

CANDIDATE
NAME

--

CENTRE
NUMBER

--	--	--	--	--

CANDIDATE
NUMBER

--	--	--	--



ENVIRONMENTAL MANAGEMENT

0680/22

Paper 2

May/June 2015

1 hour 45 minutes

Candidates answer on the Question Paper.

Additional Materials: Insert

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 **both** 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.

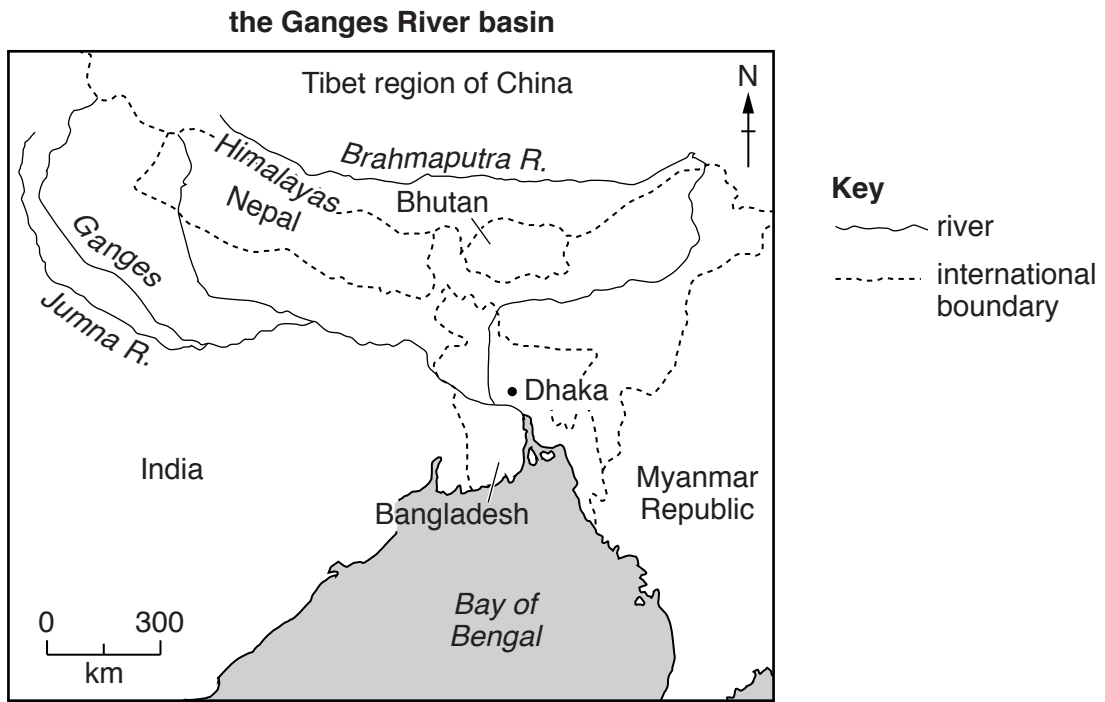
At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [] at the end of each question or part question.

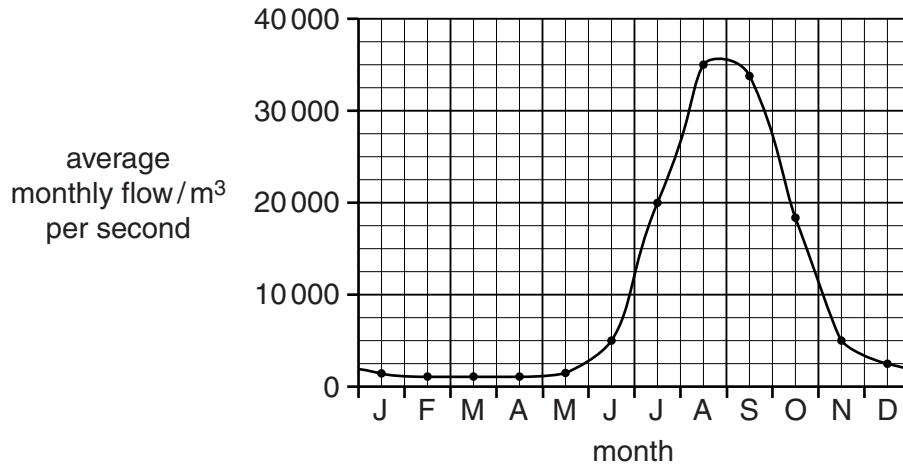
The Insert is **not** required by the Examiner.

