Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

ENVIRONMENTAL MANAGEMENT **0680/43**

Alternative to Coursework **May/June 2015**

1 hour 30 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

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.

Answer **all** questions.

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

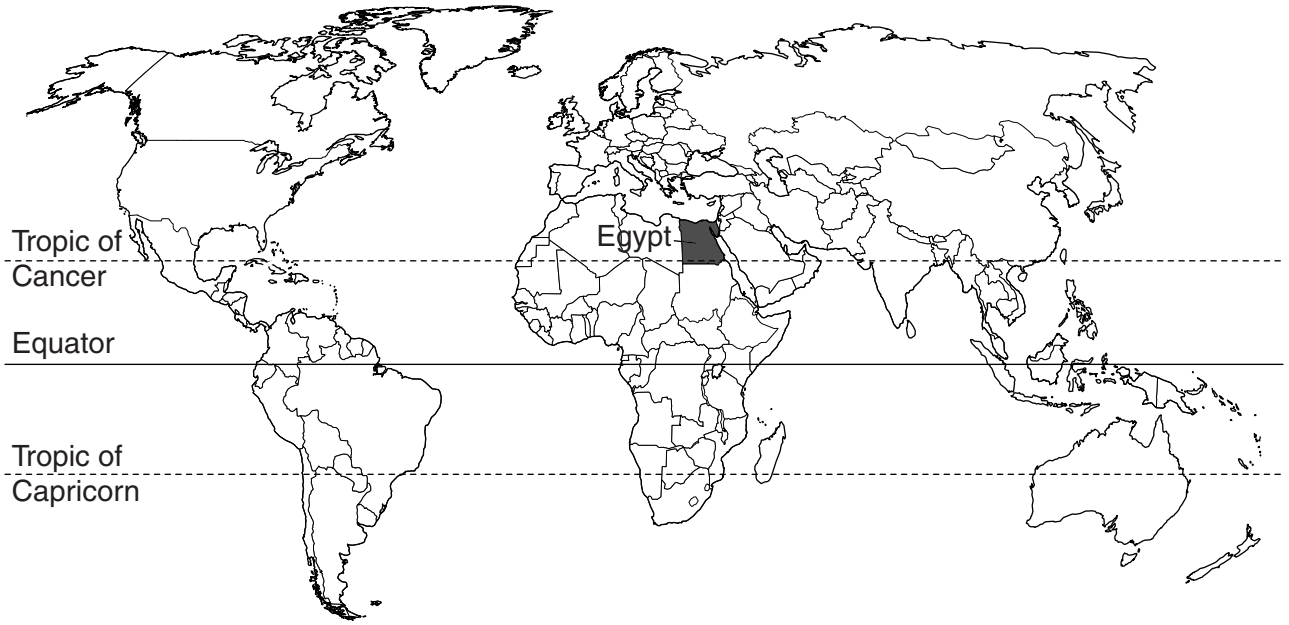
Study the appropriate source materials before you start to write your answers.
Credit will be given for appropriate selection and use of data in your answers and for relevant interpretation of these data. Suggestions for data sources are given in some questions.
You may use the source data to draw diagrams and graphs or to do calculations to illustrate your answers.

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.

