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2662605326

ENVIRONMENTAL MANAGEMENT **0680/11**

Paper 1 Theory **October/November 2023**

1 hour 45 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages.

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Section A

1 **(a)** State **three** processes that add carbon to the atmosphere.

1 .....

2 .....

3 .....

[3]

(b) State **three** processes that add water to the atmosphere.

1 .....

2 .....

3 .....

[3]

[Total: 6]

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2 Smog is one type of air pollution.

(a) State the name of **one** type of compound that is responsible for smog.

..... [1]

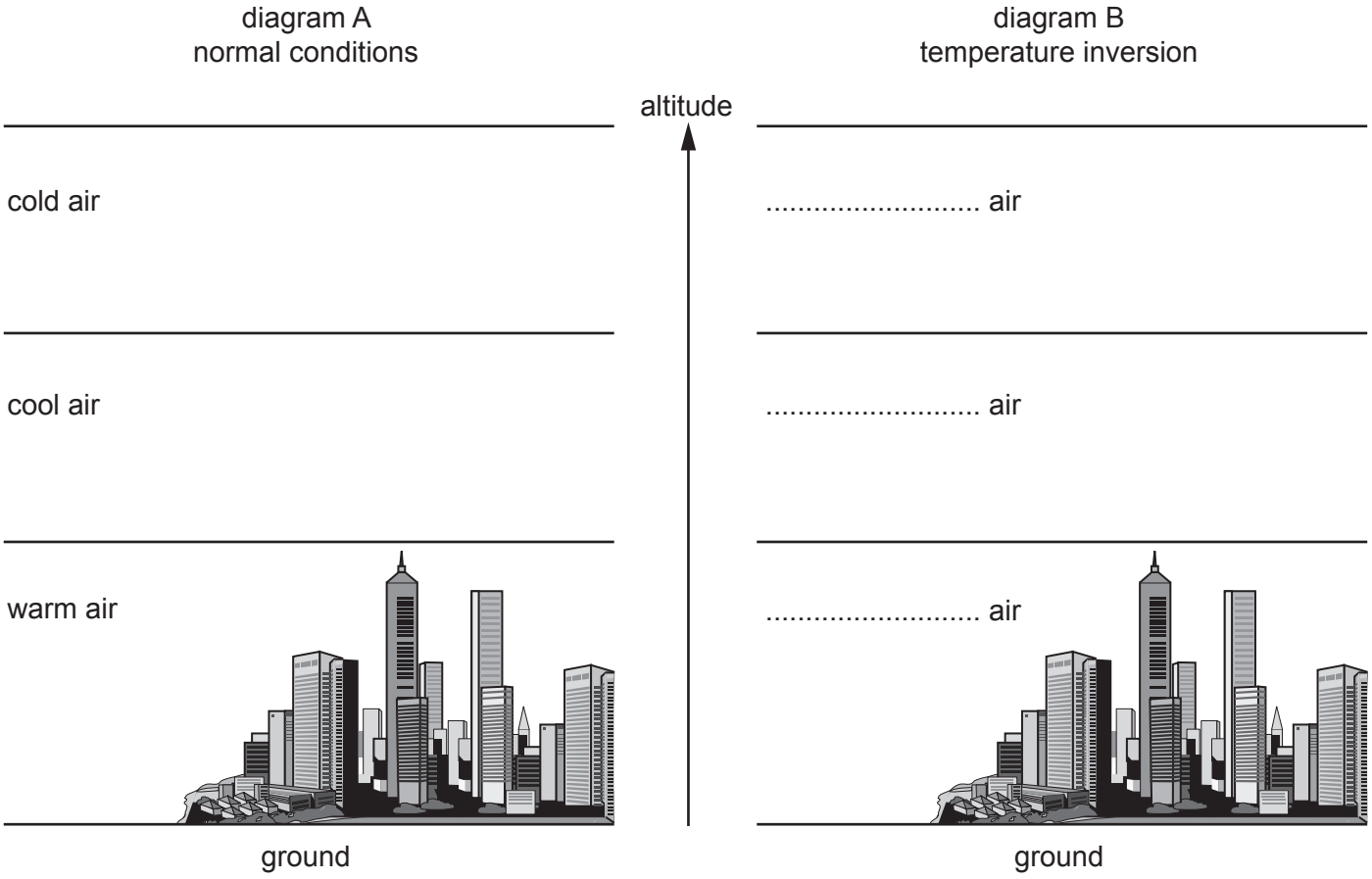
(b) State **one** effect of smog on human health that can cause an early death.

