

FOREWORD

The Botswana Examinations Council is pleased to authorise the publication of the revised assessment procedures for the Junior Certificate Examination programme. According to the Revised National Policy on Education, the main intentions of the three year Junior Secondary programme are to provide the learners with opportunities for pre-vocational preparation and to enable the learners to take advantage of further education and training. These goals are reflected in the current Junior Secondary curriculum and accordingly, were taken into account when the assessment procedures were revised.

The range of ability of the learners has also influenced the design and revision of the assessment procedures. As a result of the ten year basic education policy, the ability range of the learners in Junior Secondary schools is much greater than previously. The revised assessment procedures are designed to ensure that all learners, regardless of their ability, have the opportunity of demonstrating what they know, understand and can do.

Another important aspect of assessment meant to be fostered through this revision is the alignment of assessment with the specific requirements of the teaching programme. This has been addressed through the restructuring of the scheme of assessment for individual subjects, whilst ensuring the reliability of the outcomes. The revised procedures use a standardised format across all subjects, whilst meeting the specific requirements of each subject.

The revised procedures are not intended to replace the existing teaching syllabuses. Rather, they provide a specification of the knowledge and skills which are to be assessed in each subject. Through the scheme of assessment, the procedures provide information on: the number of question papers in each subject, the marks allocated to each paper, paper and section weightings, etc.

These procedures are the outcome of the efforts of many professionals in the education system, and I wish to extend my thanks to all those who made their contribution. I would also like to encourage a continuation of this valuable collaboration.



Executive Secretary

1. INTRODUCTION

As part of the Botswana Junior Secondary Education Programme, the Science Assessment Procedures are designed to provide a framework for assessing candidates who have completed a three-year course based on the Junior Secondary Science Teaching Syllabus.

The Science examination aims to assess the knowledge and skills acquired through instruction in the content prescribed for the Junior Secondary Science programme. The assessment will be designed in a way that encourages candidates to show what they know and can do, and their level of understanding. Furthermore, the procedures offer a general framework for syllabus content representation in examination papers and assure comparability of sampled content from year to year.

The outcome of instruction in the content prescribed by the Science Syllabus will be assessed through **two** written papers.

2. DIMENSIONS

For purposes of assessment, the behavioural outcomes of instruction in the prescribed content have been classified into three broad skill areas called dimensions. Brief descriptions of the dimensions are given below.

DIMENSION 1: Knowledge and Understanding

Candidates should be able to demonstrate knowledge and understanding of:

- the concepts, laws, theories, and principles of science;
- the terminology, vocabulary, and conventions of science, including symbols, quantities and units;
- applications of science and their environmental and social implications;
- the significance of information and communication technology in day to day life situations and the world of work.

DIMENSION 2: Application and problem solving

Candidates should be able to:

- solve problems as they relate to day to day life situations;
- translate information from one form to another e.g. graphs, tables and charts;
- manipulate numerical data;
- explain patterns and relationships;
- use information to identify patterns, report trends, draw inferences, make predictions and hypothesis.

Dimension 3: Experimental and investigative skills

Candidates should be able to:

- follow a sequence of instructions;
- use appropriate techniques, apparatus and materials;
- handle instruments, apparatus and materials safely;
- make and record observations, measurements and estimates;
- interpret and evaluate observations and data;
- plan investigations and/or evaluate methods and suggest possible improvements;
- use acquired skills creatively;
- apply knowledge and draw conclusions in practical situations.

3. STRUCTURE OF THE EXAMINATION

The syllabus is assessed by two written papers and a coursework component which is not yet in place. The subject grades will be reported on a five-point scale of **A** to **E**.

Paper 1	Multiple-Choice	Marks	40
Time	1 Hour	Weighting	30%
This is a forty item multiple-choice paper assessing knowledge, understanding, application and problem solving.			
Candidates are allowed to use a calculating aid in this paper.			

