

Cambridge O Level

CANDIDATE
NAME

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ENVIRONMENTAL MANAGEMENT

5014/01

Paper 1 Principles of Environmental Management

For examination from 2027

SPECIMEN PAPER

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. Do **not** use correction fluid or tape.
- 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 **16** pages. Any blank pages are indicated.

- 1 (a) Figure 1.1 represents the rock cycle.

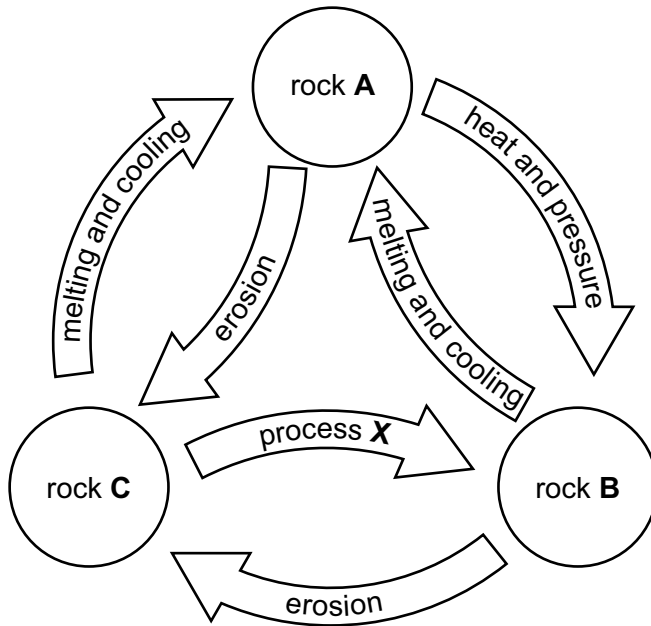


Figure 1.1

- (i) Identify the rock, **A**, **B** or **C**, that represents igneous rocks in Figure 1.1.

..... [1]

- (ii) In Figure 1.1, process **X** changes rock **C** into rock **B**.

Circle the correct description of process **X**.

erosion

heat and pressure

melting and cooling

[1]

(b) Figure 1.2 shows terms used in the rock cycle and their descriptions.

Draw **one** line from each term to its correct description.

One line has been done for you.

