GOVERNMENT OF
NEWFOUNDLAND AND LABRADOR

Department of Education Evaluation, Testing, and Certification Division

Biology 3201 Provincial Examination

Summative Evaluation

Summative evaluation is directed toward a general assessment of the degree to which outcomes are attained over the reporting period of a course and is used to grade, certify or select students. It is not intended to improve current instruction for the benefit of those being evaluated. It measures what has happened, not what is happening. Results of summative evaluations can serve to indicate areas of strength and needs, and these results can be used to influence later instruction. In that sense, summative evaluation can be used to improve teaching and learning in subsequent reporting periods or years.

Science Provincial Examinations

The Department of Education of Newfoundland and Labrador administers a provincial summative examination for Biology 3201 at the end of each school year. This examination is worth 50% of the student's total mark. It evaluates the cognitive domain of the course by testing the curriculum outcomes at different levels of cognitive learning and at the appropriate depth and breadth required as outlined in the curriculum guide.

Provincial examinations in Newfoundland and Labrador are created by teachers in consultation with Test Development Specialists at the Department of Education. Teachers, from across the province, are involved in all levels of the exam development process. These include item writing, exam creation, field testing, validation of items, and marking.

Evaluating Higher Order

By its very nature, biology is a science that contains factual information. Students are required to not only know and understand this information but also to apply it in a variety of situations. Teachers should be diligent in ensuring that assessment items requiring higher order levels are included in their evaluation instruments throughout the school year since the provincial examination in Biology 3201 is constructed using a broad range of Bloom's taxonomy.

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The cognitive level of evaluation items does not require students to have a greater knowledge than indicated by the outcomes. Most outcomes can be evaluated at all cognitive levels. For the purpose of constructing provincial examinations, the Department of Education of Newfoundland and Labrador has summarized Bloom's six categories of competence into three levels of cognitive learning. These levels are outlined below.

Level 1
The student demonstrates attainment of outcomes through the ability to recall learned materials and to grasp the meaning of material. It can range from the recall of simple facts to translating material from one form to another. It represents the lowest level of learning and understanding of outcomes.

For example,

Which part of the eye is responsible for absorbing light and preventing internal reflection?

(A) choriod
(B) cornea
(C) iris
(D) retina

Level 2
The student demonstrates attainment of outcomes through the ability to apply rules, concepts, principles, laws, or theories.

For example,

(i) A recently discovered fossil is estimated to be approximately 22 400 years old. If the half-life of carbon-14 is 5600 years, what fraction of the original carbon-14 remains in this fossil?

(A) 1/16
(B) 1/8
(C) 1/4
(D) 1/2

(ii) The island of Newfoundland is an attractive location for genetic research studies. How would a substantial influx of new families into the island affect further research by these companies?

Level 3

The student demonstrates attainment of outcomes through the ability to use learned materials in new situations, the ability to break material down into its component parts so that its organizational structure may be understood, the ability of putting parts together to form a new whole, or the ability to judge the value of a piece of information.

For example,

(i) Which pattern of inheritance for human blood types is possible?

	mother's parents	father	child
(A)	$I^A I^A$ and ii	I^Bi	ii
(B)	I^Ai and ii	ii	$I^A I^B$
(C)	$I^B I^B$ and ii	$I^A I^A$	I^B i
(D)	ii and ii	$I^A I^B$	ii

(ii) Shortly after being struck in the back of the head, a person staggers. What part of the brain was damaged? Give two reasons to support your answer.

Biology 3201 Provincial Examination

Format

The provincial examination in Biology 3201 is composed of two parts. Part I contains 75 multiple choice questions that measure student's achievement at all levels of cognitive learning. Part II contains constructed response questions that measure student's achievement only at the higher levels of cognitive learning (level 2 and 3). Part I has a value of 75% and part II has a value of 25%. Students are required to answer all questions on the examination. To ensure highest marks possible, their responses to part II questions must be clearly presented in a well-organized manner.

Table of Specifications

A table of specifications is created by teachers and is reviewed annually during provincial examination development. It guides the construction of each provincial examination and covers all parts of the examination. It assigns the mark value to each unit and each cognitive level. The total percentage for each unit directly corresponds to the suggested time lines for teaching each unit.

Biology 3201 Table of Specifications

Unit	Cognitive Level %			
	Level 1	Level 2	Level 3	TOTAL %
Maintaining Dynamic Equilibrium	8	8	4	20
Reproduction & Development	11	11	5	27
Genetic Continuity	15	15	8	38
Evolution, Change and Diversity	6	6	3	15
TOTAL %	40	40	20	100

The evaluation instrument will contain 15-20% of core lab and STSE (Science, Technology, Society, and the Environment) content.