Paper 2	Short-Answer and Structured	Marks	80
Time	2 Hours	Weighting	70%

This is a structured paper consisting of **two** sections, **A** and **B**.

The paper assesses knowledge, understanding, application, problem solving, experimental and investigative skills.

Section A

This section consists of short-answer questions worth a total of 70 marks.

Section B

This section consists of a structured question worth 10 marks.

Candidates must attempt all questions in this paper.

Candidates are allowed to use a calculating aid in this paper.

4. ASSESSMENT GRID

The table below shows percentage representation of the examined major content areas by paper.

COMPONENT	MAJOR CONTENT AREAS			TOTAL
	BIOLOGY	CHEMISTRY	PHYSICS	
PAPER 1	35%	30%	35%	100%
PAPER 2	35%	30%	35%	100%

5. WEIGHTING OF PAPERS BY DIMENSIONS

The table below shows percentage representation of dimensions by paper.

COMPONENT	DIMENSIONS			TOTAL
	KNOWLEDGE AND UNDERSTANDING	APPLICATION	EXPERIMENTAL SKILLS	
PAPER 1	20%	10%	—	30%
PAPER 2	40%	20%	10%	70%
TOTAL	60%	30%	10%	100%

6. GRADE DESCRIPTIONS

Grade descriptions are provided to give a general indication of the skill acquisition expected of candidates for the award of particular grades.

GRADE A

The candidate should be able to:

- use scientific vocabulary and recall a wide range of scientific facts, concepts, principles and theories;
- relate a wide range of scientific concepts to scientific principles and theories and recognise scientific relationships;
- apply scientific knowledge and understanding, identify patterns, and report trends from given information and draw appropriate conclusions and give recommendations to new situations;
- translate information from one form to another; process information from graphs, tables and charts; represent information in the form of graphs, tables and charts with ease;
- make concise and complete experimental procedures (plan); critically discuss the plan; generate hypotheses to solve a scientific problem, which may involve a wide range of variables;
- use appropriate apparatus and techniques safely and correctly; follow given instructions to perform an experiment involving a series of steps;

- make accurate observations, process data, make conclusions and generalisations where appropriate with ease, identify and explain anomalous observations.

GRADE C

The candidate should be able to:

- use scientific vocabulary, recall a wide range of scientific facts, concepts, principles and theories;
- relate a wide range of scientific concepts to scientific principles and theories and recognise scientific relationships with some assistance;
- apply scientific knowledge and understanding, identify patterns, and report trends from given information and draw conclusions and give recommendation to simple situations;
- translate information from one form to another, process information from graphs, tables and charts, represent information in the form of graphs, tables and charts with some assistance;
- make and complete experimental procedures (plan); generate hypotheses to solve a scientific problem and identify some key factors to vary and control;
- use appropriate apparatus and techniques safely and correctly; follow given instructions to perform an experiment involving a few steps;
- make accurate observations, measurements and record experimental data, process data, make conclusions and generalisations where appropriate with some assistance, recognise when it is necessary to repeat observations and measurement.

GRADE D

The candidate should be able to:

- use scientific vocabulary, recall a basic range of scientific facts, concepts, principles and theories with some assistance;
- relate basic scientific concepts to scientific principles and theories and recognise scientific relationships with some assistance;
- apply basic scientific knowledge and understanding; identify patterns, and report trends from given information and draw conclusions and give recommendations to familiar situations with some assistance;
- translate information from one form to another; process information from graphs, tables and charts; represent information in the form of graphs, tables and charts with assistance all the way;
- make simple and complete experimental procedures (plan); devise a fair test which only involves a few factors, generate hypotheses to solve a scientific problem with assistance all the way;

- use appropriate apparatus and techniques safely and correctly; follow given instructions to perform an experiment involving a few steps with assistance all the way;
- make simple observations, measurements and record experimental data, process data, make conclusions and generalisations where appropriate with some assistance all the way.