This document consists of **15** printed pages, **1** blank page and **1** Insert.

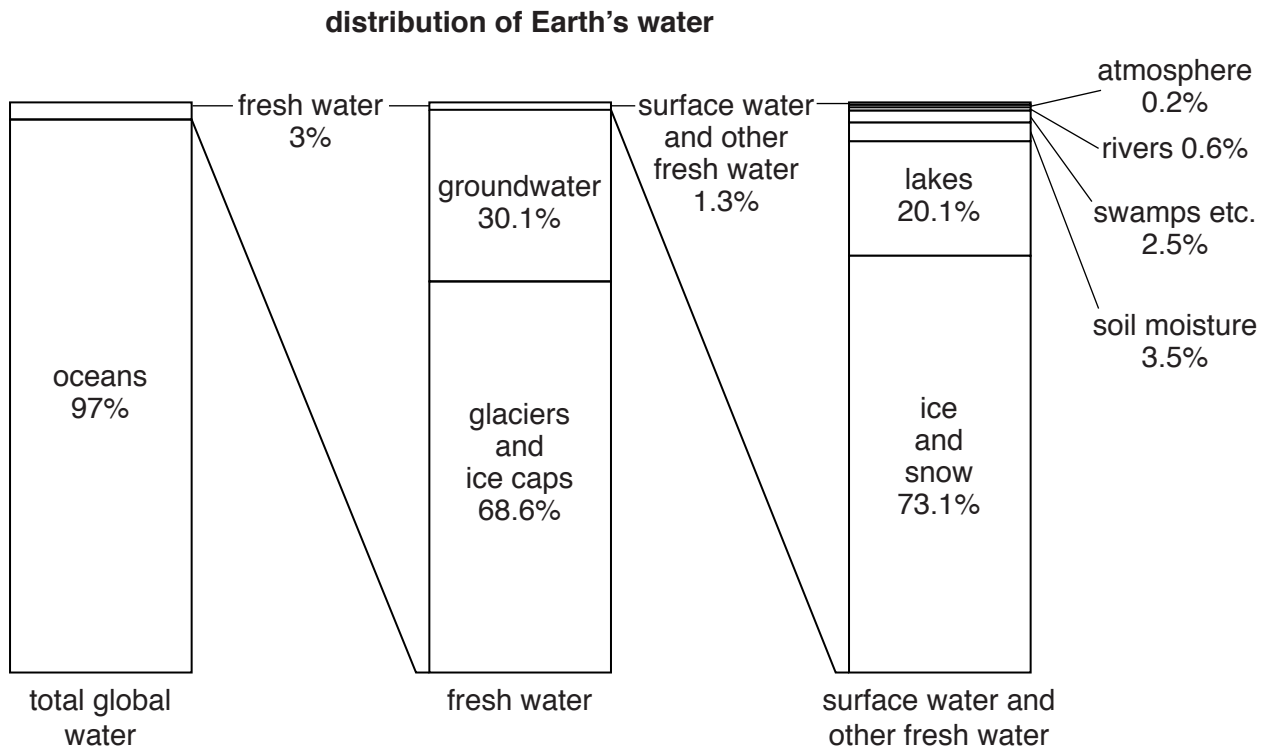
1 (a) Look at the information about the River Ganges and the country of Bangladesh.



average monthly flow of the River Ganges near Dhaka in Bangladesh



(b) Look at the diagram showing the distribution of water on Earth.



(i) State what percentage of the Earth's water is fresh water.

..... % [1]

(ii) It is estimated that there are 1390 million km³ of water on Earth. Calculate how many million km³ of water is fresh water.

