INTRODUCTION

The public assessment of this subject is based on the Curriculum and Assessment Guide (Secondary 4-6) Combined Science 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 Science Curriculum (Secondary 1-3). The mathematical skills required in the assessment will not exceed those covered in the Compulsory Part of the Hong Kong Diploma of Secondary Education Mathematics Curriculum.

The public assessment of Combined Science consists of three parts: Physics, Chemistry and Biology. Candidates should choose any two parts to form the basis of their assessment according to the curriculum they follow. As a result, there are three options available: Combined Science (Physics, Chemistry), Combined Science (Biology, Physics), and Combined Science (Chemistry, Biology).

PART 1: PHYSICS

ASSESSMENT OBJECTIVES

The objectives of the public assessment of this part are to evaluate candidates’ ability to:
1. recall and show understanding of the facts, concepts, models and principles of physics, and the relationships between different topic areas in the curriculum framework;
2. apply knowledge, concepts and principles of physics to explain phenomena and observations, and to solve problems;
3. show an understanding of the use of apparatus in performing experiments;
4. demonstrate an understanding of the method used in the study of physics;
5. present data in various forms, such as tables, graphs, charts, diagrams, and transpose them from one form into another;
6. analyse and interpret data, and draw appropriate conclusions;
7. show an understanding of the treatment of errors;
8. select, organise, and communicate information clearly, precisely and logically;
9. demonstrate understanding of the applications of physics to daily life and its contributions to the modern world;
10. show awareness of the ethical, moral, social, economic and technological implications of physics, and critically evaluate physics-related issues; and
11. make suggestions, choices and judgments based on the examination of evidence using knowledge and principles of physics.

2012-HKDSE-SCI (COM)
MODE OF ASSESSMENT

The public assessment of Combined Science (Physics part) consists of a public examination component and a school-based assessment component as outlined in the following table:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weighting</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Examination</td>
<td>40%</td>
<td>1 hour 40 minutes</td>
</tr>
<tr>
<td>Questions set on the physics part of the curriculum.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School-based Assessment (SBA)</td>
<td>10%</td>
<td></td>
</tr>
</tbody>
</table>

PUBLIC EXAMINATION

The examination paper comprises two sections: A and B. Section A consists of multiple-choice questions and carries 14% of the subject mark. Section B includes short questions, structured questions and an essay question, and it carries 26% of the subject mark. Candidates have to attempt all questions in this paper.

SCHOOL-BASED ASSESSMENT (SBA)

School-based assessment (SBA) is compulsory for all school candidates. In the 2012 HKDSE, candidates will be assessed by their teachers on their performance of a wide range of skills involved in practical related tasks throughout S5 and S6.

Practical related tasks

Practical related tasks here refer to practical work in Physics. In S5 and S6, candidates’ performance in practical work and reporting of practical work will be assessed, carrying 10% of the subject mark. The tasks will involve:

(a) organising and performing practical work, including making use of suitable apparatus and equipment, and demonstrating the candidate has the appropriate manipulative skills for carrying out the work;
(b) making accurate observations and measurements;
(c) recording and presenting results in an appropriate form;
(d) interpreting and discussing results, and drawing appropriate conclusions.
The table below summarises the percentage weighting of SBA and the minimum number of assessments required in S5 and S6:

<table>
<thead>
<tr>
<th>Practical related tasks</th>
<th>Weighting in subject</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum number of assessments</td>
<td>S5</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>S6</td>
<td>1</td>
</tr>
</tbody>
</table>

For monitoring and authentication purposes, candidates are required to keep good custody of all their work in SBA until the publication of the HKDSE examination results.

Private candidates need not complete the SBA component. Their subject result will be based entirely on their public examination results.

The detailed requirements, regulations, assessment criteria, guidelines and methods of assessment will be provided in the SBA Handbook for HKDSE Physics and Combined Science (Physics part) published by the Hong Kong Examinations and Assessment Authority.

**Non-practical related tasks**

Starting from the 2014 HKDSE, candidates will also be assessed on non-practical related tasks in the SBA. Non-practical related tasks refer to assignments that constitute part of the learning activities provided to candidates. They should be aligned closely with the curriculum. Examples of such tasks include: information searching and report writing, site-visit reports, designing posters/pamphlets/webpages, writing articles, building models or developing multimedia artefacts. Besides the understanding and application of knowledge and concepts of physics, candidates’ generic skills (creativity, critical thinking skills, communication skills and problem-solving skills) will be assessed.

