IB DIPLOMA PROGRAMME
PROGRAMME DU DIPLÔME DU BI
PROGRAMA DEL DIPLOMA DEL BI

N04/4/ENVSY/SP2/ENG/TZ0/XX

88046411

ENVIRONMENTAL SYSTEMS
STANDARD LEVEL
PAPER 2

School code

Candidate code

Wednesday 10 November 2004 (afternoon)

1 hour 15 minutes

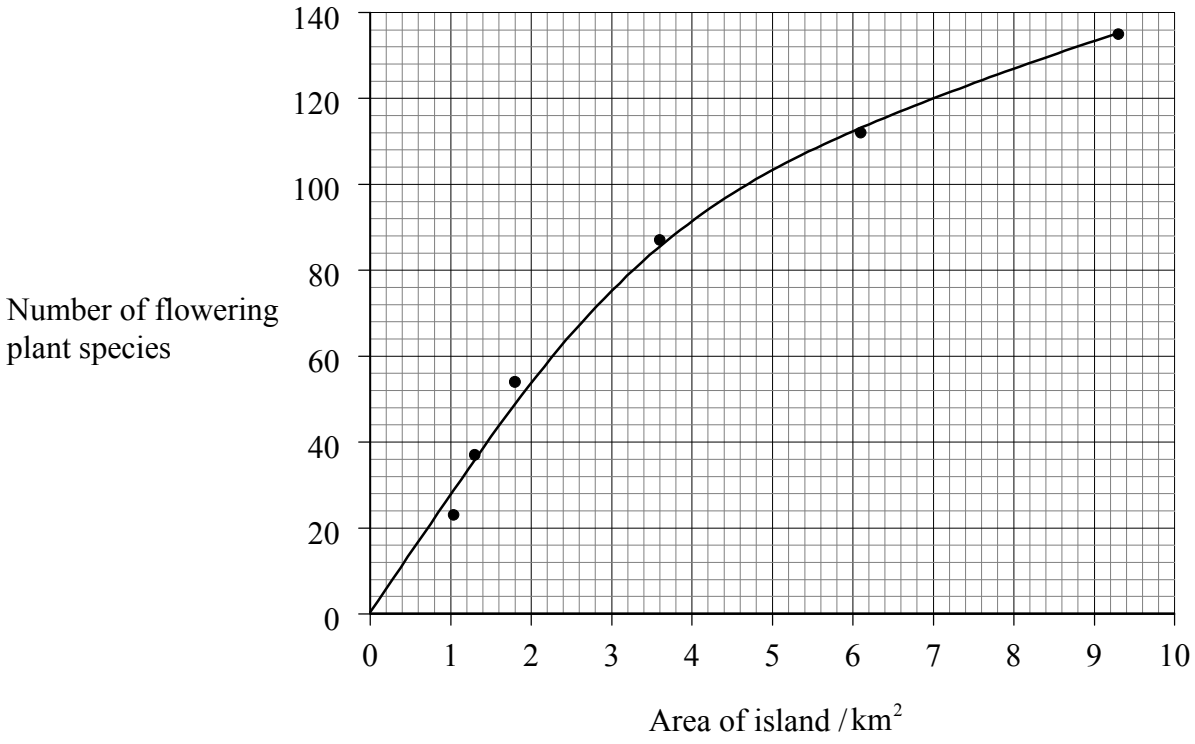
INSTRUCTIONS TO CANDIDATES

- Write your school code and candidate code in the boxes above.
- Do not open this examination paper until instructed to do so.
- Section A: answer all of Section A in the spaces provided.
- Section B: answer one question from Section B. Write your answers on answer sheets. Write your school code and candidate code on each answer sheet, and attach them to this examination paper and your cover sheet using the tag provided.
- At the end of the examination, indicate the numbers of the questions answered in the candidate box on your cover sheet and indicate the number of sheets used in the appropriate box on your cover sheet.

SECTION A

*Answer **all** the questions in the spaces provided.*

1. A study has been made of the number of flowering plant species that occur on six islands off the coast of the same country. The graph below shows the relationship between the area (in km^2) of each of the islands and the number of flowering plant species found on them.



(a) Describe the relationship between island area and plant diversity shown by the graph. *[2]*

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(b) Suggest **one** possible reason for the relationship described in (a). *[1]*

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(This question continues on the following page)

(Question 1 continued)

(c) Predict the effects of the introduction of goats or some other species of large herbivore on a small island ecosystem. *[2]*

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2. (a) Explain why the rainfall in some parts of the world is unnaturally acidic. *[2]*

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(b) State **two** effects that acid rain might have on ecosystems. *[2]*

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3. Examine the photograph below of an ecosystem which has high temperatures all through the year.

[source: CSIRO photograph]

(a) State the type of ecosystem shown above. *[1]*

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(b) From the photograph, describe the structure of the ecosystem and explain the conditions that support it. *[4]*

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(c) Outline the global distribution of this type of ecosystem. *[2]*

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4. (a) State **three** components of *soil*. *[1]*

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(b) List **two** processes that contribute to the formation of soil. *[2]*

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5. (a) Explain the term *hydrological cycle*. *[2]*

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(b) Explain why the hydrological cycle might be considered an example of a closed system. *[1]*

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(c) State **two** ways in which human activities might affect the hydrological cycle. *[2]*

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6. With the help of examples, distinguish between the terms *natural capital* and *natural income*. *[2]*

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7. With the help of a diagram, explain the term *pyramid of numbers*. *[4]*

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SECTION B

*Answer **one** question. Write your answers on the answer sheets provided. Write your school code and candidate code on each answer sheet, and attach them to this examination paper and your cover sheet using the tag provided.*

Each essay question is marked out of a total of 20 marks of which 3 are allocated to the expression and development of ideas as follows:

0 No expression of relevant ideas.
1 Expression and development of relevant ideas is limited.
2 Ideas are relevant, satisfactorily expressed and reasonably well developed.
3 Ideas are relevant, very well expressed and well developed.

8. (a) Distinguish between the terms *succession* and *zonation*, giving a detailed example of **one** of these. *[6]*

(b) Explain how the gross and net productivities, nutrient cycling and the diversity of an ecosystem change as it passes through the different stages of succession. *[11]*

Expression of ideas [3]

9. (a) Describe, with the help of a diagram, the structure of the interior of the Earth. *[4]*

(b) Outline the theory of plate tectonics, explaining the differences between constructive and destructive margins. *[6]*

(c) Explain, with examples, how the movement of the crustal plates has influenced evolution and biodiversity. *[7]*

Expression of ideas [3]

10. (a) Explain the meaning of the term *exponential growth of populations*. *[3]*

(b) Describe what changes might be expected in a human population as it passes through a demographic transition. *[9]*

(c) Explain how you might predict what the population of a country might be 50 years in the future. *[5]*

Expression of ideas [3]