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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

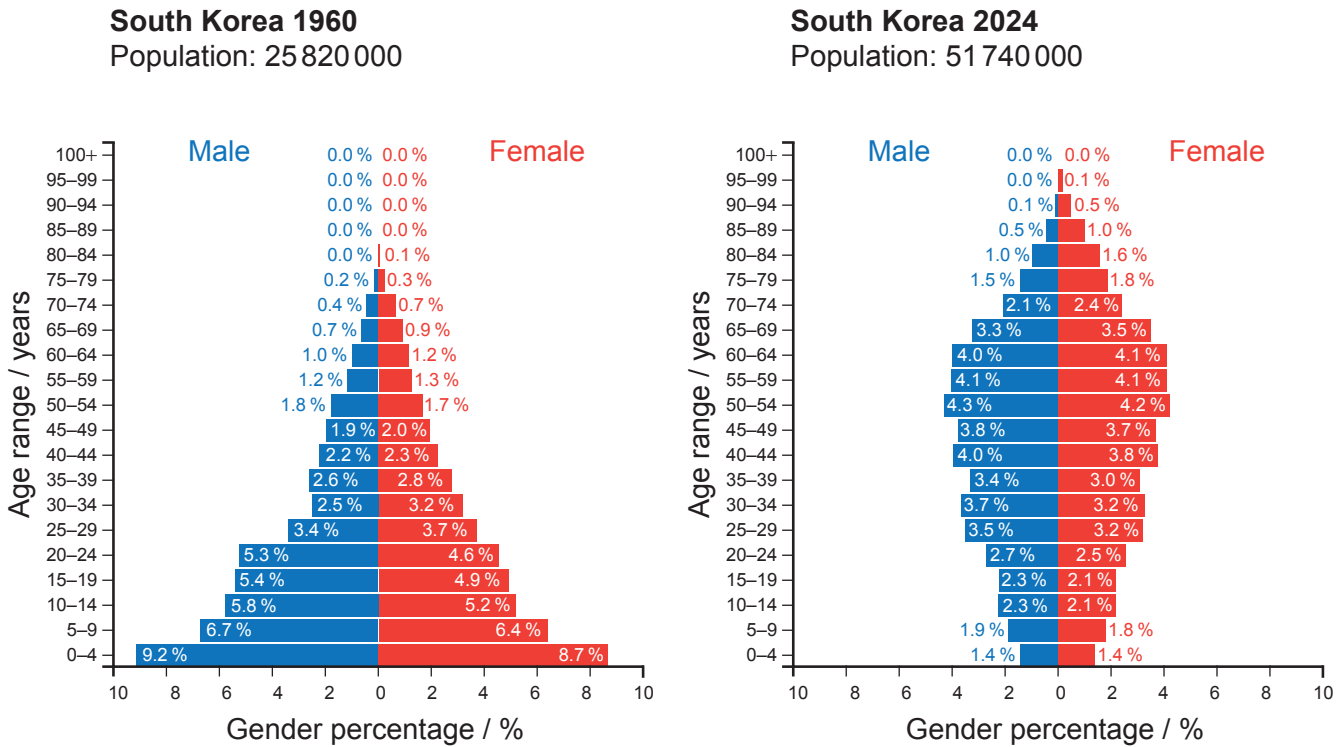
- Write your session number in the boxes above.
- Do not open this examination paper until instructed to do so.
- Section A: answer all questions.
- Section B: answer two questions.
- Answers must be written within the answer boxes provided.
- A calculator is required for this paper.
- The maximum mark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



Section A

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

Figure 1(a): Age-gender pyramid for the Republic of Korea (South Korea) in 1960 and 2024



1. (a) Using **Figure 1(a)**, identify which age range makes up the largest percentage of the population of South Korea in 1960 and 2024. [2]

| Year | Age range |
|------|-----------|
| 1960 | |
| 2024 | |

(b) Outline **two** national development policies that might have contributed to the changes shown in the pyramids from 1960 to 2024. [2]