The implementation schedule for SBA is as follows:

<table>
<thead>
<tr>
<th>Year of examination</th>
<th>Implementation of SBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012 &amp; 2013</td>
<td>Schools are required to submit SBA marks for the practical related component only. The mark of this component will contribute to 10% of the final subject mark.</td>
</tr>
<tr>
<td>2014 and thereafter</td>
<td>Schools will be required to submit SBA marks for both the practical and non-practical related components. The SBA marks for practical related tasks will constitute 7% of the final subject mark, and those for non-practical related tasks 3% of the final subject mark.</td>
</tr>
</tbody>
</table>
PART 2: CHEMISTRY

ASSESSMENT OBJECTIVES

The assessment objectives of this part are to evaluate the abilities of candidates to:
1. recall and show understanding of chemical facts, patterns, principles, terminology and conventions;
2. show an understanding of the use of apparatus and materials in performing experiments;
3. handle materials, manipulate apparatus, carry out experiments safely and make accurate observations;
4. demonstrate an understanding of the method used in chemical investigation;
5. analyse and interpret data from various sources, and draw relevant conclusions;
6. manipulate and translate chemical data and to perform calculations;
7. apply chemical knowledge to explain observations and to solve problems which may involve unfamiliar situations;
8. select and organise scientific information from appropriate sources and to communicate this information in an appropriate and logical manner;
9. understand and evaluate the social, economic, environmental and technological implications of the applications of chemistry; and
10. make decisions based on the examination of evidence and arguments.

MODE OF ASSESSMENT

The public assessment of Combined Science (Chemistry part) consists of a public examination component and a school-based assessment component as outlined in the following table:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weighting</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Examination</td>
<td>40%</td>
<td>1 hour</td>
</tr>
<tr>
<td>Questions set on the chemistry part of the curriculum.</td>
<td></td>
<td>40 minutes</td>
</tr>
<tr>
<td>School-based Assessment (SBA)</td>
<td>10%</td>
<td></td>
</tr>
</tbody>
</table>

PUBLIC EXAMINATION

The examination paper comprises two sections: A and B. Section A consists of multiple-choice questions and carries 12% of the subject mark. Section B includes short questions, structured questions and an essay question, and it carries 28% of the subject mark. Candidates have to attempt all questions in this paper.
SCHOOL-BASED ASSESSMENT (SBA)

School-based assessment (SBA) is compulsory for all school candidates. In the 2012 HKDSE, candidates will be assessed by their teachers on their performance of a wide range of skills involved in practical related tasks throughout S5 and S6.

**Practical Related Tasks**

Candidates are required to perform a stipulated amount of practical work, which may include designing experiments, reporting and interpreting experimental results, etc. The work should be integrated closely with the curriculum and form a part of the normal learning and teaching process.

The table below summarises the percentage weighting and the minimum number of assessments required in S5 and S6 for the different areas of the SBA:

<table>
<thead>
<tr>
<th>Practical related task</th>
<th>Volumetric Analysis</th>
<th>Experiment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weighting in subject</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td>Minimum number of assessments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>S6</td>
<td>---</td>
<td>1</td>
</tr>
</tbody>
</table>

For monitoring and authentication purposes, candidates are required to keep good custody of all their work in SBA until the publication of the HKDSE examination results.

Private candidates need not complete the SBA component. Their subject result will be based entirely on their public examination results.

The detailed requirements, regulations, assessment criteria, guidelines and methods of assessment will be provided in the SBA Handbook for HKDSE Chemistry and Combined Science (Chemistry part) published by the Hong Kong Examinations and Assessment Authority.
**Non-Practical Related Tasks**

Starting from the 2014 HKDSE, candidates will also be assessed on non-practical related tasks in SBA. Non-practical related tasks refer to assignments which call for generic skills such as creativity, critical-thinking, communication skills and problem-solving skills. Examples of non-practical related tasks include: critically reading, analysing and reporting the contribution of chemistry towards the understanding of the material world; designing a poster or pamphlet with a view to introducing the properties of an element or explaining the principle of a chemical cell; writing a report to present the scientific knowledge and concepts acquired after a visit to a chemical plant; developing a multimedia artefact to illustrate the synthesis of polymers.

