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Environmental systems and societies
Standard level
Paper 1

2 May 2024

Zone A afternoon | **Zone B** afternoon | **Zone C** afternoon

Candidate session number

1 hour

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Instructions to candidates

- Write your session number in the boxes above.
- Do not open this examination paper until instructed to do so.
- Answer all questions. Refer to the resource booklet which accompanies this question paper.
- Answers must be written within the answer boxes provided.
- A calculator is required for this paper.
- The maximum mark for this examination paper is **[35 marks]**.



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

1. (a) With reference to **Figure 1(e)**, identify **one** type of vegetation found within the ecosystems of the Cape Floristic Region. [1]

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- (b) With reference to **Figure 1(d)** and **Figure 1(e)**, outline why the Cape Floristic Region is high in plant diversity. [2]

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- (c) With reference to **Figure 1(e)**, calculate the percentage of plant species that are found only in the Cape Floristic Region. [1]

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- (d) State **one** service provided by the natural capital within the Cape Floristic Region. [1]

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2. (a) Explain why invasive species can lead to soil erosion. [3]

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(b) Suggest why the strategy shown in **Figure 2(c)** may be controversial. [1]

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(c) Outline the role of the king protea as a flagship species. [2]

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3. (a) Identify **one** advantage and **one** disadvantage in the design of the Table Mountain National Park. [2]

Advantage:
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Disadvantage:
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- (b) Explain why rates of productivity are high in coastal waters around the Cape Peninsula. [2]

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- (c) Identify **one** criterion used by the IUCN that may have contributed to the change in classification of the Table Mountain ghost frog from 'endangered' (1994) to 'critically endangered' (2004). [1]

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- (d) Describe how a named abiotic factor within the aquatic habitat of the Table Mountain ghost frog could be monitored. [2]

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4. (a) Suggest **two** reasons why the African penguin population at Boulders Beach has grown significantly since 1982. [2]

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- (b) Outline how climate change may impact the food supply for penguins around the southern African coast. [1]

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- (c) With reference to **Figure 4(b)**, outline why a decline in the killer whale population in the area may cause a decline in African penguin numbers. [1]

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5. (a) Outline **one** reason for the variation in the volume of water stored in dams, as shown in **Figure 5**. [1]

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- (b) Outline **one** reason for the variation in agricultural water use, as shown in **Figure 5**. [1]

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- (c) Outline **two** strategies that may have been used to reduce urban water use, as shown in **Figure 5**. [2]

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6. Evaluate how the planned changes in the energy supply, shown in **Figure 6**, are likely to influence carbon emissions in Cape Town. [3]

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