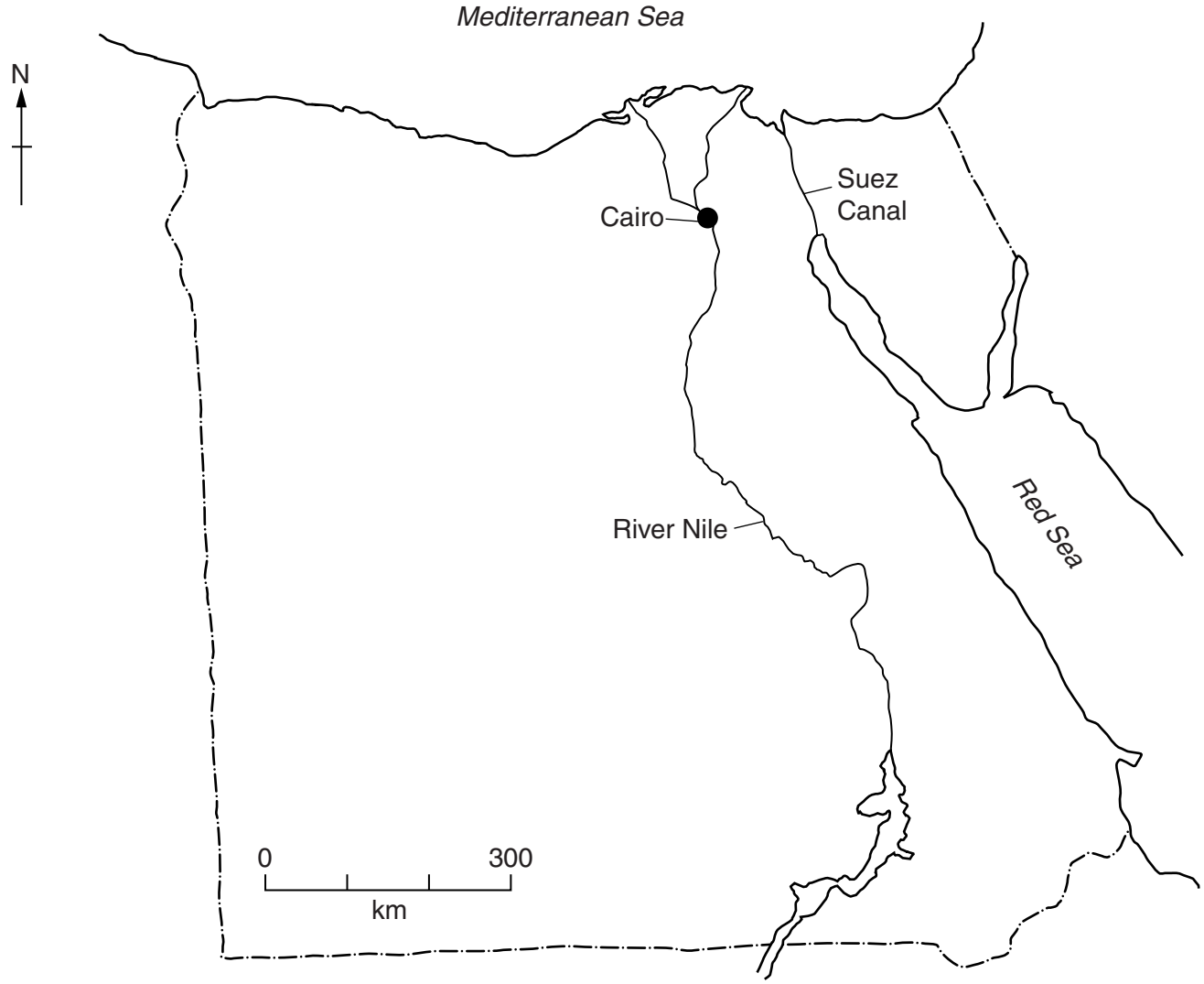
This document consists of **14** printed pages and **2** blank pages.

CAMBRIDGE International Examinations

map of world



map of Egypt



Key

international boundary

Area of Egypt: 1 million sq km

Population: about 87 million

Children per woman: 2.81

Life expectancy: 73 years

Currency: Egyptian pounds (7.0 EGP = 1 US$)

Languages: Arabic, English, French

Climate: desert; hot, dry summers and warm winters

Terrain: vast desert plateau divided by the River Nile

Main exports: crude oil and petroleum products, raw cotton, textiles, metal products, chemicals, processed foods

Most economic activity takes place around the River Nile. The economy relies on exports of manufactured goods, construction and tourism. Cairo is the capital city where 25 percent of the population live. It is the main industrial and business centre of Egypt. The Suez Canal that links the Red Sea to the Mediterranean Sea provides revenue for the country. Despite economic growth living conditions for the average Egyptian remain poor.