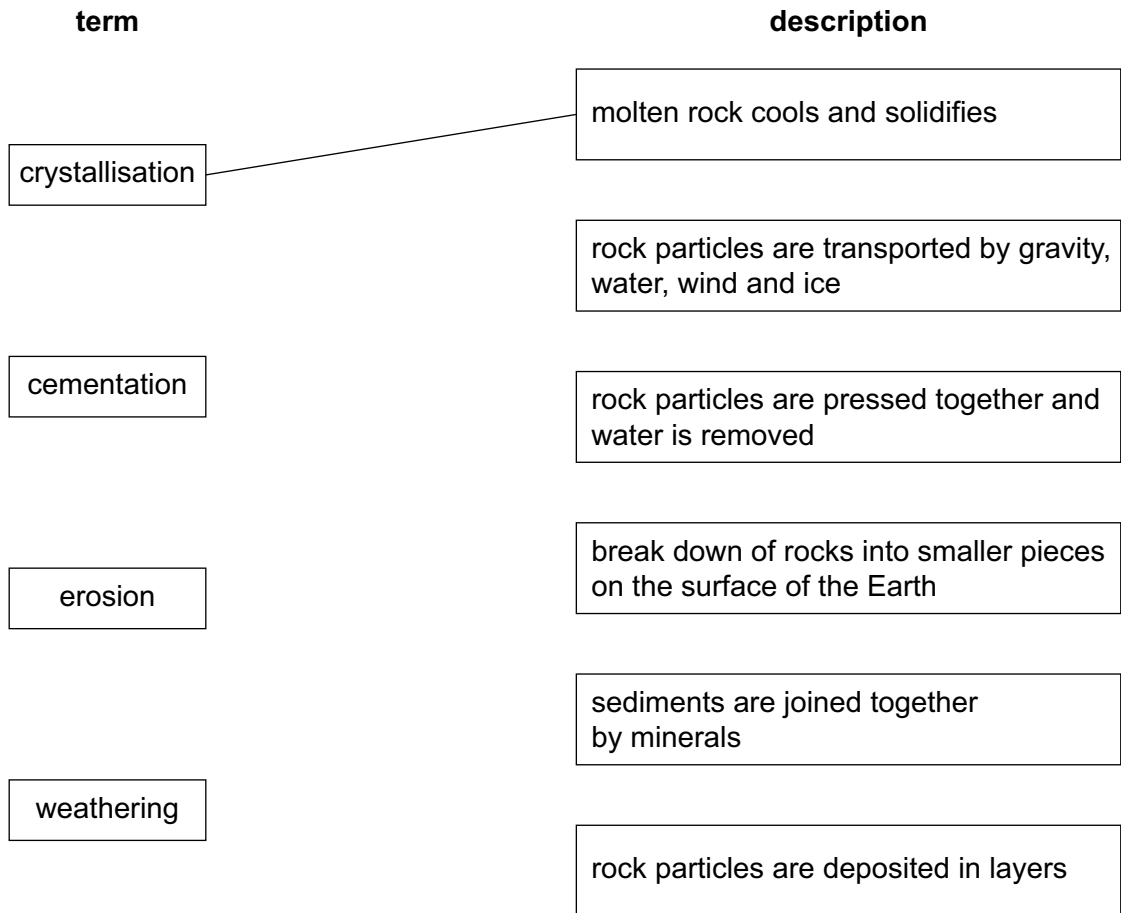


Figure 1.2

[3]

(c) Most sedimentary rocks are permeable.

(i) Define permeability.

.....

.....

.....

..... [2]

(ii) Name a sedimentary rock that is:

permeable

impermeable

[2]

(d) The African thistle plant, *Berkheya coddii*, is used for the biological extraction of minerals.

(i) Describe how plants are used for the biological extraction of minerals.

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

(ii) Suggest **two** limitations of using plants for the biological extraction of minerals.

1
.....
2
..... [2]

[Total: 14]

2 (a) Figure 2.1 shows part of the water cycle.

key

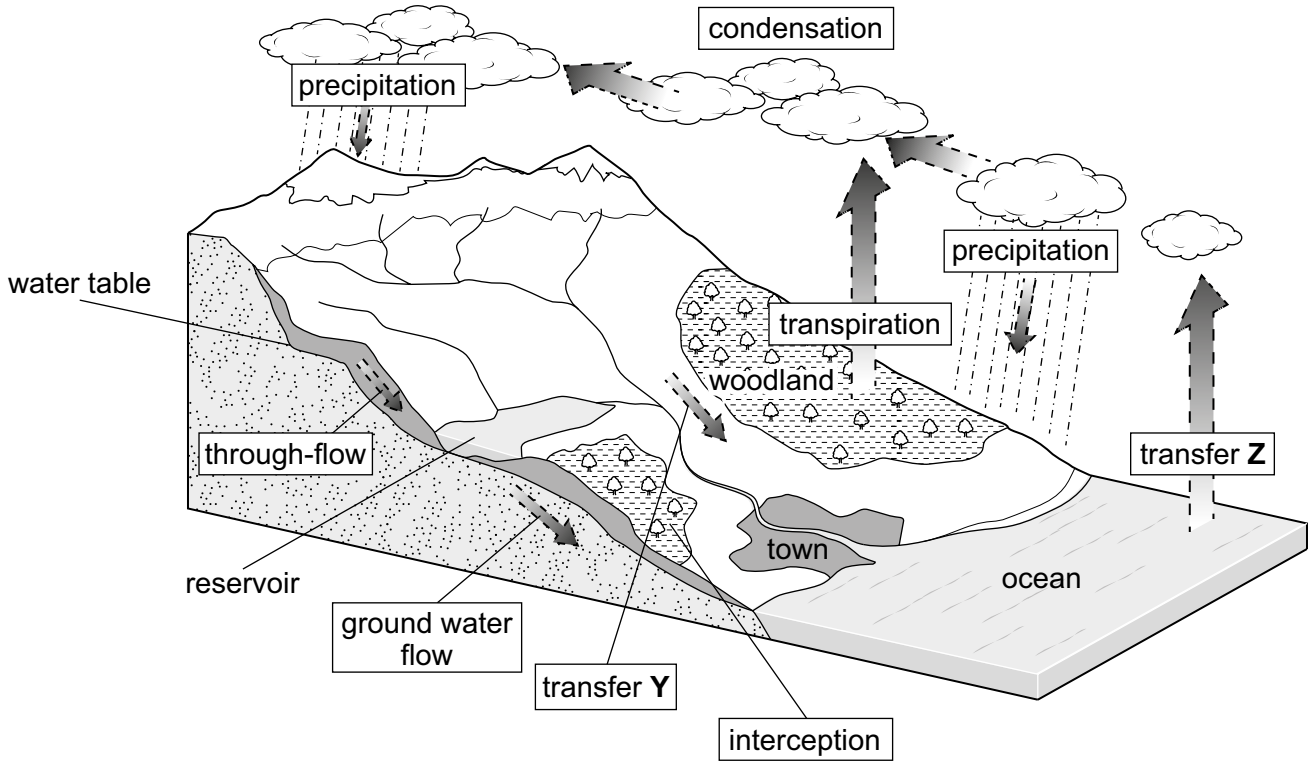


Figure 2.1

(i) In Figure 2.1, identify:

transfer Y

transfer Z

[2]

(ii) Suggest how planting trees affects interception.