..... [1]

The impact of smog is increased during a temperature inversion.

Diagram A shows the temperature of the troposphere at different altitudes during normal conditions.

Diagram B shows the temperature of the troposphere at different altitudes during a temperature inversion. Diagram B is **not** complete.



(c) Complete diagram B using the words in the box.

Each word can be used once, more than once or not at all.

cold	**cool**	**warm**

[2]

[Total: 4]

3 **(a)** Define the terms:

habitat .....

.....

niche. .....

.....

[2]

(b) **(i)** Draw a pyramid of energy for primary consumers, producers, secondary consumers and tertiary consumers.

[2]

(ii) State the source of energy for a producer.

..... [1]

[Total: 5]

4 Tsunamis are a natural hazard.

(a) The drawing shows a sign used in areas at risk from tsunamis.



Suggest reasons why this sign is used in areas at risk from tsunamis.

.....

.....

.....

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.....

..... [3]

(b) One impact of a tsunami is the contamination of water.

Explain why this is a danger to people.

.....

.....

.....

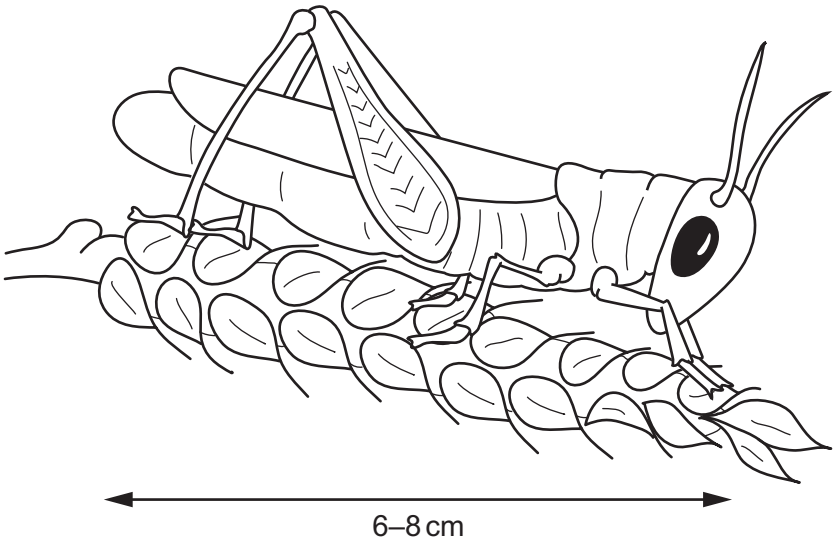
..... [2]

[Total: 5]

Section B

5 A student reads an internet article about a type of insect called a locust.

Locusts



Locusts complete their life cycle every 8 weeks. Locusts eat crops, trees and grass.

Very large numbers of locusts in a group are called a swarm. A single swarm can travel 145 km a day and contain up to 80 million locusts.

Locust swarms are a major threat to agriculture. One locust swarm can eat the same amount of food per day as 35 000 people.

In April 2020, 23 countries were affected by locust swarms. Scientists stated that 0.9 million km^2 of farmland in Africa was at risk from locust swarms.

(a) The total area of Africa is 30.37 million km^2.

Calculate the percentage of land in Africa that was farmland at risk from locust swarms in April 2020.

Give your answer to **one** decimal place.

.....% [2]

(b) One strategy for reducing the impact of locust swarms is to hand pick individual locusts from crops. This is done at night when the locusts are resting.

(i) Suggest **two** limitations of this strategy.

1 .....

.....

2 .....

.....

[2]

(ii) The hand-picked locusts are crushed and dried. They are then used as animal feed.

Suggest how this can benefit farmers.

.....

..... [1]

(c) Another strategy for controlling locust swarms is spraying them with insecticide.

Describe **two** impacts of the overuse of insecticides.

1 .....

.....

2 .....

.....

[2]

(d) The Emergency Locust Response Program (ELRP) is a fund of $500 million to support countries affected by locust swarms.

Suggest ways the ELRP can support countries affected by locust swarms.

.....

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..... [4]

(e) Locust populations increase after rainfall and in warm weather.

Suggest reasons why locust populations may increase in the future.

.....

.....

.....

..... [2]

[Total: 13]

6 The photograph shows wind turbines used to generate electricity.



(a) Suggest reasons why some people do **not** want wind turbines to be built.

.....

.....

.....