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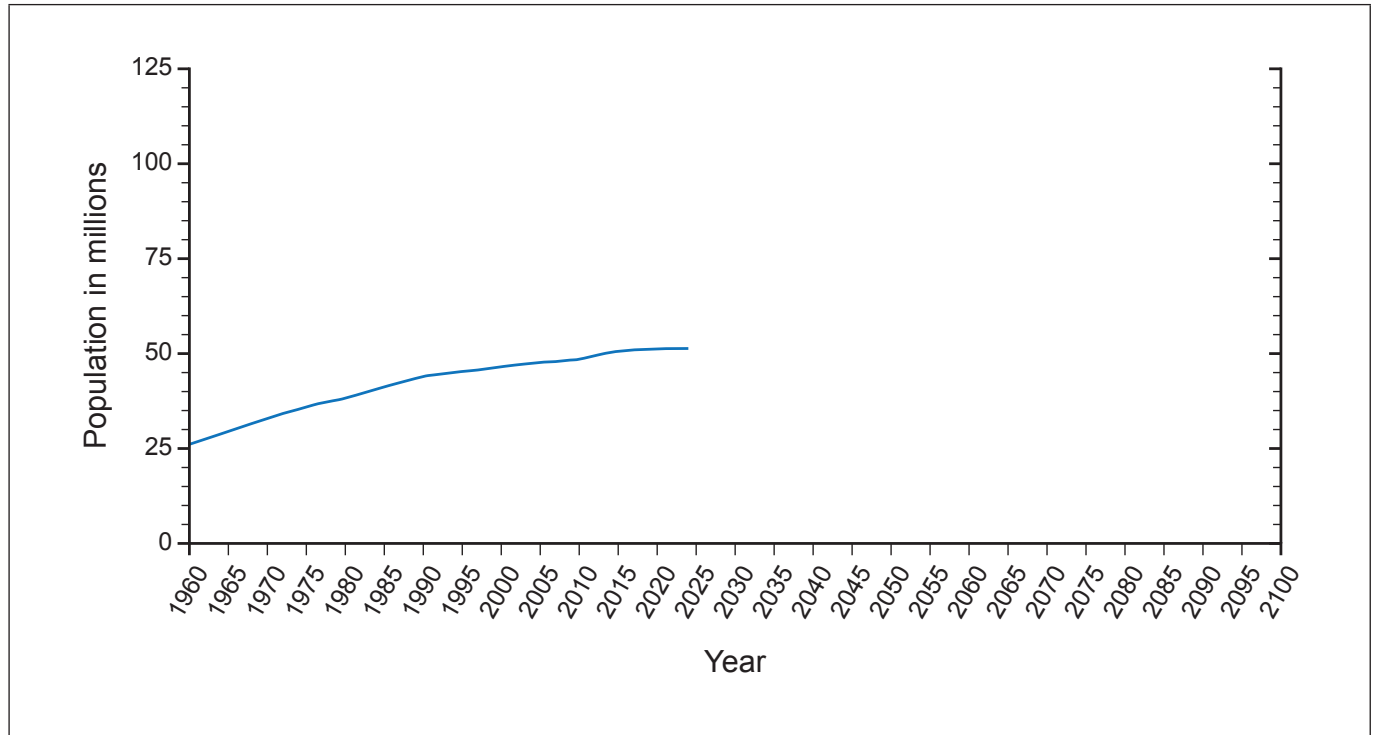
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(Question 1 continued)

Figure 1(b): Population of South Korea from 1960 to 2024



(c) Describe the trend in population numbers between 1960 and 2024, as shown in **Figure 1(b)**. [2]

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(d) Using information from **Figure 1(a)**, sketch a line on **Figure 1(b)** to demonstrate the expected total population between 2024 and 2100. [1]

(e) Outline **one** strength and **one** weakness of using models, such as the age–gender pyramids shown, to predict the growth of human populations over time. [2]

Strength:

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Weakness:

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

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2. (a) Using **Figure 2(a)**, identify which type 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]

