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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

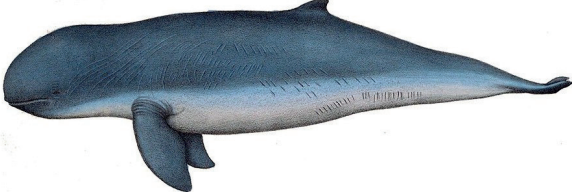
- Write your session number in the boxes above.
- Do not open this examination paper until instructed to do so.
- Section A: answer all questions.
- Section B: answer one question.
- Answers must be written within the answer boxes provided.
- A calculator is required for this paper.
- The maximum mark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



Section A

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

Figure 1: Information on river dolphins

	
Irrawaddy dolphin <i>Orcaella brevirostris</i>	Indus River dolphin <i>Platanista gangetica minor</i>
Conservation status: Critically endangered	Conservation status: Endangered
Location: Distributed throughout freshwater and coastal areas in Southeast Asia – Mekong River (Cambodia), Ayeyarwady River (Myanmar), Mahakam River (Indonesia)	Location: Indus River, South-Central Pakistan
Diet: Any type of fish	Diet: Fish and crustaceans
Threats: Entanglement in nets, dam development, reduced water flow into rivers	Threats: Pollution from untreated sewage, fertilizer run-off from nearby farms, habitat loss
Population: 250	Population: Approximately 1800

1. (a) State **one** feature, visible in **Figure 1**, that can be used to distinguish the Irrawaddy dolphin from the Indus River dolphin in a dichotomous key. [1]

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- (b) Suggest **one** factor that could be used to determine the conservation status of Irrawaddy dolphins. [1]

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(Question 1 continued)

- (c) Describe practical procedures for estimating the population size of Irrawaddy dolphins in the Mekong River.

[3]

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- (d) Outline the mechanism by which a species of river dolphin might evolve a greater tolerance to higher salinity.

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- (e) Explain how fertilizer run-off from nearby farms impacts the population of Indus River dolphins.

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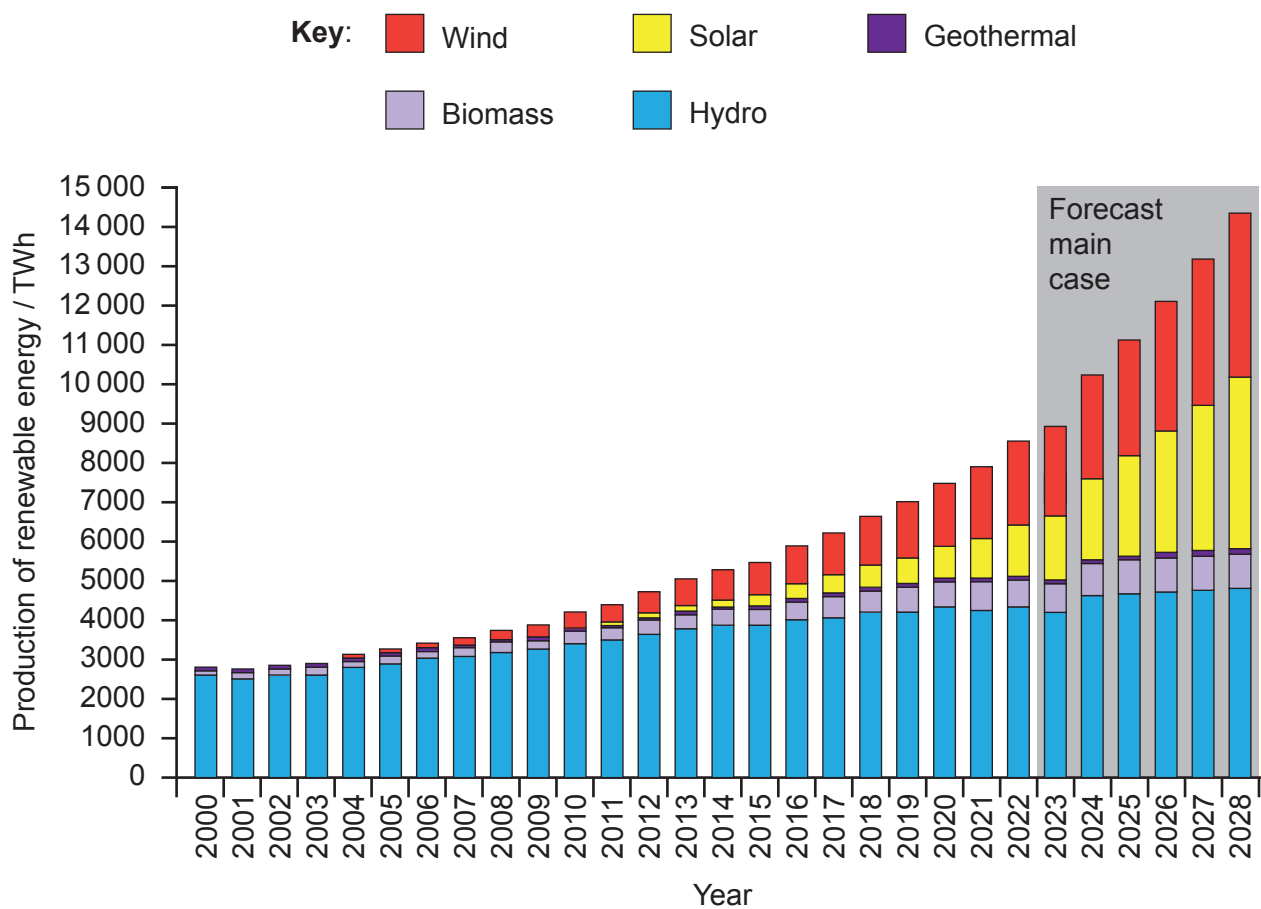
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Figure 2: Historical and forecast data of global renewable energy generation



