

2016 HKDSE

Biology and Combined Science (Biology)

Exam Analysis



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1 Coverage

a Most topics in the curriculum are covered. More marks are allocated to the chapters (3rd edition) below:

Ch 7 Gas exchange in humans

Ch 9 Nutrition and gas exchange in plants

Ch 19 Ecosystems

✕ Ch 20 Photosynthesis

Ch 25 Basic genetics

Ch 28 Biodiversity

b Relationship between Biology and Combined Science:

i In Combined Science Section A, all the multiple-choice questions are common with Biology Paper 1A.

ii In Combined Science Section B, Q1 and 9 are common with Biology Paper 1B. Other questions are slightly different from those questions in Biology Paper 1B.

2 Level of difficulty

a The multiple-choice questions in 2016 and 2015 HKDSE papers are of similar level of difficulty. In Biology Paper 1A, Q10, 14, 19, 24, 27 and 36 (CS A Q4, 10, 13, 18 and 24) are more challenging and may be set to differentiate students of different abilities.

b The conventional questions in 2016 HKDSE papers are more difficult than those in 2015 HKDSE papers. In Biology Paper 1B, Q4c, 5a, 5b, 8b, 8c, 9c and 11 (CS B Q3a, 6b, 6c, 7b and 9) are more challenging and may be set to differentiate students of different abilities.

c In Biology Paper 2, Q2b, 3b and 4b are comparatively more difficult.

3 Skills assessed

- a** The papers follow the trend of inclusion of questions related to school-based assessment (SBA) and a number of questions require the skills for making scientific inquiries.

Making observations: Biology Paper 1A Q12 (CS A Q8); Paper 1B Q4a and 8a (CS B Q4a and 6a)

Designing experiments: Biology Paper 1A Q25 and 36 (CS A Q19 and 24)

Interpreting data or graphs: Biology Paper 1A Q9, 10, 11, 18, 19 and 20 (CS A Q7, 12, 13 and 14); Paper 1B Q5a, 5b, 8b ii, 9b ii and 9c ii (CS B Q3a, 6b ii, 7a ii and 7b ii)

- b** Biology Paper 1B Q3 requires students to identify structures shown in the electron micrograph of a chloroplast.
- c** Biology Paper 1B Q8c (CS B Q6c) assesses students' understanding of the nature of science (NOS). This question carries 2 marks.
- d** Biology Paper 1B Q5 and 8 (CS B Q3 and 6) involve unfamiliar situations. They assess students' ability to apply their knowledge in unfamiliar situations.
- e** Biology Paper 1B Q5a, 5b, 7c, 9b ii, 9c ii, 10d and 11 (CS B Q3a, 7a ii, 7b ii and 9) require good communication skills.

4 Challenging questions

Some questions in the papers are challenging. The table below lists the difficulties students may encounter when answering these questions. Suggestions for developing the necessary abilities and skills to address similar questions are also listed below.

Question	Difficulty	Suggestion
Biology Paper 1A Q36 (CS A Q24) - An experiment on phototropism in coleoptiles	Students' understanding of how to set up a control is usually poor. It may not be easy for them to choose the correct control set-up.	Students should note the difference between control and experimental set-ups. Students should also be exposed to more different experiments involving control set-ups.
Biology Paper 1B Q5a, 5b (CS B Q3a) - Factors affecting the distribution of two crab species on a rocky shore	Students are usually weak in making use of their knowledge and selecting relevant information provided to make deductions, especially in an unfamiliar situation. They may also find it difficult to present their answer clearly to show how they arrive at the deductions.	Students should read questions carefully to understand the situation. They must not recite knowledge without adaptation. Training on the use of language, e.g. in making deductions, should be strengthened.
Biology Paper 1B Q8c (CS B Q6c) - J. Hammerling's experiment on unicellular algae to find out where genetic information is stored in eukaryotic cells	Students often find the nature of science (NOS) difficult to understand. They may not be able to link different aspects of NOS with historical events in the history of science.	Revise various aspects of NOS through reviewing the history of biology and discussing biological concepts.

Question	Difficulty	Suggestion
<p>Biology Paper 1B Q11 (CS B Q9)</p> <ul style="list-style-type: none"> - Comparison of gas exchange organs in plants and humans 	<p>Students often produce poorly organized essays containing discrete ideas, such as separate descriptions of structures rather than the common principles in structural adaptations. They may find it difficult to link up related facts from different topics and present them in a logical and systematic manner.</p>	<p>Students should note the importance of essay planning. Identify the main areas for discussion and then organize the thoughts using tables, flow charts or mind maps. Revise the skills in answering essay questions.</p>
<p>Biology Paper 2 Q2b</p> <ul style="list-style-type: none"> - Effect of phosphate addition on the growth of wheat in uncontaminated soil and arsenic-contaminated soil 	<p>Students often find questions involving interpretation of experimental results difficult. They may not be able to draw conclusions that address the aims of the investigations.</p>	<p>Students should note that no conclusion can be drawn if there is more than one difference in the conditions of the set-ups. Students should be exposed to more different experiments so that they are more familiar with comparing results and drawing valid conclusions.</p>

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