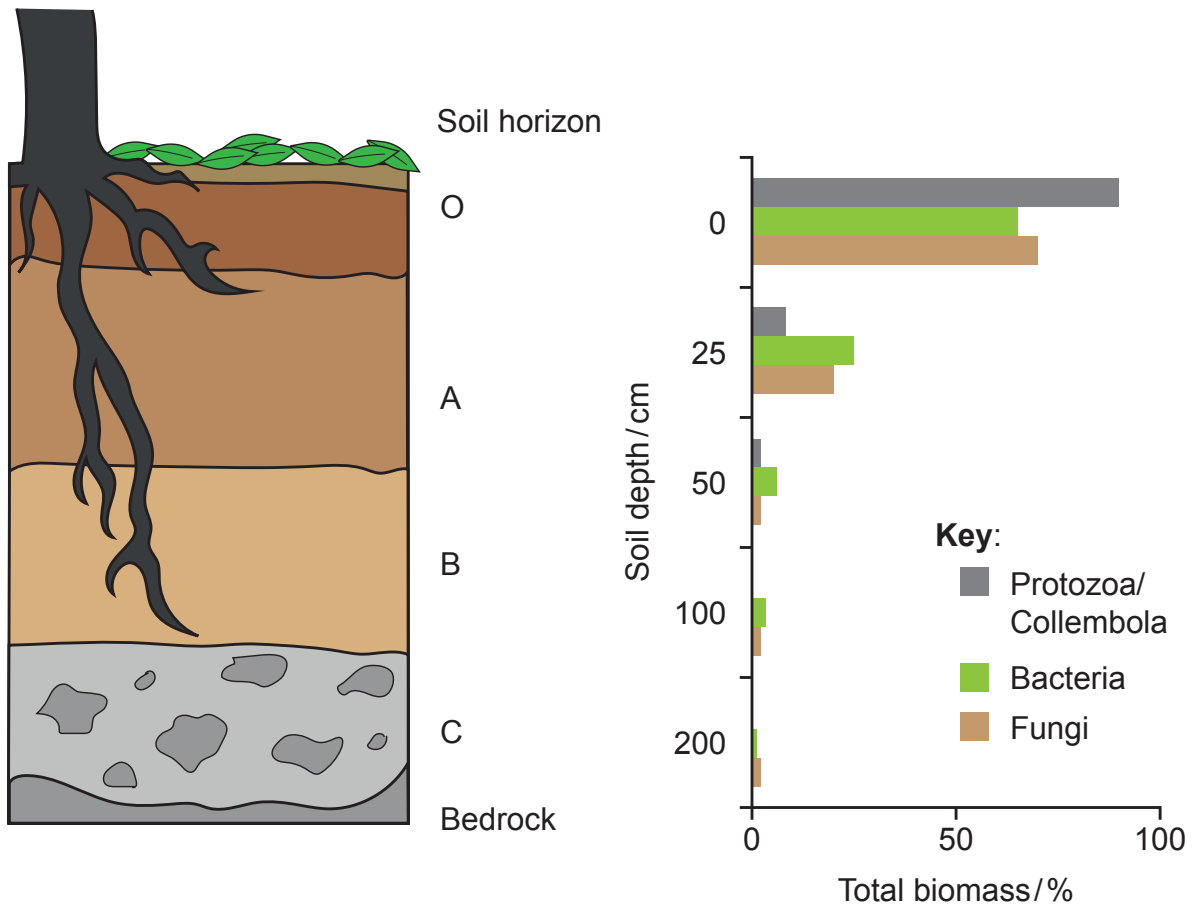
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(Question 2 continued)

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]

