



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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ENVIRONMENTAL MANAGEMENT

0680/21

Paper 2

October/November 2016

1 hour 45 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 **both** questions.

Electronic calculators may be used.

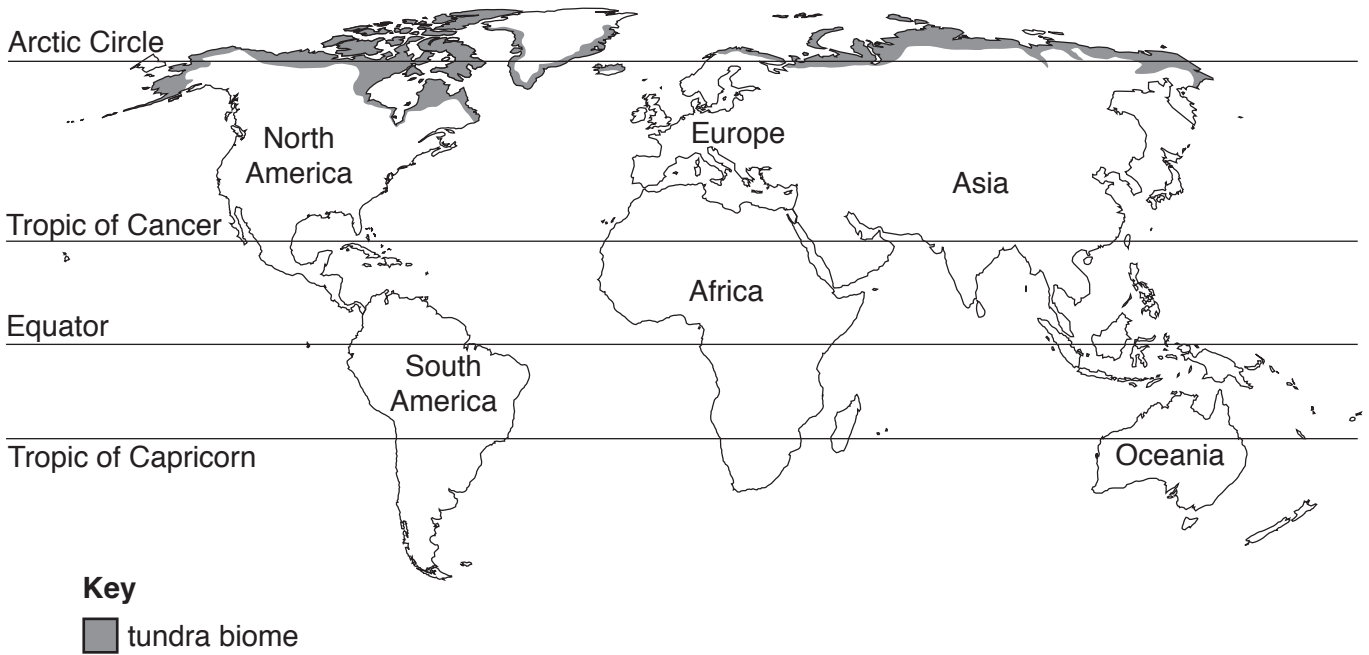
You may lose marks if you do not show your working or if you do not use appropriate units.

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.

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

1 (a) Look at the map below, which shows the tundra biome.



(i) Describe the distribution of the tundra biome shown on the map.

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

(ii) Increases in greenhouse gases are thought to cause global warming. Suggest what might happen to the area of tundra biome shown on the map if global warming continues.

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

(iii) Name **two** gases that contribute to global warming. For each gas, state a human activity that is causing the amount of that gas to increase in the atmosphere.

