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Environmental systems and societies
Standard level
Paper 2

13 November 2025

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

Candidate session number

2 hours

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Instructions to candidates

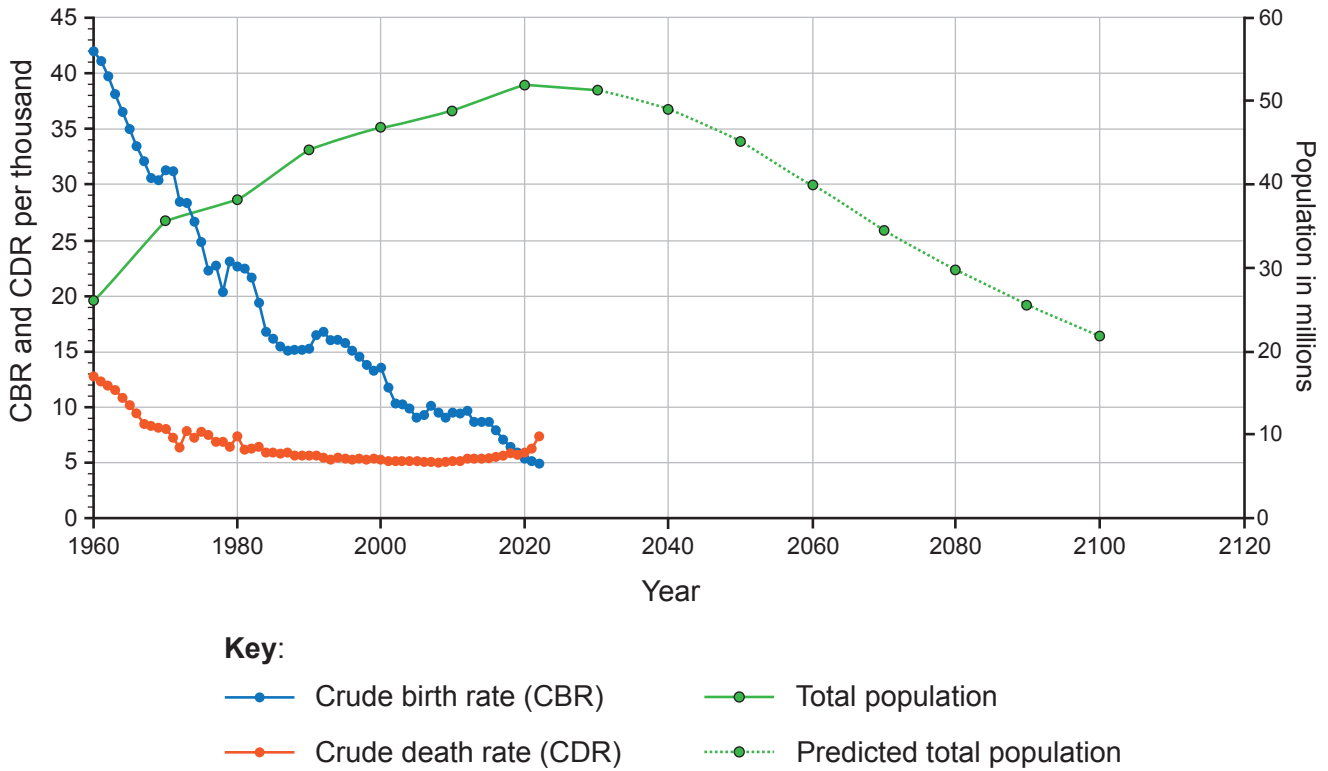
- Write your session number in the boxes above.
- Do not open this examination paper until instructed to do so.
- Section A: answer all questions.
- Section B: answer two questions.
- Answers must be written within the answer boxes provided.
- A calculator is required for this paper.
- The maximum mark for this examination paper is **[65 marks]**.



Section A

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

Figure 1: Crude birth rate, crude death rate, total population (1960–2024) and predicted total population (2025–2100) for South Korea



1. (a) Using **Figure 1**, state the crude birth rate (CBR) of South Korea in 1980 and 2024. [2]

Year	Crude birth rate
1980
2024

(b) Using **Figure 1**, calculate the natural increase rate (NIR) in 1980. [1]

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(Question 1 continued)

- (c) Explain which stage of the demographic transition model South Korea was in during 1980. [2]

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- (d) Outline **two** national development policies that might have contributed to the changes in the crude birth rates in South Korea between 1960 and 2024. [2]

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- (e) Sketch the shape of the age-gender pyramid for 2024 that would lead to the predicted total population changes from 2024 to 2100, as shown in **Figure 1**. [2]



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will not be marked.



