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Environmental systems and societies
Standard level
Paper 2

4 May 2026

Zone A morning | **Zone B** morning | **Zone C** morning

Session number

2 hours

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Instructions to students

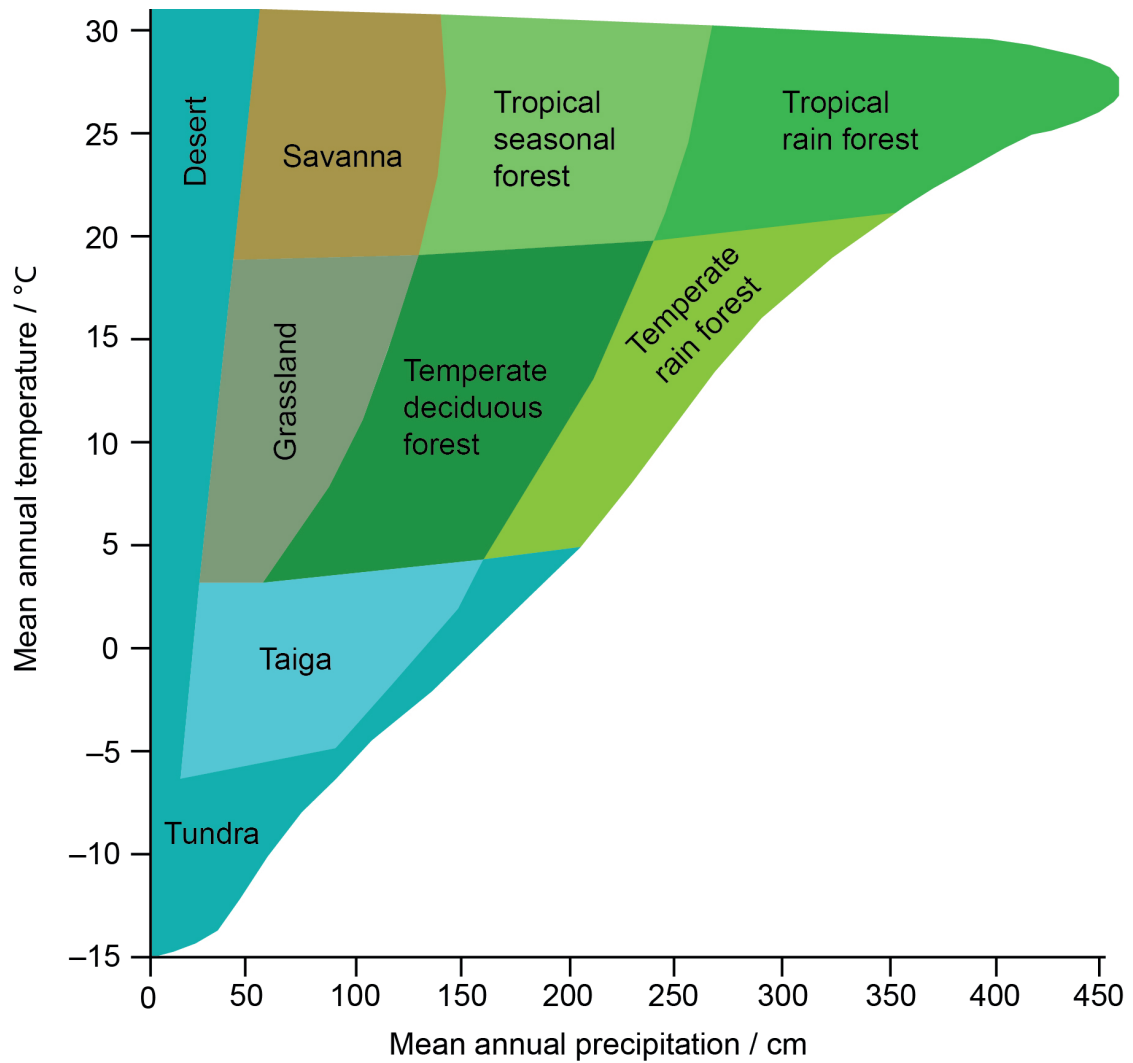
- Write your session number in the boxes above.
- Do not open this examination paper until instructed to do so.
- Section A: answer all questions.
- Section B: answer one question.
- Answers must be written within the answer boxes provided.
- A calculator is required for this paper.
- The maximum mark for this examination paper is **[60 marks]**.