2. (a) Calculate the percentage of energy generated from hydroelectricity in 2025. [1]

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- (b) Suggest **two** reasons why renewable energy sources are not the main source of energy in many countries. [2]

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- (c) State why energy production from some renewable sources creates the need for energy storage systems. [1]

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- (d) Describe why natural capital such as coal has a dynamic value. [2]

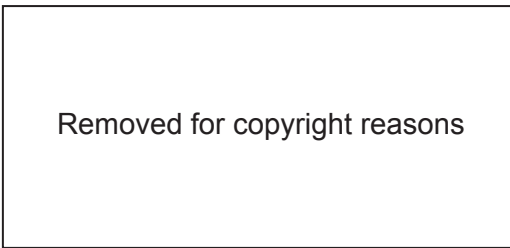
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- (e) Outline **one** energy conservation strategy to reduce consumption of energy. [1]

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Figure 3: Tundra–boreal biome shift



3. (a) Describe how trees in forests can act as stores, sinks and sources in the carbon cycle. [3]

Stores:	
Sinks:	
Sources:	

(This question continues on the following page)



(Question 3 continued)

- (b) Construct a feedback loop diagram showing the impact of rising global temperatures on ice cover. [4]

- (c) Outline how a **named** adaptation strategy contributes to the achievement of environmental justice. [2]

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- (d) Explain how forest fires (bushfires) contribute to an enhanced greenhouse effect. [2]

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- (e) Evaluate **one** strategy supported by technocentric-inclined societies to reduce the impact of human activities on the carbon cycle. [3]

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Figure 4: Coffee plantation in Minas Gerais, Brazil



One of the Brazilian states with the largest acreage for coffee plantations is Minas Gerais. **Table 1** shows climate data collected from the 12 weather stations in Minas Gerais.

Table 1

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average monthly temperature / °C	25.7	26.0	25.6	24.5	22.4	21.5	21.1	22.2	23.8	24.9	24.6	25.3
Precipitation amount / mm day⁻¹	6.4	5.3	4.9	2.8	1.5	0.8	0.7	0.7	1.3	3.1	6.3	6.5



4. (a) Calculate the temperature difference between the coldest and the hottest month. [1]

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- (b) In many coffee plantations, farmers add fertilizers to the coffee trees. This is usually done between May and September. Using the data in the table, explain why farmers add fertilizers at this time of year. [2]

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- (c) The increase in coffee plantations has led to deforestation in Brazil. Describe how deforestation can result in soil erosion. [3]

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- (d) As part of a sustainability programme, coffee farmers are encouraged to grow additional crops between coffee trees, a technique known as intercropping. Suggest **two** benefits for farmers implementing this technique. [2]

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Section B

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

5. (a) With reference to **named** examples, identify **four** areas of influence that have shaped the environmental movement over the last century. [4]
- (b) Explain how the concepts of footprints and biocapacity can be used to assess the sustainability of a human population. [7]
- (c) To what extent do the various concepts and models associated with human population dynamics enable us to predict human population growth? [9]
6. (a) Outline **four** conditions that determine the niche of a **named** species. [4]
- (b) Explain how bioaccumulation **and** biomagnification of toxins may occur in food chains. [7]
- (c) Evaluate the approaches to conservation likely to be adopted by different environmental perspectives and value systems. [9]



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References:

Figure 1: C. Berjeau. https://commons.wikimedia.org/wiki/File:Orcaella_brevirostris_1878.jpg. Public domain image. Source adapted.

NOAA Fisheries, n.d. *Indus River Dolphin*. [online] Available at: <https://www.fisheries.noaa.gov/species/indus-river-dolphin> [Accessed 12 August 2025]. Source adapted.

Figure 2: IEA, 2025. Renewable energy progress tracker. [online] Available at: <https://www.iea.org/data-and-statistics/data-tools/renewable-energy-progress-tracker> [Accessed 12 August 2025]. Licensed under CC BY 4.0 <https://creativecommons.org/licenses/by/4.0/deed.en>. Source adapted.

Figure 4: Alfribeiro, 2017. *Cefé plantation in Minas Gerais*. [image online] Available at: <https://www.gettyimages.co.uk/detail/photo/cef%C3%A9-plantation-in-minas-gerais-royalty-free-image/837859062?searchscope=image%2Cfilm&adppopup=true> [Accessed 1 September 2025]. Source adapted.



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