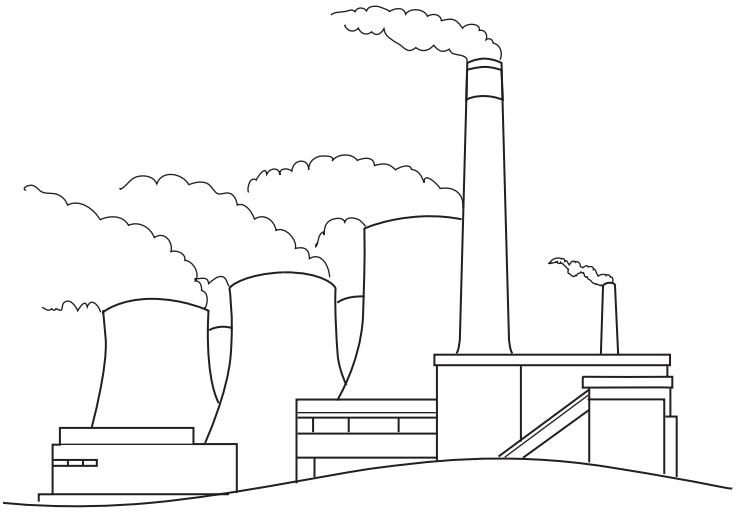
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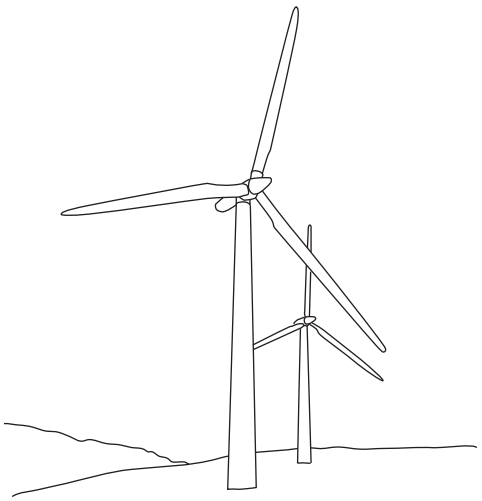
(d) **Two energy sources in the UK**

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coal burning power station



wind turbines



full output of an average station 32,000 megawatts of energy a day	full output of one standard sized wind turbine 32 megawatts of energy a day
average output achieved 30,000 megawatts a day	average output achieved 8 megawatts a day
percentage of full output achieved	percentage of full output achieved
on average – 94%	on average – .....

(i) In the space, fill in the average percentage of the full output achieved by a standard wind turbine in the UK. [1]

(ii) Explain the advantages of using coal fired power stations instead of wind turbines for generating electricity in the UK.

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.....[4]

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(iii) State the environmental damage caused by coal fired power stations.

For Examiner's Use

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.....[2]

(iv) Explain why the air pollution that results is both a local and an international problem.

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.....[3]

(e) **World top 10 producers of nuclear power (2007)**
(million tonnes of oil equivalent for energy produced)

Rank	Country	Amount	Continent
1	USA	192	North America
2	France	100	Europe
3	Japan	63	Asia
4	Russia	36	Europe / Asia
5	South Korea	32	Asia
6	Germany	31	Europe
7	Canada	21	North America
8	Ukraine	20	Europe
9	Sweden	15	Europe
10	China	14	Asia

Source BP Statistical Review of World Energy June 2008

(i) Describe what the table shows about the world distribution of nuclear power production. (You should refer to continents without nuclear power production as well as those with production).

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.....[3]

(ii) Which are the stronger – arguments **for** more use of nuclear power, or arguments **against** more nuclear power use?

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State the arguments for and against more nuclear power use, and explain your view.

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.....[5]

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