Section A

Answer **all** questions. Answers must be written within the answer boxes provided.

Figure 1: A Whittaker biome diagram



1. (a) (i) Using **Figure 1**, identify the biome with a mean annual precipitation of 100 cm and a mean annual temperature of 0 °C.

[1]

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- (ii) With reference to **Figure 1**, distinguish between the climate conditions of a desert biome and a tundra biome.

[2]

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- (b) With reference to **Figure 1**, outline why primary productivity is highest in the tropical rainforest.

[2]

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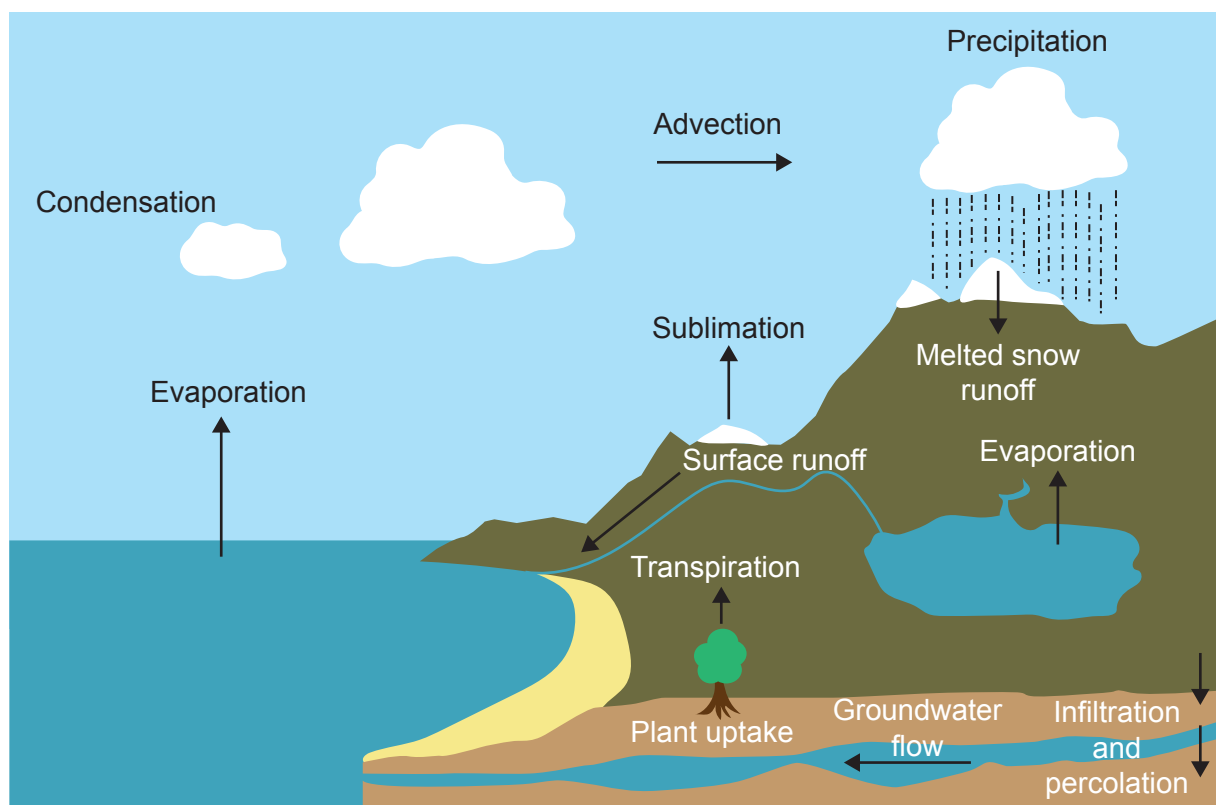
- (c) Explain how the tricellular model of atmospheric circulation influences the structure of biomes.