Space for working.

..... km³ [2]

(iii) Explain why water shortage is a problem in many parts of the world when there is so much fresh water on Earth.

.....

.....

.....

.....

.....

.....

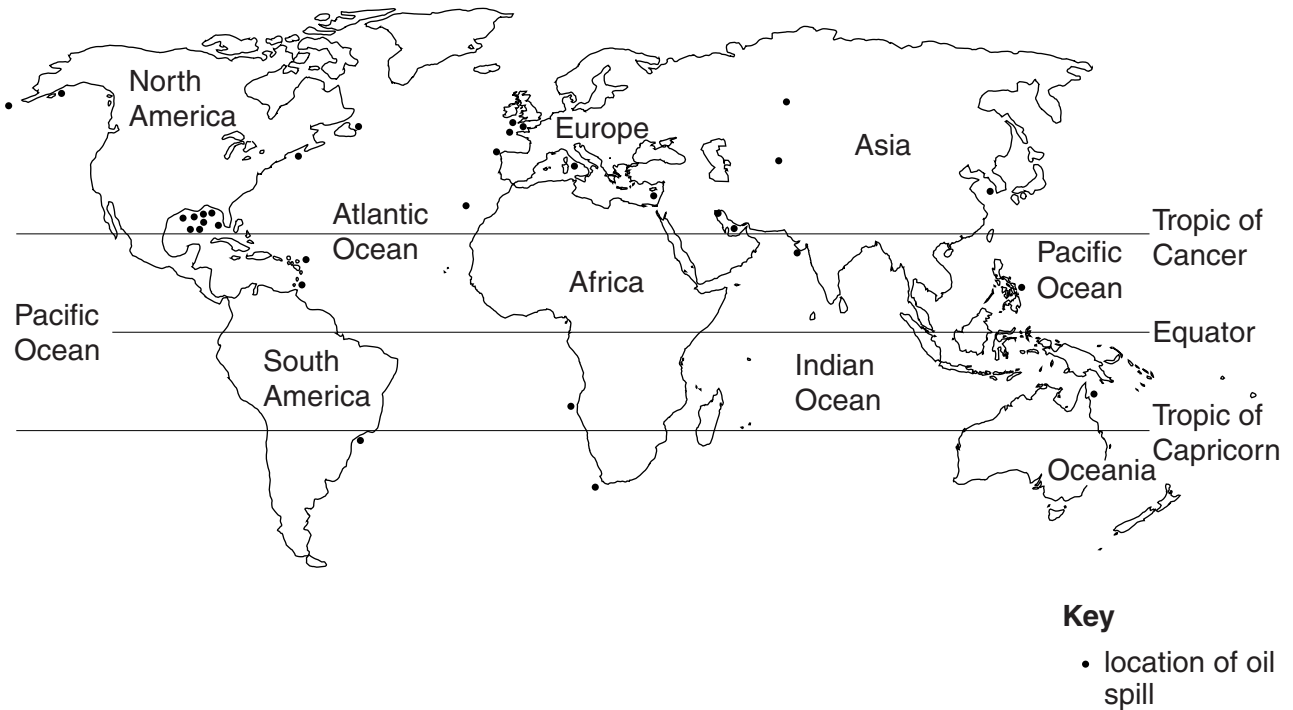
.....

.....

..... [4]

(c) Look at the map which shows major oil spills in the last thirty years.

major oil spills in the last 30 years



(i) State how many major oil spills occurred on land in the last thirty years.

..... [1]

(ii) Describe the distribution of marine oil spills.

.....
.....
.....
.....
.....
..... [3]

(iii) Suggest reasons why more marine oil spills have occurred in some parts of the oceans than in others.