..... [2]

(b) The table shows the annual electricity generated by three different wind turbines for a four-year period.

turbine	annual electricity generated / megawatt-hours			
	2019	**2020**	**2021**	**2022**
1	3600	3100	2800	2000
2	2800	2700	2000	1800
3	4100	3800	3600	0

(i) Suggest a reason for the value for turbine 3 in 2022.

.....

..... [1]

(ii) Calculate the average annual electricity generated by turbine 2.

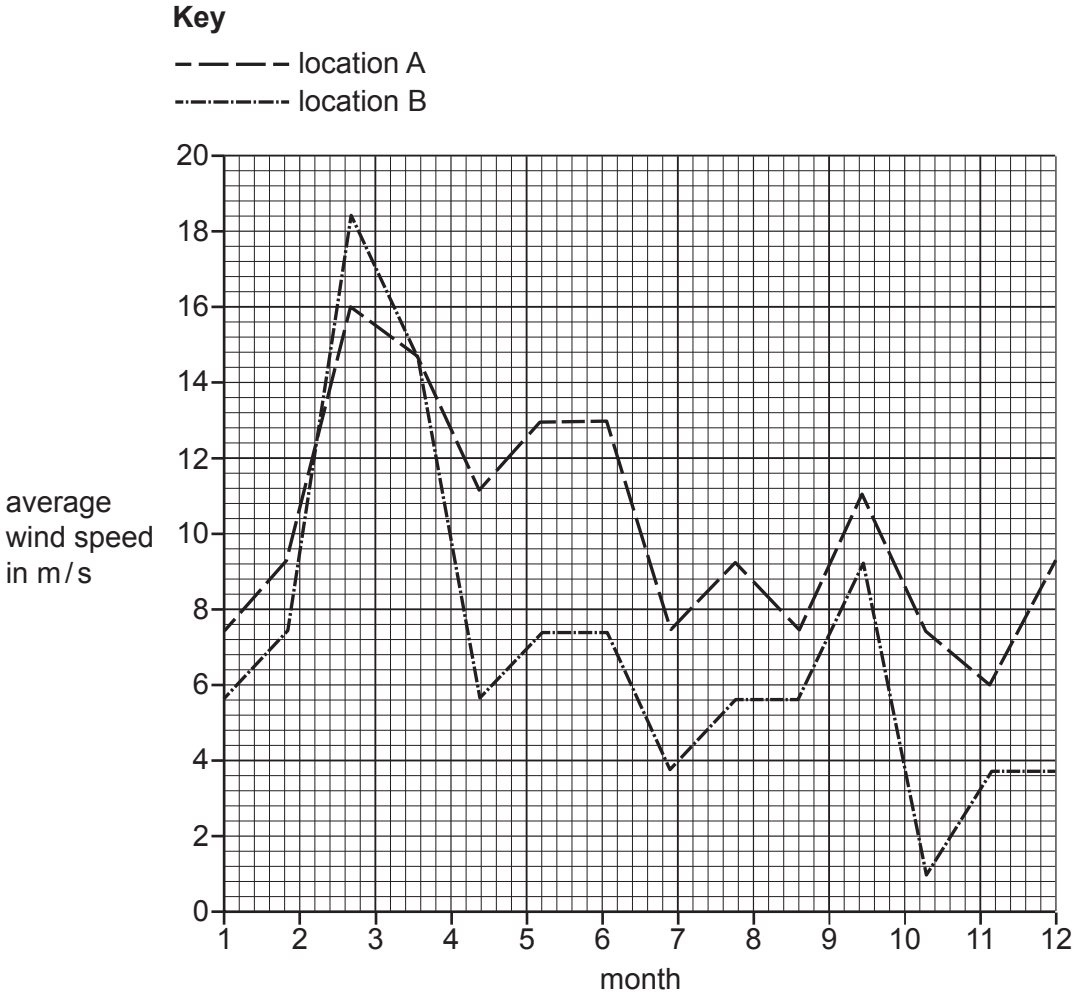
..... megawatt-hours [1]

(iii) State what can be concluded about the annual electricity generated by the three wind turbines over the four-year period.

..... [1]

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(c) The graph shows the average wind speed at two locations, A and B.



(i) Calculate the range for the average wind speed at location A.

..... m/s [1]

(ii) Use the data to suggest **one** reason why location A is more suitable than location B for a wind turbine.

.....