[4]

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Figure 2: The hydrological cycle



2. (a) Identify **one** transfer and **one** transformation in **Figure 2**. [2]

Transfer:	
Transformation:	

- (b) Outline how gravity contributes to the movement of water through the hydrological cycle in **Figure 2**. [2]

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- (c) Describe how deforestation can alter the flow of water in **Figure 2**. [2]

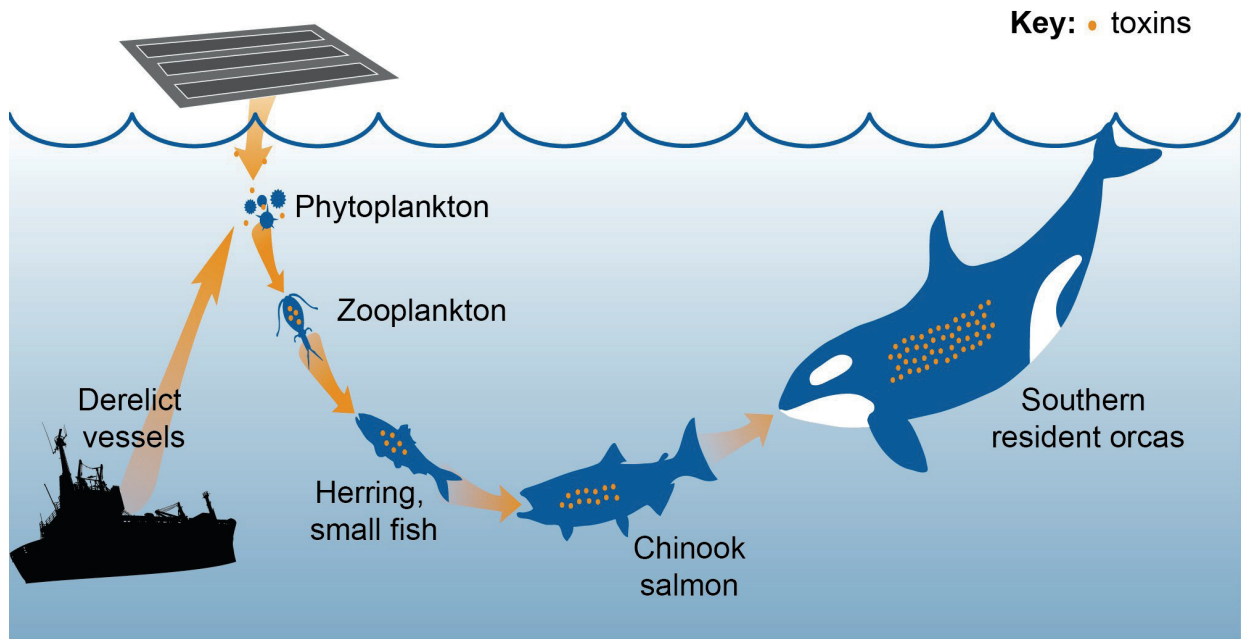
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- (d) Explain how the water resources shown in **Figure 2** could be further enhanced for human use. [4]

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Figure 3: Bioaccumulation of toxins in southern resident orcas in Puget Sound, Washington, the United States



3. (a) State the trophic level of the orca in **Figure 3**. [1]

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- (b) Outline why the food web in **Figure 3** has reached the maximum possible number of trophic levels. [2]

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- (c) State the difference between biomagnification and bioaccumulation. [1]

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- (d) Outline why pollutants such as polychlorinated biphenyl (PCB) could cause problems along the food chain shown in **Figure 3**. [2]