.....
.....
.....
.....
..... [3]

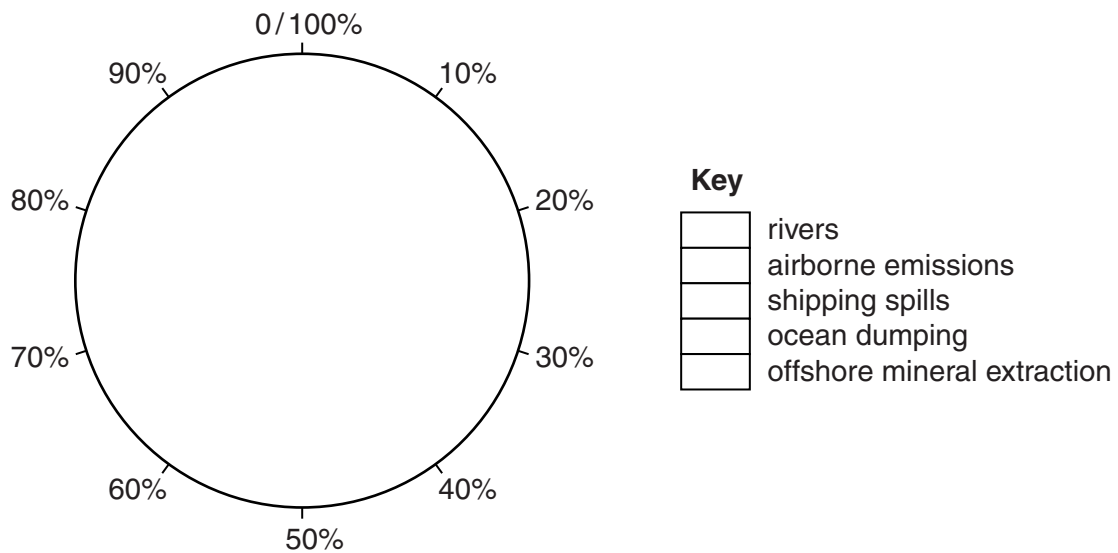
(iv) Describe the impact of a major oil spill on the marine ecosystem.

.....
.....
.....
.....
.....
..... [4]

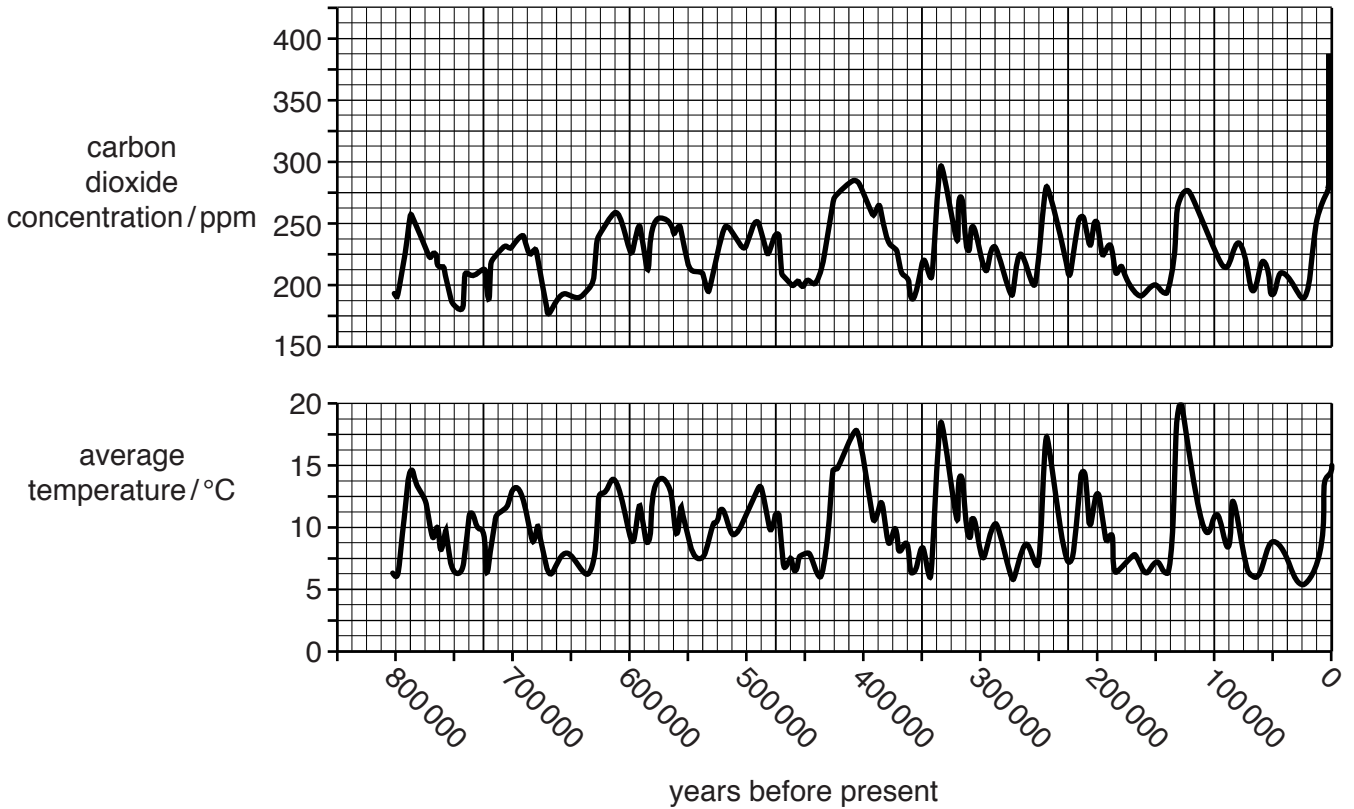
(d) Look at the table below, which shows sources of marine pollution.