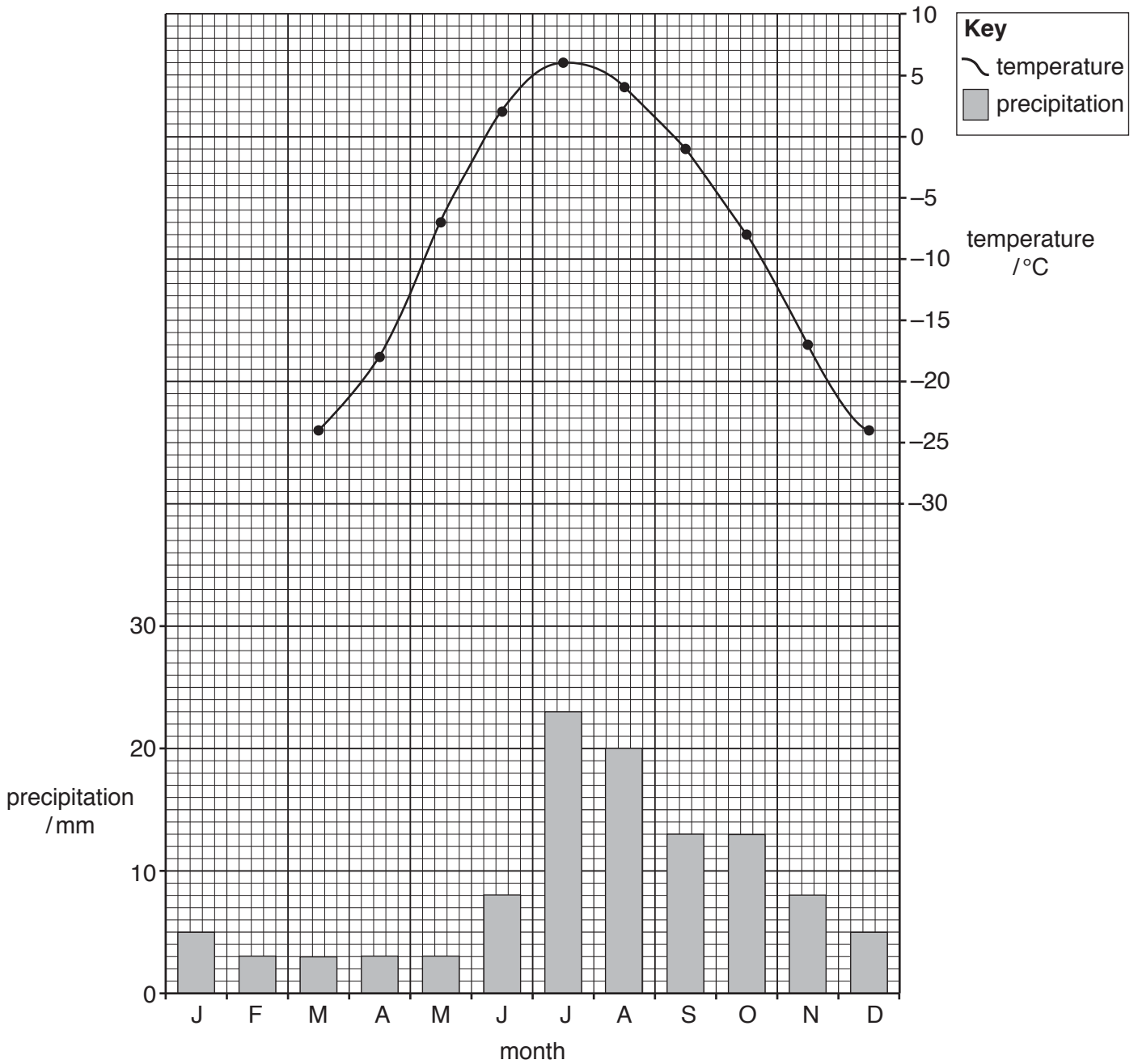
name of gas 1:

human activity 1:

name of gas 2:

human activity 2:[4]

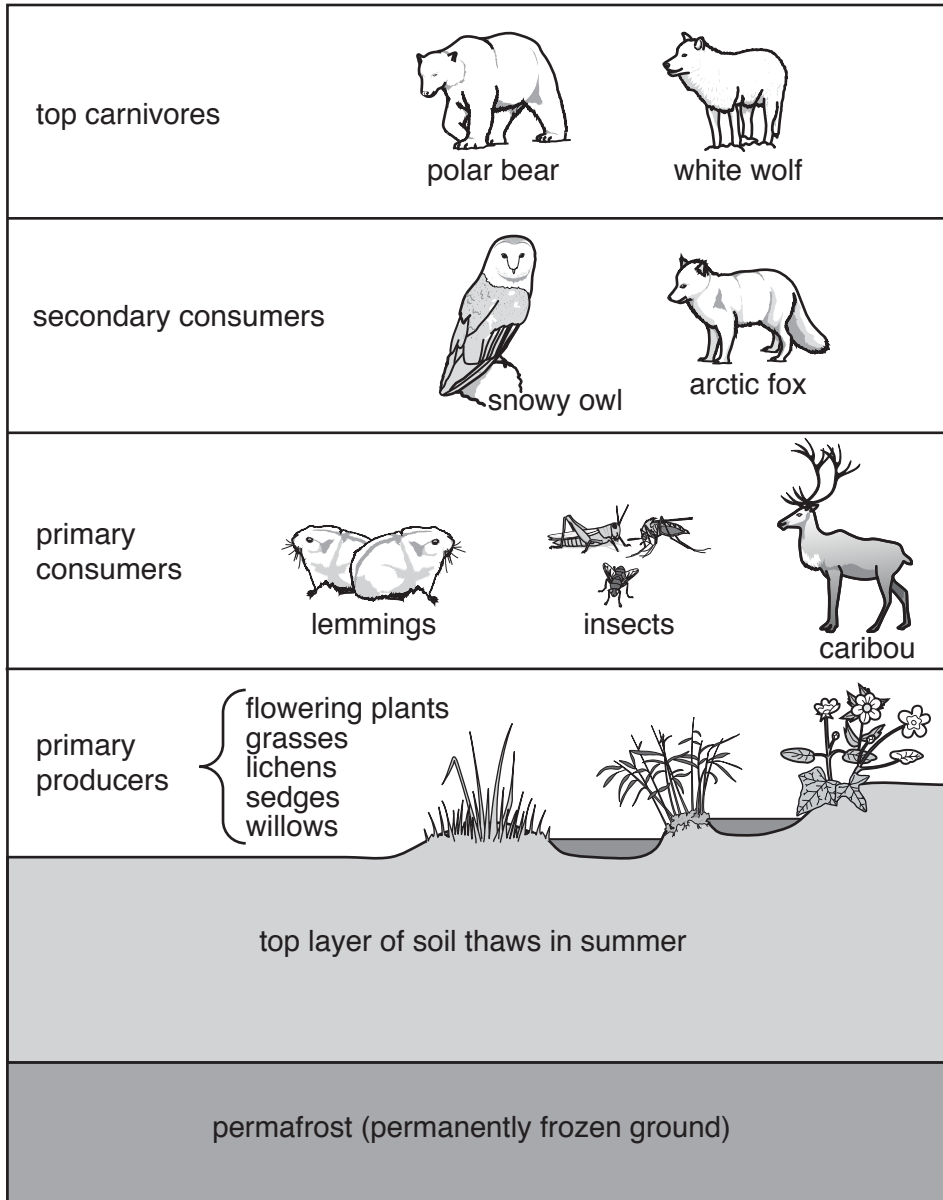
- (b) Look at the climate graph and data below, which show the temperature and precipitation for a weather station in the tundra region of Alaska.