Figure 2(a): Types and causes of soil degradation globally

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2. (a) Using **Figure 2(a)**, identify which cause of soil degradation makes up the largest percentage globally. [1]

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- (b) Outline **two** farming techniques that could reduce soil erosion. [2]

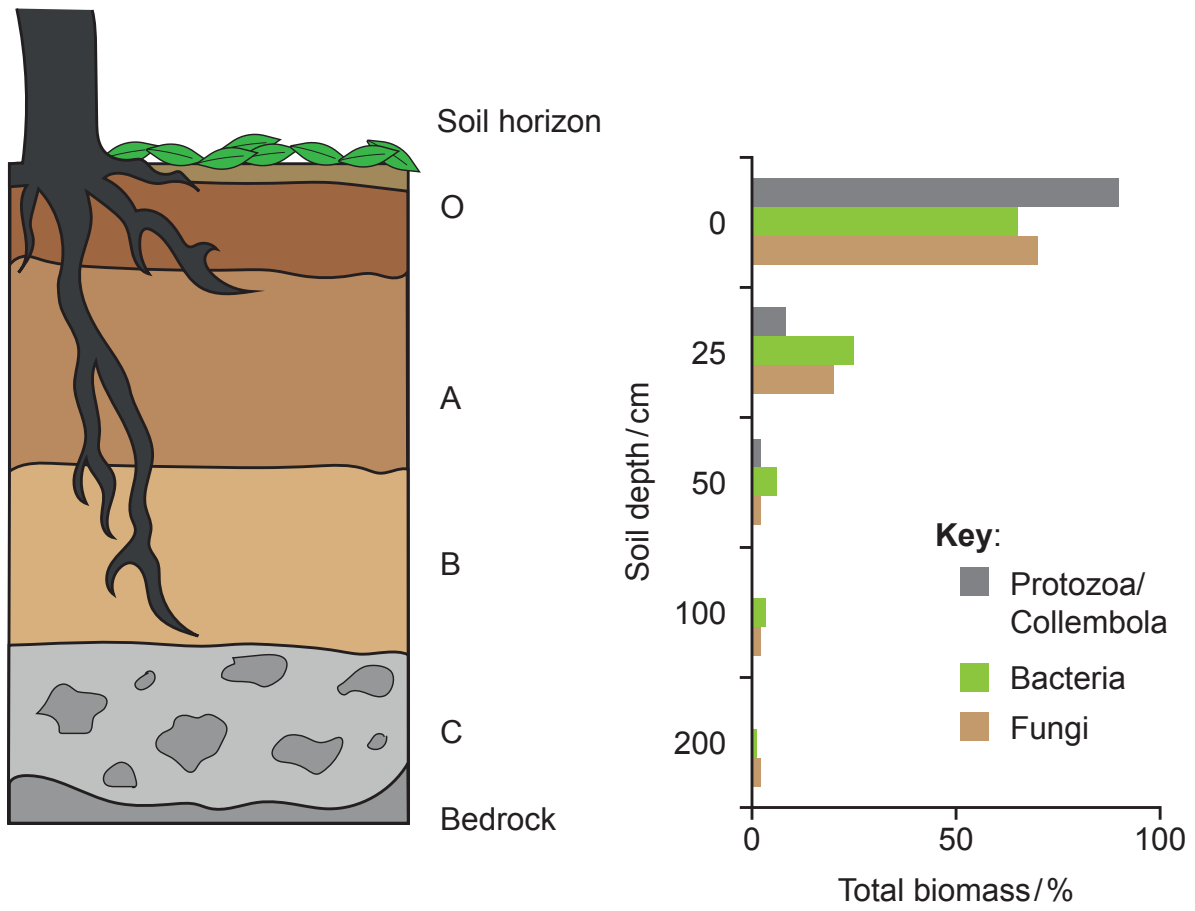
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(Question 2 continued)

Figure 2(b): Soil profile and the relative proportions of each type of microorganism at increasing depth



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(Question 2 continued)

(c) State the trend of microorganism biomass with increasing depth in **Figure 2(b)**. [1]

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(d) State **one** process that could reduce the mineral storage from the A horizon. [1]

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(e) Outline **one** role that microorganisms play in soil ecosystems. [1]