marine pollution source	examples	percentage of marine pollution/%
rivers	nutrients bacteria heavy metals	44
airborne emissions	mercury nitrous oxides	33
shipping spills	oil	12
ocean dumping	sewage rubbish	10
offshore mineral extraction	oil gas	1

Draw a pie graph in the circle below to show the sources of marine pollution and complete the key. [3]



2 (a) Study the graph which shows atmospheric carbon dioxide concentrations and average global temperatures for the past 800 000 years.



(i) State the highest carbon dioxide concentration in the last 800 000 years.
ppm [1]

(ii) State the highest temperature in the last 800 000 years and how long ago it occurred.
 temperature °C
 how long ago it occurred years ago [2]

(iii) Compare the trend in carbon dioxide concentrations with that of world temperatures.

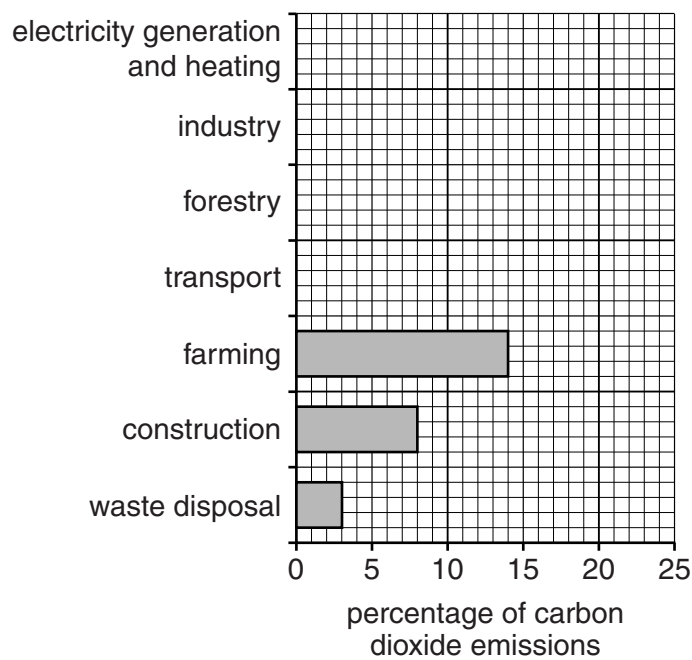
 [2]

(b) (i) Look at the table which shows sources of carbon dioxide emissions from human activities.

sources of carbon dioxide emissions from human activities	percentage /%
electricity generation and heating	24
industry	19
forestry	17
transport	15
farming	14
construction	8
waste disposal	3

Use the data to complete the bar graph.

