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Environmental systems and societies
Standard level
Paper 1

5 May 2023

Zone A morning | **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) Identify **one** reason why in 2018 the life expectancy in Beijing was higher than the national average for China, as referred to in **Figure 3(a)**. [1]

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- (b) With reference to **Figure 3(b)**, identify a year in which the population growth rate is negative. [1]

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- (c) With reference to **Figure 3(c)**, explain **two** reasons for the changes in the under 30 age groups from 1950 to projections for 2050. [2]

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2. (a) With reference to the data in **Figure 5**, calculate the average annual increase in energy demand between 2008 and 2019 in billion kWh. [2]

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- (b) Describe **one** way in which the change in coal consumption between 2005 and 2018 referred to in **Figure 6(a)** was achieved. [1]

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3. (a) Outline **one** reason why $\text{PM}_{2.5}$ levels are highest during December as shown in **Figure 6(c)**. [1]

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- (b) Outline **one** reason for the seasonal changes in tropospheric ozone shown in **Figure 6(d)**. [1]

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- (c) State **one** advantage of having the safe levels of $\text{PM}_{2.5}$ and ozone established by international organizations, such as the World Health Organization (WHO), rather than by national governments. [1]

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4. With reference to the information in the resource booklet, explain how the problem of acid deposition is likely to have changed since 2004. [3]

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5. (a) With reference to **Figure 7**, identify **one** trend in the use of a named type of transport between 1999–2017. [1]

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- (b) With reference to **Figure 7**, suggest **two** reasons for the trends in the changing use of transport types between 1999–2017. [2]

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6. Outline **two** environmental advantages of ‘greening the city’ as illustrated in **Figure 8**. [2]

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7. (a) Outline **one** way in which a reduction in water usage per person as referred to in **Figure 9(a)** could have been achieved. [1]

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- (b) With reference to **Figures 9(a)** and **9(b)**, evaluate the South–North Water Diversion Project. [3]

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8. (a) With reference to **Figure 9(d)**, identify the year in which eutrophication was most likely to have occurred. [1]

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- (b) (i) Outline **one** advantage of using the data in **Figure 9(d)** compared to using a biotic index for assessing pollution. [1]

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- (ii) Outline **one** advantage of using a biotic index compared to using the data in **Figure 9(d)** for assessing pollution. [1]

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9. Explain why Beijing may want to stop the use of landfill for the disposal of solid domestic waste. [2]

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10. (a) With reference to **Figures 11(a)** and **(b)**, outline **one** advantage of Beijing Zoo's approach to conservation compared with that of Beijing Gardening and Greening Bureau. [1]

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- (b) With reference to **Figures 11(a)** and **(b)**, outline **one** advantage of Beijing Gardening and Greening Bureau's approach to conservation compared with that of Beijing Zoo. [1]

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- [6]



Please **do not** write on this page.

Answers written on this page
will not be marked.



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