



LIFE SCIENCES: PAPER II

Time: 2 hours

100 marks

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This question paper consists of 5 pages and a Source Material Booklet of 18 pages (i–xviii). Please check that your question paper is complete. Remove the Source Material Booklet from the middle of the question paper.
 2. The question paper consists of three questions. Question 1 and Question 2 are case studies and Question 3 is an essay. Read the sources provided in the Source Material Booklet and use this information and your own knowledge to answer Questions 1 and 2.
 3. Source material is also provided in the Source Material Booklet for the essay. Use this information and your own knowledge to first plan and then write your response.
 4. All questions must be answered in the Answer Book provided.
 5. Read the questions carefully.
 6. Please start **each question** on a **new** page and leave lines open between all sub-questions (e.g. 1.1 and 1.2).
 7. Number the answers exactly as the questions are numbered.
 8. Use the total marks that can be awarded for each part of the questions in Question 1 and 2 as an indication of the detail required.
 9. It is in your own interest to write legibly and to present your work neatly.
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SECTION A**QUESTION 1**

Refer to pages ii–v of the Source Material Booklet. Use this information as well as your own knowledge to answer the questions that follow.

- 1.1 Study the following table containing terms/biological concepts in Column 1 and statements/names in Column 2. **Decide how the information in Column 2 relates to the concepts in Column 1.**

Make use of the following codes:

- A** only statement/name 1 relates to the term
B only statement/name 2 relates to the term
C both statements/names 1 and 2 relate to the term
D neither statement/name 1 nor 2 relates to the term

Write the question number (1.1.1–1.1.4) and the LETTER of the correct choice (A, B, C or D) in your Answer Book.

Question number	Column 1	Column 2
1.1.1	Niche of wild rosemary plant	1. Fynbos plant, drought resistant 2. Root penetrates 6 m into soil
1.1.2	Fynbos community	1. Bracken fern only 2. Coast metalasia, green protea, cone bush and gonna bush growing together
1.1.3	Ecosystem definition	1. Protea 2. Blushing bride plant
1.1.4	Estimating population size of fynbos plants	1. Quadrat 2. Mark and recapture

(4)

- 1.2 Explain why rainfall is a limiting factor specifically for fynbos plants.

(2)

- 1.3 Succession is a factor in the ecology of the fynbos biome.

- 1.3.1 What type of succession is occurring in the burnt areas after the Knysna fires? Explain your answer.

(3)

- 1.3.2 Draw a table in which you provide TWO comparisons between primary and secondary succession.

(5)

- 1.4 Fires are common in the fynbos biome.
- 1.4.1 State ONE way in which fires are necessary for the survival of certain species of fynbos. (1)
- 1.4.2 Explain how climate change could affect the occurrence of future fires in the southern Cape. (2)
- 1.4.3 State the relationship between the biomass of alien vegetation in an area and the severity of fires. (2)
- 1.4.4 How did the change in the burning policy of the Department of Forestry contribute to the severity of the 2017 fires? (5)
- 1.5 Suggest an explanation of how the increase in the human population around Knysna could negatively affect the fynbos biome in the area. (2)
- 1.6 Study the graph in Figure 1.4 on page iv in the Source Material Booklet. Match the labels A to D from the graph in Column 1, with the correct plant species in Column 2. The images of the plants appear on page v. Write the letter (A to D) and the appropriate plant species name next to it in your Answer Book.

Column 1	Column 2
A	Bracken fern
B	Blushing bride
C	Conebush
D	Bobartia

(4)
[30]

QUESTION 2

Refer to pages vi–ix of the Source Material Booklet. Use this information as well as your own knowledge to answer the questions that follow.

- 2.1 Can the sable antelope in the Pilanesberg National Park be regarded as a closed population? Explain your answer. (2)
- 2.2 Wild dogs are social animals.
- 2.2.1 What does the word 'social' mean? (3)
- 2.2.2 Use your own knowledge to explain THREE ways in which wild dogs are able to use their social behaviour to hunt effectively. (3)
- 2.3 Why is it important that the local people have been involved in the establishment and management of the Pilanesberg National Park? (3)
- 2.4 Sketch a graph showing the population growth of sable antelope between 1989 and 1999. No numbers need be shown. (5)
- 2.5 Study Figure 2.6 (page ix) and the information on the sable antelope.
- 2.5.1 Provide TWO factors in the experiment that could negatively affect its reliability. (2)
- 2.5.2 Provide the names of the two species of grass plant most commonly grazed by sable antelope and explain reasons for your choice from the graph. (4)
- 2.6 Trophy hunting has been promoted as a means of raising money.
- 2.6.1 In your opinion, is trophy hunting an ethical way to make money? Justify your answer. (3)
- 2.6.2 Refer to Figure 2.5 (page viii) and state which species (wildebeest or buffalo) can be hunted without affecting their sustainability in the reserve. Explain your answer. (2)
- 2.7 Brown hyenas and lions live in the reserve and occupy similar niches. Explain how they manage to survive without competing directly for resources. (3)
- [30]**

60 marks

SECTION B

Refer to pages x–xviii of the Source Material Booklet.

QUESTION 3

Consider the following statement:

The government of a country should enforce population control measures to limit the number of children being born to a family.

Discuss your opinion on the statement in the form of an essay of 2½–3 pages.

In your response, you are expected to:

- Read the source material carefully.
- Take a definite stand on the statement.
- Plan your essay before you start writing. Your plan will be marked.
- Present a debated argument, using relevant information from sources A–G as well as your own knowledge of Life Sciences, to support your point of view.
- Arrange the information to best develop your argument.
- Write in a scientifically appropriate way.

In your essay, ensure that you have discussed at least nine different facts from the sources.

40 marks

Total: 100 marks