1 **(a)** Calculate the population of Cairo.

Space for working.

.....[1]

(b) Read the newspaper report below:

Two days of heavy rain has caused flooding in many parts of Egypt. In Cairo road traffic stopped moving in some districts for several hours.

Many traders in Cairo could not work. Some villages and agricultural land were flooded after many small dams collapsed.

(i) Suggest reasons why many traders in Cairo could not work.

.....

.....

.....

.....

.....

.....[3]

(ii) Climate data for Cairo is shown in the table below.

month	J	F	M	A	M	J	J	A	S	O	N	D
average temperature /°C	13	15	17	21	25	27	29	29	26	24	20	15
average rainfall /mm	5	5	5	3	3	0	0	0	0	0	3	5
average number of wet days	1.0	1.0	0.8	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.6	1.0

Using information from the table give **three** reasons why the city authorities are **not** concerned about urban flooding in Cairo.

.....

.....

.....

.....

.....

.....[3]

(c) The table shows predicted urban and rural population figures for Egypt.

population	2015	2020	2050
urban/millions	38.4	43.5	78.1
rural/millions	48.6	51.3	45.3

Suggest reasons why the rural population is predicted to decrease by 2050.

.....

.....

.....

.....

.....

.....[3]

The air quality in many parts of Cairo is often poor. The high buildings and narrow streets reduce air circulation and allow pollutants to build up.

A student wanted to carry out a survey of peoples' views about air quality in Cairo. The student proposed three plans.

plan one
Visit one narrow street in a district and ask 10 people their views about air quality. Record their answers using a questionnaire.

plan two
Visit three narrow streets in a district and ask 10 people their views about air quality in each street. Record their answers using a questionnaire.

plan three
Visit three narrow streets in each of three districts and ask 10 people their views about air quality in each street. Record their answers using a questionnaire.

(d) (i) Give **two** reasons why the student did not carry out **plan one**.

.....

.....

.....

.....[2]

(ii) Explain why **plan three** is better than **plan two**.

.....

.....

.....

.....[2]

The student carried out **plan three**. The results are shown in the table below.

	number of responses	
question	yes	no
Do you often suffer breathing difficulties?	70	20
Do you think the air quality is best in the early morning?	65	25
Is the air quality worst in the coldest months?	82	8
Do you think motor vehicles are a major cause of poor air quality?	80	10

(iii) Suggest **one** further question the student could have asked as part of this survey.

.....

.....[1]

(iv) How could the student process the results shown in the table to make them easier to understand?

.....

.....[1]

(v) Suggest **one** cause, other than motor vehicles, for the poor air quality in Cairo.

.....[1]

(vi) Explain why air quality is worst in the coldest months.

.....

.....[1]

(e) A scheme to predict air quality in Cairo was developed. The predictions are published every day using the classifications shown in the table below.

classification	concentration of particulate matter
clear	0–99
normal	100–199
moderate	200–349
attention	350–419
alert	420–549
warning	550–649
emergency	650+

Suggest how these predictions can be used by

city authorities .....

.....

people living in Cairo .....

.....

[2]

(f) A development plan has been produced to house the predicted increase in population by 2050.

(i) Suggest why the development plan on the next page does not allow expansion to the north and south of the old city.

.....

.....

.....

.....[2]

(ii) Suggest why most expansion is to the east and west of the old city.

.....

.....[1]

(iii) The plan has three areas that have not been allocated for development.

Using the key, indicate the best area that could be allocated for housing and **one** that could be allocated for farming. [2]

development plan

(g) The photograph shows that some building has already started. Suggest **two** ways, shown in the photograph, that suggest this is a planned development.

.....

.....

.....

.....[2]

(h) Suggest the services that must be planned as part of this new housing development.

.....

.....

.....

.....

.....

.....