[2]



(ii) Explain why electricity generation, heating, industry and transport produce large quantities of carbon dioxide.

.....

.....

.....

.....

.....

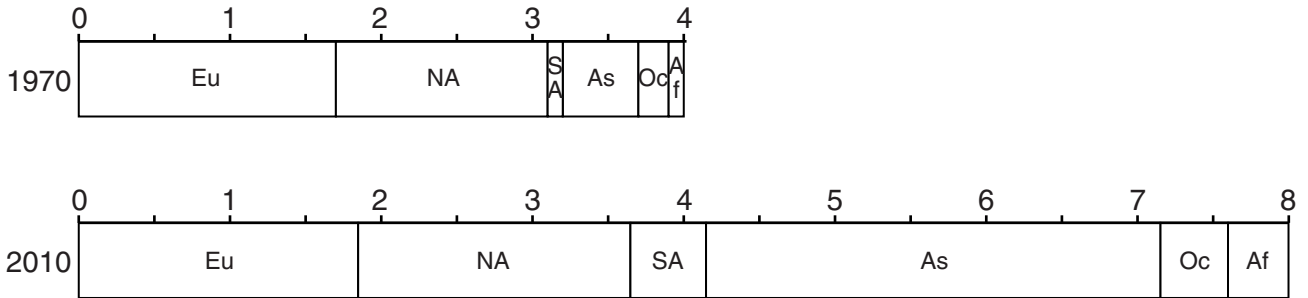
.....

.....

..... [3]

- (c) Look at the divided bar graphs showing carbon dioxide emissions in 1970 and 2010, by continent.

billion tonnes of carbon dioxide emissions



Key

- | | |
|--------------------------------|--------------|
| Eu = Europe | As = Asia |
| NA = North America | Oc = Oceania |
| SA = South and Central America | Af = Africa |

- (i) Calculate how much the total emissions of carbon dioxide have increased from 1970 to 2010.

..... [1]

- (ii) Describe the changes in the amounts of carbon dioxide emissions from these continents between 1970 and 2010.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(iii) Describe strategies to reduce carbon dioxide emissions.

.....
.....
.....
.....
.....
.....
.....
..... [4]

(d) (i) Explain what is meant by the term *fossil fuel*.

.....
.....
..... [2]

(ii) Name **two** fossil fuels.

.....
..... [1]

(e) Look at the photograph (Insert) of an open-pit (cast) coal mine.

(i) Explain how mineral deposits are removed from an open-pit (cast) mine.

.....
.....
..... [2]

(ii) Using the photograph (Insert) and your own knowledge, describe the environmental impacts of open-pit (cast) mining.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(f) Read the comments for and against the use of nuclear power rather than fossil fuels to generate electricity.

Nuclear power stations produce large amounts of radioactive waste that we cannot dispose of safely.

Fossil fuels will run out and we need a reliable source of power when that happens. Fossil fuels will become very expensive as they become scarce. There is probably enough uranium ore to last more than 1000 years.

Nuclear power does not produce carbon dioxide, unlike fossil fuels.

Nuclear waste remains dangerous for thousands of years.

Radiation is natural; it is all around us. Nuclear power does not increase the amount of radioactivity to any great extent.

Coal, oil and gas-fired power stations are only one source of greenhouse gases. Even if nuclear power was used to produce all the world's electricity it would not stop an increase in greenhouse gases in the atmosphere.

Nuclear power doesn't need vast amounts of raw materials to be transported to the power station.

Nuclear accidents happen – Chernobyl, Fukushima, Three Mile Island – they will happen again.

(i) State **two** environmental reasons in favour of nuclear power.

.....
.....
.....
..... [2]

(ii) Suggest why a person living near a nuclear power station may be both in favour of **and** against nuclear power.

.....
.....
.....
.....
.....
.....
.....
.....
..... [4]

(g) Is nuclear power the best way to meet future energy needs? Explain your answer.

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
..... [6]

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge International Examinations Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cie.org.uk after the live examination series.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.