Give a reason for your answer.

.....

[2]

(b) The oceans are a store of water.

Desalination makes sea water potable.

(i) Define potable water.

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

(ii) Distillation is one type of desalination.

Describe the process of distillation.

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

(iii) Name **one** other type of desalination.

..... [1]

(iv) Discuss the benefits and limitations of desalination.

.....

.....

.....

.....

.....

.....

.....

.....

.....

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.....

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.....

.....

.....

.....

..... [6]

[Total: 15]

3 (a) Figure 3.1 shows the world population pyramid in 2023.

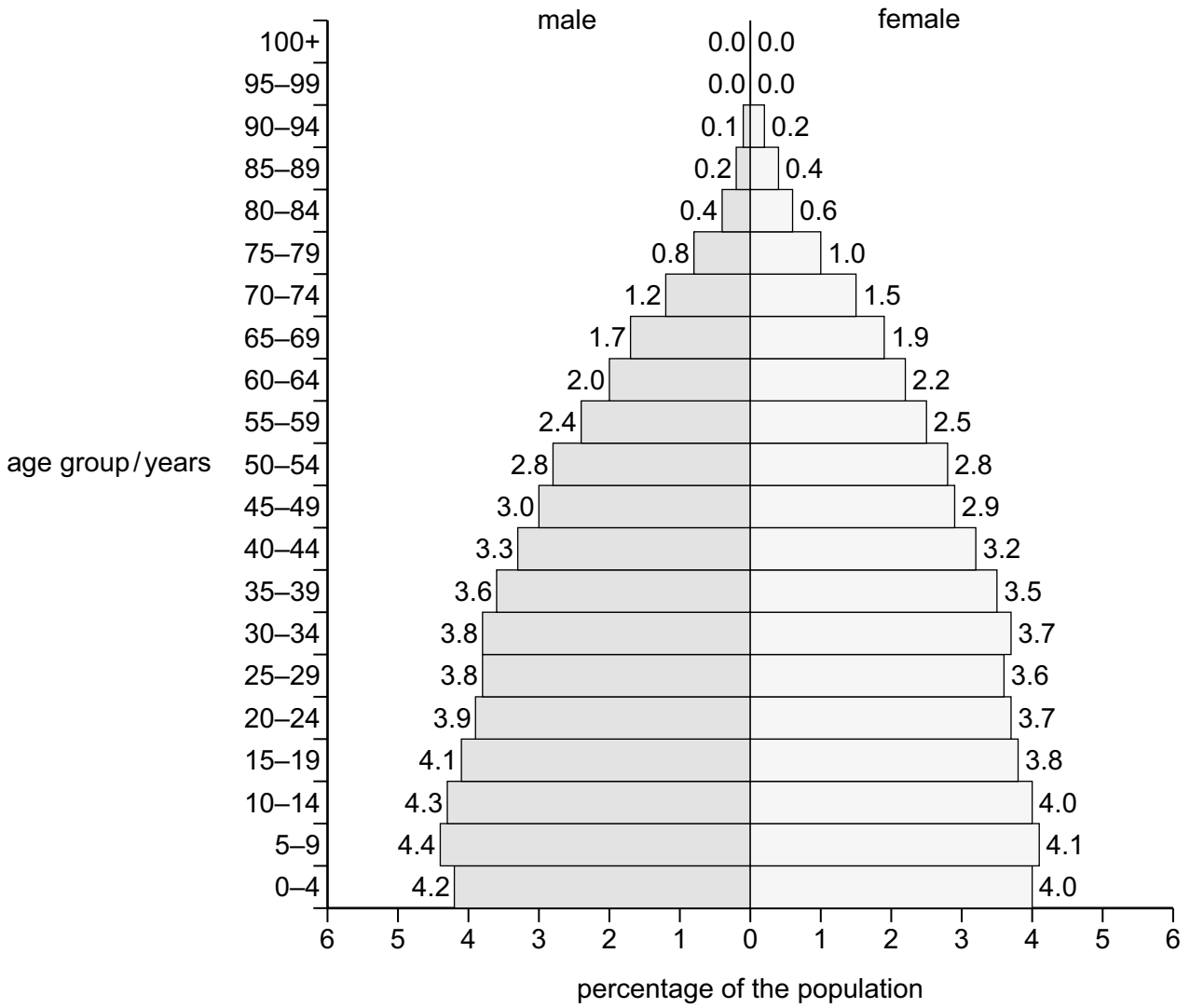


Figure 3.1

(i) State the percentage of the world population that is over 74 years of age in 2023.