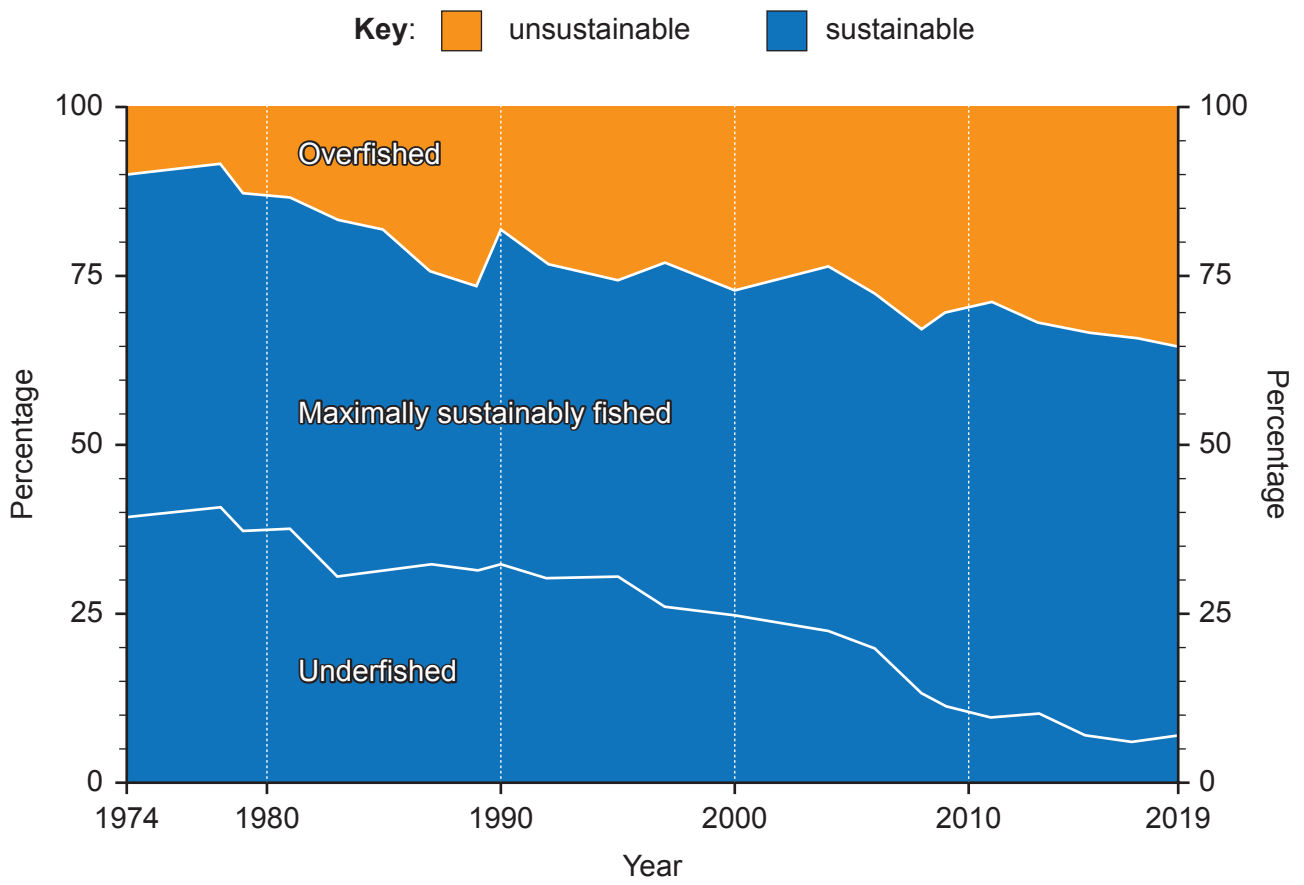
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(f) Explain how deforestation could impact soil quality. [3]

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Figure 3: Global trends in the world's marine capture fishery stocks, 1974-2019



3. (a) Using **Figure 3**, calculate the percentage difference between the marine capture fishery stock considered overfished in 1974 and 2019. [1]

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- (b) Outline **two** reasons for the change in overfished stock between 1974 and 2019, as shown in **Figure 3**. [2]

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- (c) Evaluate the potential value of aquaculture as a strategy to avoid the levels of unsustainable fishing as seen in 2019 in **Figure 3**. [4]

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Section B

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

4. (a) Outline **four** factors that contribute to an increase in tropospheric ozone. [4]
- (b) Evaluate **two** strategies that could be used to limit the release of pollutants that contribute to stratospheric ozone depletion. [7]
- (c) To what extent are different value systems effective in their approach to managing air quality? [9]
5. (a) Outline **two** advantages and **two** disadvantages of using DDT. [4]
- (b) Explain how a community can impact the quantity of its freshwater supply. [7]
- (c) The introduction of a species into an ecosystem could be considered a form of pollution. Discuss this statement. [9]
6. (a) Outline **four** factors that enable a human population to increase its terrestrial food production. [4]
- (b) Explain how human activities can impact the nitrogen cycle. [7]
- (c) To what extent is the sustainability of terrestrial food production systems influenced by soil degradation and soil management strategies? [9]
7. (a) Outline **two** advantages and **two** disadvantages of using a **named** renewable source of energy. [4]
- (b) Explain how the laws of thermodynamics apply to the flow of energy through ecosystems [7]
- (c) With reference to **named** examples, evaluate the waste management strategies adopted by different societies. [9]



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References:

- Figure 1** © 2024 by PopulationPyramid.net, made available under a Creative Commons license CC BY 3.0 IGO: <http://creativecommons.org/licenses/by/3.0/igo/>.
- Figure 2(b)** © 2014 Churchland and Grayston. Specificity of plant-microbe interactions in the tree mycorrhizosphere biome and consequences for soil C cycling. *Frontiers in microbiology* 5(261). <https://doi.org/10.3389/fmicb.2014.00261>. Licensed under CC BY 3.0. <https://creativecommons.org/licenses/by/3.0/>. Source adapted.
- Figure 3** FAO. 2022. *The State of World Fisheries and Aquaculture 2022. Towards Blue Transformation*. Rome, FAO. <https://doi.org/10.4060/cc0461en>.



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