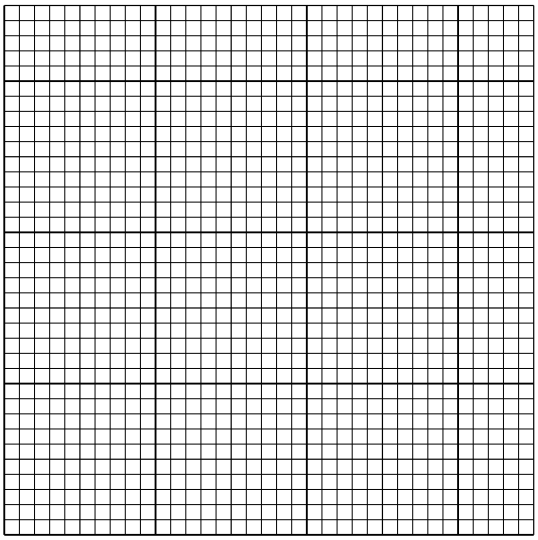
.....

.....[5]

2 **(a)** Egypt has to import a large amount of wheat every year to meet their needs. Most imported wheat is used to produce bread at a price fixed by the government. Some reserves of wheat are held in government stores. The table shows Egyptian wheat production, imports and reserves for a twelve-year period.

year	production of wheat in Egypt / million tonnes	wheat imported into Egypt / million tonnes	Egyptian wheat reserves / million tonnes
2000	6.3	6.0	1.7
2002	6.3	6.3	1.7
2004	7.2	8.1	2.6
2006	8.2	7.3	4.8
2008	7.9	9.9	4.1
2010	7.2	10.6	5.6
2012	8.5	8.3	4.6

(i) Plot a graph of wheat production and imported wheat on the grid.



[4]

(ii) Describe the pattern of wheat production in Egypt between 2000 and 2012.

.....

.....[1]

(iii) Suggest why the wheat imports shown on your graph are higher in some years than others.

.....

.....

.....

.....[2]

(iv) Calculate the percentage increase in wheat reserves between 2000 and 2012.

Space for working.

.....[2]

(v) Suggest **two** reasons why the government have increased the wheat reserves between 2000 and 2012.

.....

.....

.....

.....[2]

(b) Wheat is grown in irrigated fields near the River Nile. A researcher wanted to find out how two different varieties of wheat grew in an irrigated field in one season. Two experimental plots were selected from the field.

Each plot was

- the same size
- planted on the same day
- planted at the same density
- irrigated the same way
- harvested on the same day

at harvest	sakha variety	giza variety
plant length/cm	117	98
number of spikes per m^2	337	308
number of grains per spike	58	52
grain yield/tonnes per ha	6.6	6.5
straw yield/tonnes per ha	13.5	12.8
% grain protein content	12.3	11.3
% of nitrogen in fertiliser absorbed by plant	71.7	65.3

(i) The researcher decided that sakha variety had a faster growth rate than giza variety. Explain why the researcher came to this conclusion.

.....

.....

.....

.....

.....

.....[3]

(ii) Complete the table below to show the total number of grains per m^2 for both varieties.

variety	number of spikes per m^2	number of grains per spike	total number of grains per m^2
sakha	337	58	19546
giza	.....	.....	.....

[2]

(iii) Suggest **one** reason for the small difference in final grain yield (tonnes per ha) between the two varieties.

.....

.....[1]

(iv) Explain why making bread from sakha variety would help to improve human health.

.....

.....[1]

(v) The researcher decided to repeat this experiment in the next growing season using the same methods. Explain why.

.....

.....[1]

(vi) Explain why farmers want to grow a wheat variety that absorbs the most nitrogen from fertiliser.

.....

.....

.....

.....[2]

(c) Describe the environmental damage that can be caused by fertilisers entering irrigation channels.

.....

.....

.....

.....

.....

.....

.....

.....[4]

(d) There are more than 20 wheat research stations along the River Nile working on ways to improve the yield of Egyptian wheat crops. Suggest how genetically modified wheat varieties could help the people of Egypt in the future.

.....

.....

.....

.....

.....

.....[3]

BLANK PAGE

BLANK PAGE