.....% [1]

(ii) Suggest why the percentage values in the pyramid in Figure 3.1 do **not** total 100%.

.....
 [1]

(iii) Use Figure 3.1 to compare the world population of males to the world population of females in 2023.

.....

.....

.....

.....

.....

.....

..... [3]

(b) The population pyramids for low-income countries (LICs) and high-income countries (HICs) are different.

Complete Table 3.1.

Tick (✓) to show if a description is true or false.

Table 3.1

description	tick (✓) if true	tick (✓) if false
LICs have a wider base than HICs.		
HICs have a smaller percentage of people in the working population than LICs.		
LICs have a smaller percentage of elderly dependants than HICs.		

[2]

(c) State **three** strategies for managing human population.

1

2

3

[3]

[Total: 10]

4 (a) Energy resources are classified as non-finite or finite.

Circle all the non-finite resources in the list.

biogas

geothermal power

nuclear power using uranium

solar power

wood

[2]

(b) Bioethanol is used to generate electricity.

(i) Describe how bioethanol is used to generate electricity.

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

(ii) Describe **three** limitations of using bioethanol to generate electricity.

1
.....
2
.....
3
..... [3]

(c) Scientists predict that the mean global temperature will increase.

- (i) One group of scientists predicts that the mean global temperature in 2033 will increase by 1.5 °C and that the mean global temperature in 2100 will increase by 5.4 °C.

Calculate the mean annual increase in global temperature between 2033 and 2100.

Give your answer to **two** significant figures.

..... °C [3]

- (ii) Explain **two** ways the predicted increase in mean global temperature will affect the demand for energy.

1

.....

.....

2

.....

.....

[2]

- (iii) Most scientists predict global temperature change as a range of values.

Suggest **two** reasons why a range of temperatures is predicted and **not** an actual value.

1

.....

2

.....


[2]

[Total: 15]

- 5 (a) Figure 5.1 shows the global production of non-biodegradable bioplastics and biodegradable bioplastics in 2021 and 2023.

key

 non-biodegradable bioplastics

 biodegradable bioplastics

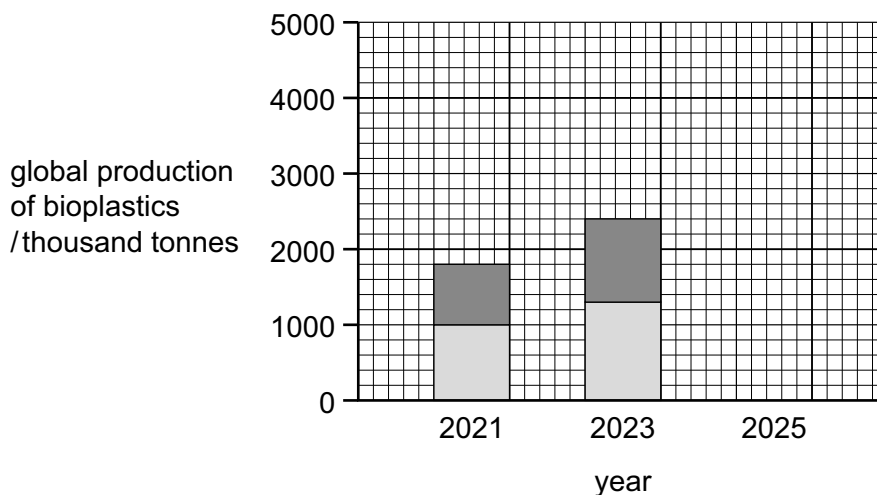


Figure 5.1

Table 5.1 shows the predicted global production of non-biodegradable bioplastics and biodegradable bioplastics in 2025.

Table 5.1

year	global production of non-biodegradable bioplastics / thousand tonnes	global production of biodegradable bioplastics / thousand tonnes
2025	2500	2400

- (i) Plot the data for 2025 on the grid in Figure 5.1. [2]
- (ii) Determine the mass of non-biodegradable bioplastics produced in 2023.

