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Environmental systems and societies
Standard level
Paper 1

Friday 28 October 2022 (afternoon)

Candidate session number

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1 hour

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]**.



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Answers written on this page
will not be marked.



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

1. (a) Using **Figure 2(b)**, state the annual temperature range for Sapporo. [1]

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(b) Using **Figures 1(a), 2(b) and 2(c)**, identify **one** terrestrial biome found on Hokkaido. [1]

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(c) Using **Figures 2(c) and 3(b)**, outline **one** relationship between the location of Hokkaido's national parks and their elevation. [1]

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(d) With reference to **Figure 3(b)**, evaluate the design of Hokkaido's national parks as protected areas. [4]

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2. (a) With reference to **Figure 5**, state the trophic level of the red-crowned crane. [1]

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- (b) Outline the potential impact on the food web shown in **Figure 5** if the Hokkaido salamander becomes extinct. [2]

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- (c) (i) Using **Figure 6(b)**, identify the number of mature red-crowned cranes in 1952 and 2000. [1]

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- (ii) Calculate the average annual increase of mature red-crowned cranes between 1952 and 2000. [1]

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- (d) The IUCN uses criteria to classify a species as Endangered. With reference to **Figures 6(a)** and **6(b)**, list **two** criteria that were met by the red-crowned cranes in 2000. [2]

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(This question continues on the following page)



(Question 2 continued)

- (e) With reference to **Figure 6(a)**, explain why some conservationists disagree with changing the status of the red-crowned crane from Endangered to Vulnerable. [3]

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- 3. (a) Using **Figure 7(b)**, distinguish between the trends for the natural forests and coniferous forest monocultures. [1]

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- (b) Explain why coniferous forest monocultures have low resilience. [3]

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4. (a) Using the data in **Figure 8(a)**, calculate the natural increase rate for Hokkaido. [1]

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(b) Using **Figure 8(b)**, state Hokkaido's location on the demographic transition model. [1]

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(c) Describe **three** socio-economic factors which may have led to Hokkaido's low fertility rate. [3]

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5. (a) With reference to **Figures 9(a)** and **9(b)**, suggest **two** reasons for the differences between Hokkaido's potential and actual sources of electricity in 2017. [2]

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- (b) Outline **one** purpose of an Environmental Impact Assessment (EIA). [1]

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