

GENERAL COMMENTS

- Definitions poorly stated generally.
- Exam technique needs to be improved.
- The difference between *understanding/explain/describe/state* must be emphasised.
- Poor/inadequate knowledge of terminology is a concern.
- Candidates must adhere to instructions, e.g. Where letters are required, only the letters and not the descriptions must be given.

Question 1**1.1 No major problems****Misconceptions shown by candidates**

None

Challenges and strategies for teachers

None

1.2 No major problems**Challenges and strategies for teachers**

Candidates did not know definitions

1.3 No major problems**Misconceptions shown by candidates**

None

Challenges and strategies for teachers

None

1.4 Misconceptions shown by candidatesMisinterpretation of the meaning of *trend* or *pattern***Challenges and strategies for teachers**

Failure to answer question completely. E.g. the unit "thousand tons" was often omitted in 1.4.2. Likewise, "1996" or "1998" in 1.4.3.

1.5 Misconceptions shown by candidates

Not able to read the geological timeline.

Challenges and strategies for teachers

- Comprehension of the timeline poor at many centres. Many candidates read the graph from the top down (100mya to 600mya, instead of from 600mya to the present). Hence, to many the reptiles increased while the mammals decreased during the Cretaceous period.
- Poor understanding of the eras and periods
- Poor understanding of the term *common ancestor* gave rise to one or more new lines.
- Emphasise the value of a timeline and design activities to facilitate the understanding of timelines.

1.6 Misconceptions shown by candidates

Misinterpretation of the meaning of *trend* or *pattern*

Challenges and strategies for teachers

How to interpret graphs correctly and give direct and concise answers based on the graphs (same applies to tables).

Question 2

2.1 Misconceptions shown by candidates

2.1.1 Candidates stated that birds had to adapt to the different foods/environments.

2.1.2 Did not understand what was meant by *geological* vs *geographical*.

Challenges and strategies for teachers

2.1.1 and 2.1.3 Evolution is the result of *variations* that exist in *populations* and those best suited to a *particular environment* will survive. Examples need to be given to teachers and they must understand that adaptations arise in populations.

2.1.2 Teachers need to understand that evolution has occurred because of changes in the environment and that most of the large changes in the environment have occurred because of geological changes i.e. movement of the tectonic plates underpins macroevolution.

2.2 Misconceptions shown by candidates

Candidates confused OBSERVATIONS with DEDUCTIONS that Darwin made from his observations.

Challenges and strategies for teachers

Teachers need to distinguish between *observations* and *deductions* – this requires a good understanding of the scientific method and how to think and *communicate* scientific thought.

2.3 Misconceptions shown by candidates

Stated that birds *adapt* to the different environments.

Challenges and strategies for teachers

Teachers need to understand that evolution is a result of *variations* that *exist*. *Populations* and that those that are best suited to a *particular environment* will survive. Examples need to be given to teachers and they must understand that adaptations arise in populations.

Question 3

3.1 Misconceptions shown by candidates

Many candidates still struggle to distinguish between the following concepts: *aim*, *result* and *hypothesis*.

Challenges and strategies for teachers

- Application to be the order of the even at Grade 10 level.
- Evolution must be taught in a realm of existing science and not as a foreign idea that cannot tap in on previous knowledge.
- Teaching exam skills : Much information (which may become confusing) is given in this question (light- and dark-banded snails, birds, snails eaten, shells found). A crucial piece, often missed by candidates, was the fact that birds break the snails on rocks. The rocks are thus not there for camouflage. Candidates have to find all the information provided in the question (underline if necessary) and prioritise the information.

- Answering should *not be in the negative*, e.g. "The light banded snails are better adapted because the dark ones are more visible or more dark ones were caught."

3.2 Misconceptions shown by candidates

Could not distinctly separate Lamarck from Darwin.
Confused Lamarckian concepts with natural selection. Organs do not become vestigial through disuse; rather as a result of the influence of selection pressure.

Challenges and strategies for teachers

- By far most candidates lacked the ability to apply existing knowledge to new contexts.
- The concepts of *variation* and *natural selection* need clarification, perhaps against the background of genetics

Teach and Teach and Teach – and use as many examples as possible.

Use a variety of activities and worksheets that illustrate the various concepts. The key is Application, Application, and Application.

The challenge is that evolution is new and often only done in the third term. Preparation is thus seriously rushed and often not sufficient or effective.

Terminology: Many candidates were unfamiliar with the terms *femur/pelvis*.

3.2 Misconceptions shown by candidates

Graph was confusing and was misinterpreted by many candidates.

3.3 Misconceptions shown by candidates

Strangely, many candidates did not score these marks.

Too many candidates equated *degradable* with *recyclable*.

Some candidates gave the same definition for *biodegradable* and *non biodegradable*.

Question 4

4.1 Misconceptions shown by candidates

Candidates were confused as to which volume column had to be plotted and therefore they plotted both.

Some candidates still did not understand the concept of *variables (dependent and independent)*

Many candidates did not have a 0,0 point on the graph, but had two separate 0 points on the x-axis..

Some candidates drew a free-hand graph without the use of a ruler

Inappropriate scales, e.g. 0 – 35 where values only go up to maximum of 16.

4.1.3 Candidates did not know how to improve the *reliability* of an investigation

4.1.4 Drawing a graph: Candidates did not use a relevant scale.

Challenges and strategies for teachers

Teachers should encourage candidates to start the graph on a clean page

Graphing *skills* must be emphasised.

The heading for a graph must include both variables.

Distinguish between *dependent* and *independent* variables

Attention must be given to plotting, providing a key to distinguish between the two graphs, constants, intervals on the axes, labels and units on axes.

4.2 Misconceptions shown by candidates

Candidates did not understand the difference between *extinction* and *decrease* of organisms.

Candidates mentioned anything about the energy flow and the effect of perlemoen declining.

Few candidates mentioned energy level differences and the different trophic levels.

Challenges and strategies for teachers

Emphasise the difference mentioned above.

4.3 Misconceptions shown by candidate

Candidates confused management strategies and very few gave an explanation for the strategies.
Candidates mentioned ways of "home-improvements", e.g. (boiling water or adding *Jik*),

Challenges and strategies for teacher

Teachers should teach the skill of writing a scientific essay. Too many candidates were confused with language essays and scientific factual essays, and lost marks for synthesis.

Teachers should encourage candidates to read the question carefully, identify headings and then answer the different aspects asked.