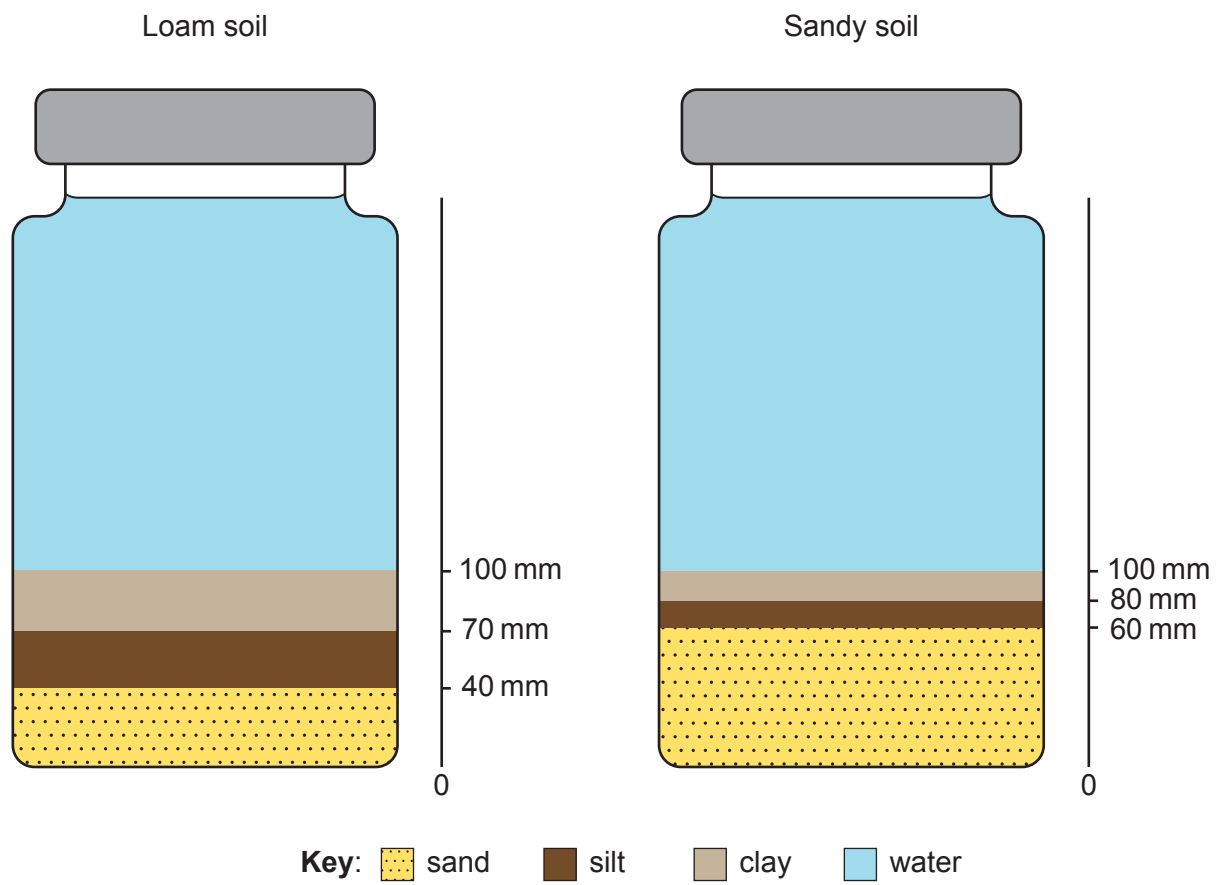
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- (e) Explain how plastic pollution could have adverse effects on the organisms shown in **Figure 3**. [3]

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Figure 4: Soil sedimentation test



4. (a) Using **Figure 4**, calculate the percentage of sand in the sandy soil. [1]

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- (b) Using **Figure 4**, calculate the percentage of silt in the loam soil. [1]

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- (c) Explain the role of humus in influencing the properties of a soil. [2]

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- (d) State **two** anthropogenic inputs to a managed soil system. [2]

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Figure 5: Electricity generation in Argentina by fuel type, 2017–2023

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5. (a) Using **Figure 5**, identify the year with the smallest proportion of electricity generated from oil.

[1]

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- (b) Calculate the percentage increase in total electricity generation between 2017 and 2021, using **Figure 5**.

[1]

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- (c) With reference to **Figure 5**, outline the trend in the generation of electricity from renewable sources between 2017 and 2021.

[2]

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- (d) Suggest **two** behavioural changes humans can make that may reduce the consumption of electricity.

[2]

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Section B

Answer **one** question. Answers must be written within the answer boxes provided.

6. (a) Outline **four** ways in which human activities can affect the resilience of a forest ecosystem. [4]
- (b) Evaluate the use of an herbivorous species as a management strategy to control an invasive alien plant species. [7]
- (c) To what extent can citizen science be used to accurately assess sustainability? [9]
7. (a) Outline how a city can be considered as a system. [4]
- (b) Explain the matter exchange between the atmospheric system and living organisms. [7]
- (c) To what extent is urban planning more affected by global warming than by population growth? [9]



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References:

- Figure 1:** GA. Dorias. NASA - Ames Research Center (2018). An Evolutionary Computation System Design Concept for Developing Controlled Closed Ecosystems: An Intelligent Systems Approach to Foster Gravitational Ecosystem Research for Developing Sustainable Communities in Space and on Earth.
<https://ntrs.nasa.gov/citations/20190000114>. Source adapted.
- Figure 3:** With permission from Defenders of Wildlife.
(Derelict vessels image) GDJ / Pixabay.
- Figure 4:** Angelo, E., 2022. Soil-Sedimentation-Test. [image online] Available at:
https://deepgreenpermaculture.com/soil-sedimentation-test/#google_vignette. Source adapted.

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Answers written on this page
will not be marked.



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