The implementation schedule of SBA is as follows:

<table>
<thead>
<tr>
<th>Year of examination</th>
<th>Implementation of SBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012 &amp; 2013</td>
<td>Schools are required to submit SBA marks for the practical related component only. The mark of this component will contribute to 10% of the final subject mark.</td>
</tr>
<tr>
<td>2014 and thereafter</td>
<td>Schools will be required to submit SBA marks for both the practical and non-practical related components. The SBA marks of practical related tasks will constitute 7% of the final subject mark, and those for non-practical related tasks 3% of the final subject mark.</td>
</tr>
</tbody>
</table>
PART 3: BIOLOGY

ASSESSMENT OBJECTIVES

The assessment objectives of this part are to evaluate candidates’ abilities to:
1. recall and show understanding of facts, concepts and principles of biology, and the relationships between different topic areas in the curriculum framework;
2. apply biological knowledge, concepts and principles to explain phenomena and observations, and to solve problems;
3. formulate working hypotheses, and plan and perform tests for them;
4. demonstrate practical skills related to the study of biology;
5. present data in various forms, such as tables, graphs, charts, drawings, diagrams, and transpose them from one form into another;
6. analyse and interpret both numerical and non-numerical data in forms such as continuous prose, diagrams, photographs, charts and graphs – and make logical deductions and inferences and draw appropriate conclusions;
7. evaluate evidence and detect errors;
8. generate ideas; select, synthesise and communicate ideas and information clearly, precisely and logically;
9. demonstrate understanding of the applications of biology to daily life and its contributions to the modern world;
10. show awareness of the ethical, moral, social, economic and technological implications of biology, and critically evaluate biology-related issues; and
11. make suggestions, choices and judgments about issues affecting the individual, society and the environment.

MODE OF ASSESSMENT

The public assessment of Combined Science (Biology part) consists of a public examination component and a school-based assessment component as outlined in the following table:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weighting</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Examination</td>
<td>Questions set on the biology part of the curriculum.</td>
<td>40%</td>
</tr>
<tr>
<td>School-based Assessment (SBA)</td>
<td></td>
<td>10%</td>
</tr>
</tbody>
</table>

2012-HKDSE-SCI (COM)
PUBLIC EXAMINATION

The examination paper comprises two sections: A and B. Section A consists of multiple-choice questions and carries 12% of the subject mark. Section B includes short questions, structured questions and an essay question, and it carries 28% of the subject mark. Candidates have to attempt all questions in this paper.

SCHOOL-BASED ASSESSMENT (SBA)

School-based assessment (SBA) is compulsory for all school candidates. In the 2012 HKDSE, candidates will be assessed by their teachers on their performance of a wide range of skills involved in practical related tasks throughout S5 and S6.

Practical related tasks

Practical related tasks here refer to laboratory work and fieldwork in Biology. Candidates will be required to carry out practical work including scientific investigations. In S5 and S6, they will be assessed in two ability areas: A and B. Ability area A carries 4% of the subject mark, while ability area B carries 6% of the mark. Details of the two ability areas are as follows:

Ability area A involves:
(a) organising and performing practical work, including using suitable apparatus and equipment, and demonstrating the appropriate manipulative skills in carrying out the work;
(b) making accurate observations and measurements.

Ability area B involves:
(a) identifying the problem to be investigated and formulating a hypothesis, where applicable, and putting it into a testable form;
(b) devising a plan of investigation in accordance with the problem being investigated;
(c) recording and presenting results in an appropriate form;
(d) interpreting and discussing results, and drawing appropriate conclusions.

The table below summarises the percentage weighting and the minimum number of assessments required in S5 and S6 for the different areas of the SBA:

<table>
<thead>
<tr>
<th>Weighting in subject</th>
<th>Ability area A</th>
<th>Ability area B</th>
</tr>
</thead>
<tbody>
<tr>
<td>S5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>S6</td>
<td>1</td>
<td>1</td>
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Private candidates need not complete the SBA component. Their subject result will be based entirely on their public examination results.

The detailed requirements, regulations, assessment criteria, guidelines and methods of assessment will be provided in the SBA Handbook for HKDSE Biology and Combined Science (Biology part) published by the Hong Kong Examinations and Assessment Authority.

**Non-practical related tasks**

Starting from the 2014 HKDSE, candidates will also be assessed on non-practical related tasks in SBA. Non-practical related tasks refer to assignments that constitute part of the learning activities provided to candidates. They should be aligned closely with the curriculum emphases (viz. scientific inquiry, science-technology-society-environment connections, nature and history of biology). Examples of such tasks include: information searching and report writing; survey studies, field-studies or site-visit reports; designing posters, pamphlets or webpages; writing articles; and building models or developing multimedia artefacts. Besides the understanding and application of biology knowledge and concepts, candidates’ generic skills (creativity, critical thinking skills, communication skills and problem-solving skills) will be assessed.

The implementation schedule of SBA is as follows:

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