month	J	F	M	A	M	J	J	A	S	O	N	D
temperature /°C	-26	-28	-24	-18	-7	2	6	4	-1	-8	-17	-24
precipitation /mm	5	3	3	3	3	8	23	20	13	13	8	5

- (i) Using the data in the table, complete the temperature line graph for January and February. [2]

(c) Look at the diagram below, which shows part of a tundra ecosystem.



(i) State what is meant by the term *consumer*.

.....

.....[1]

(ii) Read the information in the text box.

Some animals are moving further north into tundra regions as a result of global warming. One example is the red fox, which is a secondary consumer.

Suggest ways in which the tundra ecosystem could be affected by the movement of the red fox.

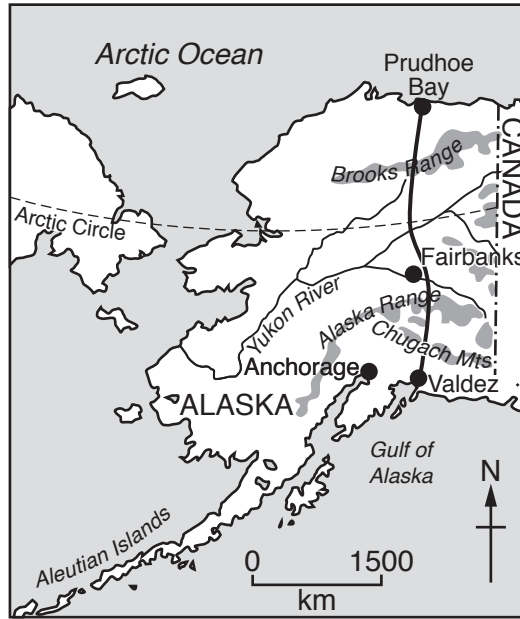
.....
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..... [4]

(d) In 1968 a large oil field was discovered in the Alaskan tundra.

(i) Explain how the oil was formed.

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

- (ii) Look at the map below, which shows information about oil in Alaska. Use information from the map to complete the paragraph below.



Key

- settlement
- - - - - international boundary
- route of pipeline
- highland
- ~ river

In 1968 oil was discovered in northern Alaska. A pipeline was built to transport the oil. The pipeline runs from in the north to on the south coast of Alaska. Here the oil is taken away to markets by supertankers. The pipeline crosses the River and passes close to the town of Fairbanks. In total the pipeline is 1241 km long. [3]

- (iii) Suggest why the pipeline was built rather than transporting the oil from the north of Alaska by sea in supertankers.

.....
 [1]

(e) Look at the photograph, which shows an oil pipeline in Alaska, and read the information.



vegetation grows very slowly

caribou breed close to the pipeline

ground below surface remains frozen all year

oil in the pipeline is warm

caribou migrate across the region to search for food

animals, such as bears and wolves, live in the region

pipelines can leak

(i) Suggest why there were concerns that building the pipeline could damage the environment.

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

(ii) In some places the pipeline was raised above the ground. Suggest **two** reasons why the pipeline was raised above the ground.

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

- (ii) Look at the table below, which shows the amount of tropical rainforest cleared in South America in four different years.

year	amount of tropical rainforest cleared / km ²
2003	25 247
2006	14 109
2009	7 464
2012	4 571

Calculate the difference between the amount of tropical rainforest cleared in 2003 and 2012.

Space for working.

..... km² [1]

- (iii) Describe the trend in the amount of rainforest cleared in South America. Use data from the table to support your answer.

.....

 [2]

- (iv) Suggest a reason to explain the trend identified in (b)(iii).

.....
 [1]

- (c) (i) Suggest how deforestation can increase global warming.

.....

 [3]

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