..... [1]

[Total: 7]

7 **(a)** The table shows the total mass of plastic waste produced and the mass of plastic waste disposed of by three strategies in the United States from 1980 to 2018.

		total mass of plastic waste / thousand tonnes			
		produced	**disposed of by recycling**	**disposed of by burning**	**disposed of by landfill**
year	**1980**	6196	18	127	6051
	1990	15540	336	2703	12501
	2000	23179	1023	4103	17016
	2010	28485	2268	4110	22107
	2018	32368	2803	5098	24467

(i) Suggest **one** reason why the total mass of plastic waste produced in the United States increased between 1980 and 2018.

.....

..... [1]

(ii) Compare the trends for the different strategies of plastic waste disposal.

.....

.....

.....

.....

.....

..... [3]

(iii) The data for 2000 show that the total mass of plastic waste produced was greater than the mass of plastic waste disposed of by the three strategies.

Suggest **one** reason for this difference.

.....

..... [1]

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(b) Some plastic waste is washed into the ocean from landfill sites.

State **three** ways in which plastic waste pollution has an impact in the oceans.

.....

.....

.....

.....

.....

..... [3]

[Total: 8]

8 The photograph shows an area of land where trees have been removed.



(a) Suggest **three** reasons for removing trees from an area of land.

1 .....

2 .....

3 .....

[3]

(b) Explain the impacts of deforestation.

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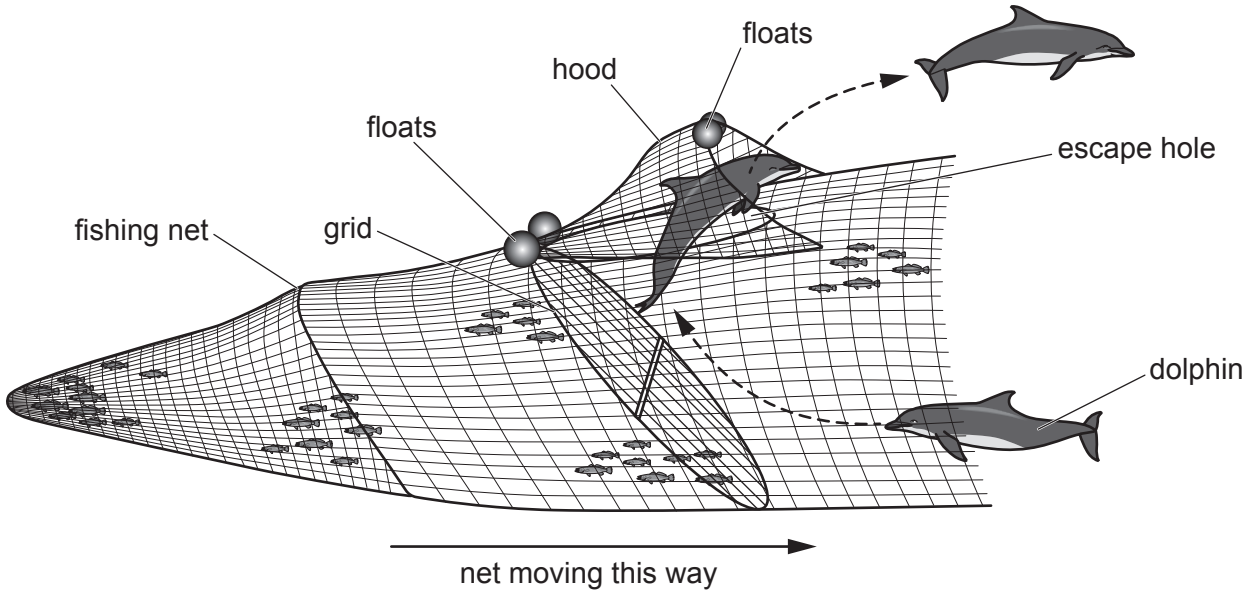
..... [7]

[Total: 10]

9 Dolphins can be caught in the nets of fishing boats.

Some nets are fitted with a dolphin exclusion device (DED) to allow dolphins to escape.

The diagram shows a DED.



Key

- - - - - ► direction of dolphin movement

(a) Use the diagram to explain how dolphins escape from a net fitted with a DED.

.....

.....

.....

