

## **BIOLOGY**

### **ADVANCED LEVEL**

#### **INTRODUCTION**

The assessment of this subject is based on the Biology Curriculum and Assessment Guide (Advanced Level) jointly prepared by the Curriculum Development Council and the Hong Kong Examinations and Assessment Authority. Candidates have to refer to the section on 'Curriculum Framework' in this Guide for the knowledge, understanding, skills and attitudes they are required to demonstrate in the assessment. Candidates are expected to have a general knowledge of the materials contained in the Hong Kong Certificate of Education Biology Syllabus. The mathematical skills required in the assessment will not exceed those covered in the Hong Kong Certificate of Education Mathematics syllabus.

#### **ASSESSMENT OBJECTIVES**

The objectives of this assessment are to evaluate candidates' abilities and achievements in the following:

1. to recall and show understanding of biological facts, concepts and principles, and the relationships between different topic areas of the curriculum framework;
2. to apply biological knowledge, concepts and principles to explain phenomena and observations, and to solve problems;
3. to formulate working hypotheses, to plan and to perform tests for them;
4. to show practical skills related to the study of biology ;
5. to present data in various forms (tables, graphs, charts, drawings, diagrams etc.) and transpose them from one form into another;
6. to analyze and interpret data (including numerical and non-numerical data such as in the form of continuous prose, diagrams, photographs, charts and graphs etc.); make logical deductions, inferences and draw conclusions from them;
7. to evaluate evidence and detect errors;
8. to select, synthesize, and communicate ideas and information clearly, precisely and logically;
9. to show understanding of the applications of biology to daily life and the contributions of biology to the modern world;
10. to show awareness of the ethical, moral, social, economic and technological implications of biology; and
11. to make suggestions, choices and judgements based on biological knowledge and principles.

**MODE OF ASSESSMENT**

The following table outlines the various components of the assessment:

Paper	Description	Weighting	Duration
1 (All questions are compulsory)	Section A : Short questions	16%	3 hours
	Section B : Data-response and structured questions	16%	
	Section C : Text-response questions on general biological topics/issues	8%	
2	Section A : Short structured questions each built upon a given context (a choice of 2 out of 3 questions)	16%	3 hours
	Section B : Structured questions each related to a theme (a choice of 2 out of 3 questions)	16%	
	Section C : Essay-type questions on the integration of biological knowledge (a choice of 1 out of 2 questions)	8%	
3	Teacher Assessment Scheme <sup>1</sup>	20%	
OR			
4	Practical examination <sup>2</sup>		3 hours

<sup>1</sup> Candidates may opt to sit the practical examination (Paper 4) or use their previous TAS results (obtained in 2011 or 2012 exam) to substitute for the practical examination.

<sup>2</sup> The practical examination serves to assess candidates' achievements and abilities in practical skills stipulated in Section 13 of the 'Curriculum Framework' of the Biology Curriculum and Assessment Guide (Advanced Level).

The range of skills required in the practical examination and the abilities to be assessed may include the following:

- a. to make observations (with the naked eye or using the microscope) on living and preserved specimens, including animal and plant tissues / structures, and record them accurately in writing or by using labelled and annotated diagrams or drawings;  
(Note: Low-power diagrams of microscopic sections should not include any cell structure as this should be shown in high-power drawings.)
- b. to carry out slide preparations: free-hand sectioning, simple staining (excluding double staining) and temporary mounting; (Note: Candidates may be required to cut transverse sections of suitable plant materials for low-power microscopic examination. However, the cutting of thin sections suitable for high-power investigations of cell structure is not expected.)
- c. to carry out biochemical tests, e.g. food tests;
- d. to design, perform and report on experiments, including:
  - formulating a hypothesis
  - stating the basis of an experimental design and its assumptions; identifying dependent and independent variables and setting controls
  - writing procedures and precautions, recording, processing and presenting results, interpreting experimental findings, identifying sources of error and suggesting ways for improvements, and drawing conclusions;
- e. to construct and use dichotomous keys to identify plants and animals based on their distinguishing external features;
- f. to suggest the inter-relationships among organisms with reference to a collection of specimens and also between the organisms and their ways of life / habitats; and
- g. to interpret photographs, photomicrographs and electron micrographs.

Candidates will be required to use the microscopes provided, and will **NOT** be permitted to use their own microscopes. Diagrams and drawings of specimens should be large and correctly proportioned and should not be coloured. Relevant structures only should be labelled. Indicating lines should be neatly drawn and should not be intersected by other lines. Memorized textbook drawings or diagrams, bearing little likeness to the candidate's specimens or observations, are of no value.

**NOTES**

1. In general, SI units will be used.
2. The conventions used in the question papers will be those described in the *Biological Nomenclature*, 2000 Edition, Institute of Biology, London. The overriding consideration is clarity and unambiguity; alternative names or units will be given whenever ambiguity might otherwise arise.
3. The booklet 'An English-Chinese Glossary of Terms Commonly Used in the Teaching of Biology in Secondary Schools (2003)' prepared by the Curriculum Development Council is a useful reference for biological terms in Chinese.