

Exam Practice Guide

Unit 4

Biology

Examination Questions

Key Features:

- ✓ 120 original examination style questions on all examinable topics.
- ✓ Full solutions and a marking guide to all questions.
- ✓ Separated into key topic areas within each Area of Study, enabling students to master one topic at a time.
- ✓ Written by VCE assessors who mark the real examinations.
- ✓ Excellent resource for examination practice.

Helping VCE students be the best they can be.

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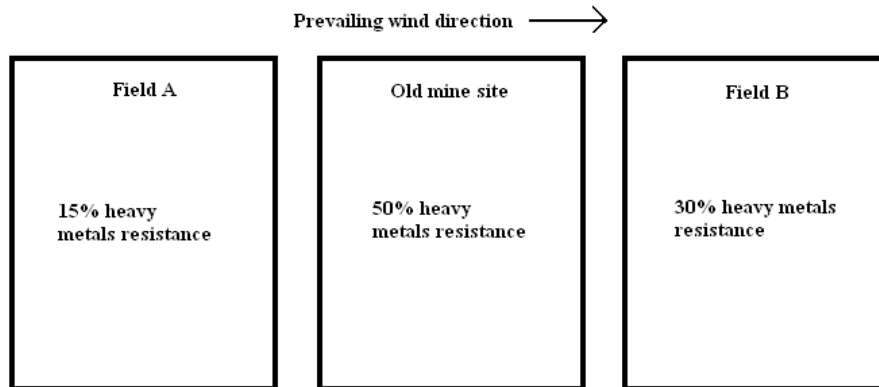
SAMPLE

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AREA OF STUDY 1: How are species related?**Topic 1 – Changes in the genetic makeup of a population****Question 1**

An old mining site was colonised by several species of plants that were able to tolerate the significant amounts of heavy metals in the soil. On either side of this area were fields that were going to be used to grow canola. An environmental scientist was called to one of the fields by the owner, as they were worried about possible contamination from the old mine site. The scientist analysed samples of plants from the mine site and from both of the adjoining fields. Their results are shown below:



Which of the following best explains this observation?

- A. Genetic drift occurred between the three sites.
- B. The wind carried seeds from the old mine site to the two fields.
- C. Gene flow occurred between the three sites.
- D. A mutation occurred at all three sites separately.

Question 2 (4 marks)

A farmer sprays a field with an insecticide designed to kill fruit flies. The results are impressive, but the farmer has to spray again after a couple of months. This time, however, it was not as effective, with many flies surviving.

- a. Explain how the increase in the number of insecticide resistant individuals occurred.

3 marks

- b. What type of selection is this an example of?

1 mark

Question 3 (5 marks)

A shipwreck occurred on the reef of a desert island in the South Pacific. All passengers were killed, but 20 rats that were on the boat survived. They swam to shore and began to establish themselves, as no other rats were present. The gene pool of this population was quite small compared to that of rat populations on the mainland.

- a. Identify possible implications for the descendants of this small gene pool.

1 mark

- b. The rat population grew and remained stable over a long period of time. A scientist decided to analyse the genetic diversity of the rats. It was found that a rare allele was more common in the island population than on the mainland. What name is given to the initial event that may have led to this difference?

1 mark