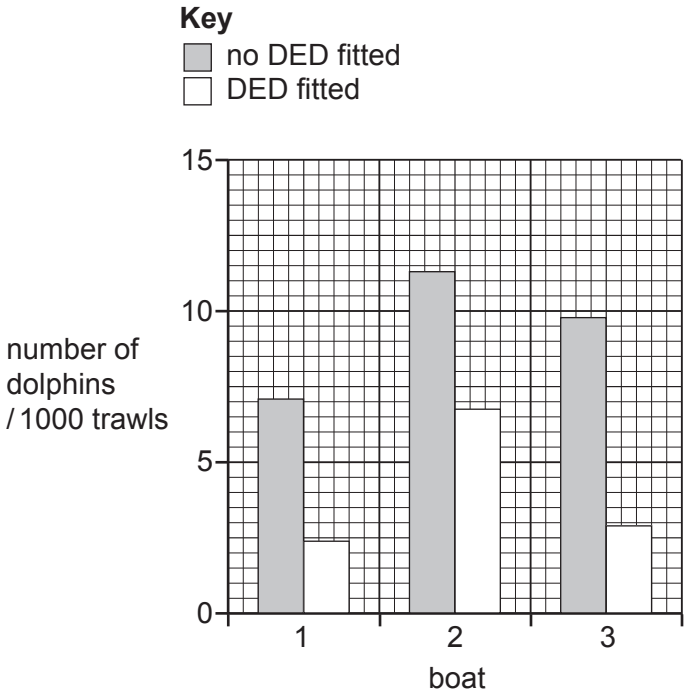
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..... [3]

(b) The bar chart shows the average number of dolphins caught per 1000 trawls for three different boats. A trawl is each time a fishing net is used.

The data shows the average number of dolphins caught before and after a DED was fitted.



(i) State which boat caught the most dolphins.

..... [1]

(ii) Suggest a suitable conclusion for this data.

.....

..... [1]

(c) Using different net types and mesh sizes are strategies for reducing the impact of overfishing.

State **three** other strategies to reduce overfishing.

1 .....

2 .....

3 .....

[3]

[Total: 8]

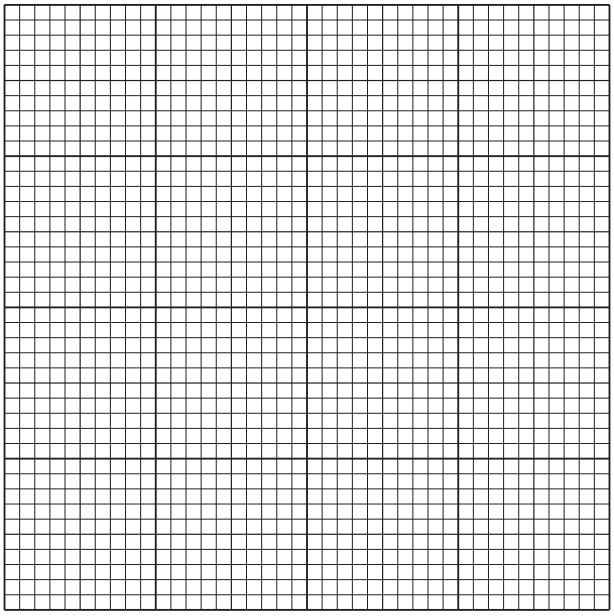
10 Cement is a building material.

(a) The table shows the percentage of different resources used to make cement.

resource	percentage
lime	65.0
silica	.....
aluminium oxide	4.5
other	10.5

(i) Complete the table to show the percentage of silica used to make cement. [1]

(ii) Plot a bar chart to show the percentage of resources used to make cement.



[4]

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(b) Limestone is used to produce the lime to make cement.

(i) Limestone is heated to a very high temperature to produce lime. The process produces large volumes of carbon dioxide.

Suggest disadvantages of this process.

.....

.....

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..... [2]

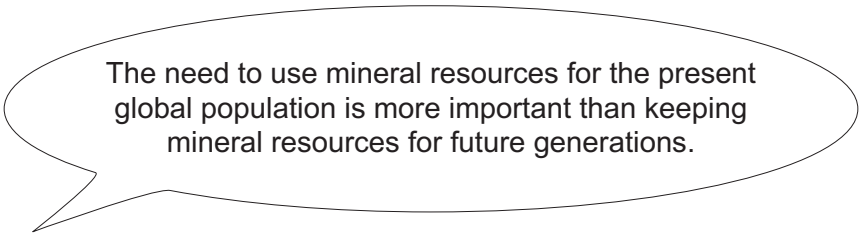
(ii) Limestone is a sedimentary rock.

Tick (✓) all the boxes that describe limestone rock.

rarely contains fossils	☐
often contains crystals	☐
permeable	☐
erodes in acid rain	☐

[1]

(c) A student says:



To what extent do you agree with this statement? Give reasons for your answer.

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..... [6]

[Total: 14]

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