Give the unit.

mass = unit [3]

(b) Biodegradable bioplastics break down over time.

(i) Name **one** group of organisms that break down biodegradable bioplastics.

..... [1]

(ii) Name **two** products formed when biodegradable bioplastics break down.

1

2

[2]

(iii) Suggest **two** abiotic factors that affect the rate of break down of biodegradable bioplastics.

1

2

[2]

(c) Bioaccumulation and biomagnification are two impacts of plastic pollution on marine ecosystems.

Describe other impacts of plastic pollution on marine ecosystems.

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

[Total: 14]

6 (a) Figure 6.1 shows water hyacinth plants in a river ecosystem.



Figure 6.1

(i) Water hyacinth plants reduce the growth of other aquatic plants by competition.

Suggest **two** ways water hyacinth plants compete with other aquatic plants.

- 1
 -
 - 2
 -
- [2]

(ii) Water hyacinth plants are **not** native to this river ecosystem.

State the term for an organism living in an ecosystem they are **not** native to.

..... [1]

(b) Water hyacinth plants produce flowers above the surface of the water. These flowers are pollinated by two different methods.

(i) Suggest **two** ways that water hyacinth flowers are pollinated.

- 1
 - 2
- [2]

(ii) Complete the sentences about the events that occur in a flower after pollination.

After pollination, the flower is

This allows the formation of fruits and

[2]

(c) Figure 6.2 shows a food web containing water hyacinth plants.

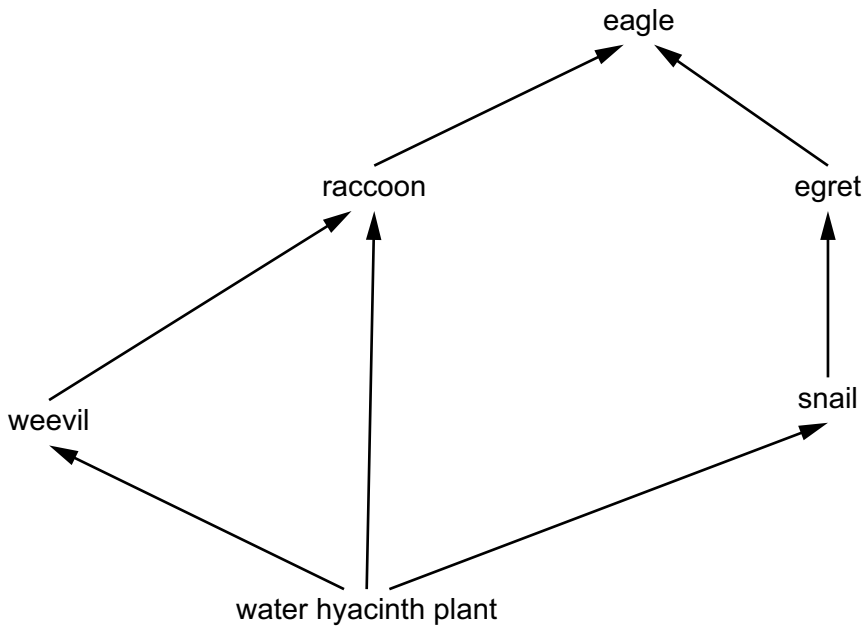


Figure 6.2

(i) Use Figure 6.2 to identify:

all the primary consumers

.....

the organism that **only** feeds as a secondary consumer

.....

the organism that feeds at trophic levels two and three

.....

[3]

(ii) The snails contain 100 units of energy.

Complete Figure 6.3 to show the units of energy in the food chain.

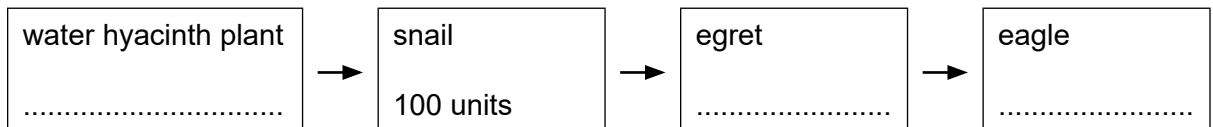


Figure 6.3

[2]

[Total: 12]

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Question 6 © Ref: MPAA33: Muhammad Mostafiqur Rahman / Alamy Stock Photo; *A cargo vessels cut through water hyacinth growth in the Burhiganga River at Keraniganj. Dhaka, Bangladesh*; www.alamy.com

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