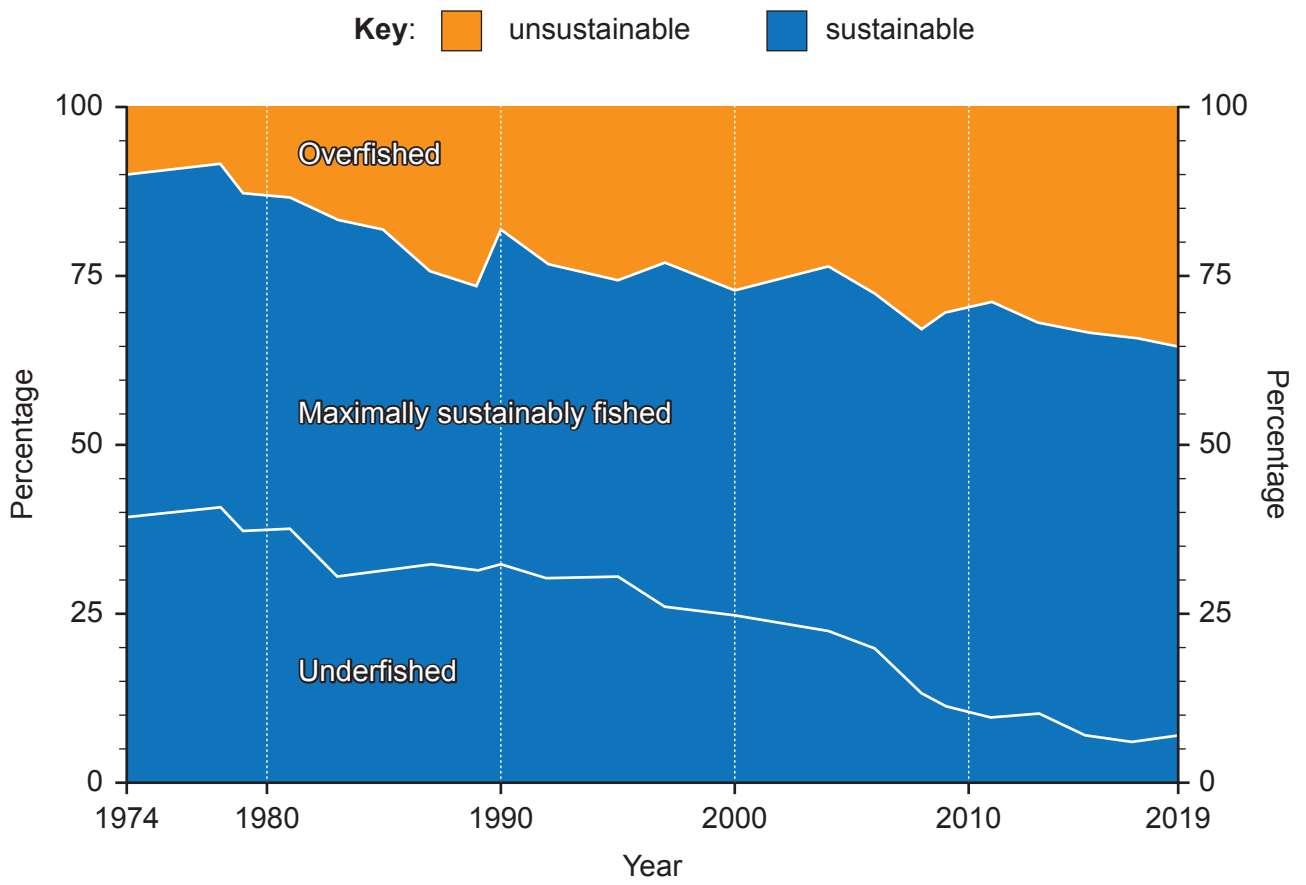
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(f) Explain how overgrazing could impact soil quality. [3]

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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 a management strategy for capture fisheries that could be used to reduce the levels of unsustainable fishing from 2019 as shown 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 how decreasing stratospheric ozone may impact living organisms. [4]
- (b) Pollution can be managed at three different levels: altering human activity; controlling release of pollutant; and clean-up and restoration. Describe strategies at each of these levels that may be employed in addressing photochemical smog. [7]
- (c) To what extent are different value systems effective in their approach to managing air quality? [9]
5. (a) Outline **two** point sources and **two** non-point sources of water pollution in a city. [4]
- (b) Evaluate the strategies that can be used to meet an increasing demand for freshwater. [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 socio-political, economic and ecological factors? [9]
7. (a) Outline **two** advantages and **two** disadvantages of nuclear power as a choice of energy production. [4]
- (b) Explain the ways in which energy is lost as it moves through an ecosystem. [7]
- (c) With reference to **named** examples, evaluate the waste management strategies adopted by different societies. [9]



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References:

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Figure 1(b) © 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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