



AQA GCSE Combined Science: Trilogy · Topic 4.6 Inheritance, variation and evolution

The development of understanding of genetics and evolution: practice questions

3 questions · 11 marks · mark scheme at the back

For AQA GCSE Combined Science: Trilogy 8464. **Higher tier** is only on the Higher paper.

Name

Total / 11

- 1** (a) Describe two ways in which fossils may form. (2) (b) Give one reason why the fossil record is incomplete. (1) **[3 marks]**

[illegible]

- 2** Define extinction and describe one factor that could cause a species to become extinct. **[2 marks]**

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- 3** Some bacteria have become resistant to antibiotics. MRSA is an example. Explain how antibiotic-resistant strains of bacteria develop and spread, and describe how the rate of their development can be reduced. **[6 marks]**

[illegible]

Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [3]

- (a) parts of organisms have not decayed because one or more conditions needed for decay are absent (1)
- (a) parts of the organism are replaced by minerals as they decay (1)
- (a) preserved traces, such as footprints, burrows or rootlet traces (1)
- (b) early forms of life were soft-bodied, so left few traces / traces were destroyed by geological activity (1)
- Max 3 (max 2 for part a)

2. [2]

- no remaining individuals of a species are still alive (1)
- any one from: new predator / new disease / new, more successful competitor / change in the environment / a catastrophic event such as a volcanic eruption or asteroid collision (1)

3. [6]

Level 3 5-6	A clear, logical explanation of how resistance arises and spreads, with at least two ways to reduce the rate of development, explained.
Level 2 3-4	Explains some of how resistance arises or spreads, and gives at least one way to reduce the rate.
Level 1 1-2	Simple statements, for example that bacteria become resistant or that antibiotics should be used carefully.

Indicative content

- bacteria reproduce at a fast rate, so can evolve rapidly
- mutations produce new strains, some of which are resistant to antibiotics
- antibiotics kill non-resistant bacteria but the resistant ones survive and reproduce
- the population of the resistant strain rises
- the strain spreads because people are not immune and there is no effective treatment
- doctors should not prescribe antibiotics inappropriately, such as for viral infections or non-serious infections
- patients should complete the course of antibiotics so that all bacteria are killed
- restrict agricultural use of antibiotics