

## Principal Assessor Report 2002

**Assessment Panel:**

**Biology**

**Qualification area**

**Subject(s) and Level(s)  
included in this report**

**Biology Standard Grade – General & Credit Levels**

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## Statistical information: update

Number of entries in 2001	
Pre appeal	23049
Post appeal	23049

Number of entries in 2002	
Pre appeal	22813
Post appeal	Not available

### General comments re entry numbers

The total presentation for Standard Grade Biology remains high. The presentation for the General paper was approximately 1600 more than for the Credit paper. The difference in presentations in the two papers, over the previous three years, has varied from approximately 900 to 3100 but without any particular trend.

### General comments

The ability range of the candidates appears to be similar to that of recent years. There appeared to be an increased number of candidates presented at Credit Level who had been instructed to answer only Problem Solving questions. While this is a legitimate tactic for presenting centres and candidates, it does highlight a difference in the demands and expected performance between the two elements.

## Grade boundaries for each subject area included in the report

### Knowledge and Understanding

Maximum mark

General=50

Credit=40

Year	1	2	3	4	5	6	7
2002	29	21	26	20	17	–	–

### Problem Solving

Maximum mark

General=50

Credit=40

Year	1	2	3	4	5	6	7
2002	27	20	35	28	24	–	–

### Comments on grade boundaries for each subject area

A consideration of candidates' responses and the continuing high presentation for Standard Grade Biology confirms the view that the ability range remains similar from year to year. Changes are made to the grade boundaries to reflect this.

The KU element of the General Paper proved to be slightly more difficult to achieve high marks than last year and so the grade boundary for a Grade 3 was lowered. The PS element proved to be very easy and produced a large skew to the high end of the marks range. Grade boundaries had to be raised to compensate for this.

The Credit Paper was more accessible to candidates in the KU element and more demanding in the PS element compared to last year's paper. Grade boundaries very close to the notional were applied to achieve a distribution of grades consistent with previous years.

## Comments on candidate performance

### General comments

**General Paper** – Candidates performed much better in the Problem Solving element than in the Knowledge and Understanding one. This has been the pattern in previous years although it appears more pronounced this year. The KU element was more difficult than last year whereas the PS element produced a pattern of results similar to last year, but with a greater skew to the higher marks.

**Credit Paper** – The distribution of marks in the two elements was more similar than in previous years. There has been an attempt to create differentiation between General and Credit Level PS questions and this had the desired effect of producing a more normal distribution for the PS element.

### Areas of external assessment in which candidates performed well

Markers have reported the following areas of good performance:

<b>General KU</b> -	2(a)(i)	Constructing a food web.
	11(a)	Knowledge of the terms ‘cells’ and ‘stains’.
	11(c)	Diffusion.
<b>General PS</b> -	1(a)(i)	Calculating an average.
	6(a)	Converting pie chart data into percentages to complete a table.
	9	Selecting information from a passage. Graphs and charts overall were thought to have been well done.
<b>Credit KU</b> –	9(a)	Structure and function of a joint.
	9(b)	Features of the breathing system.
	11	The carbon cycle and difference between fossil and nuclear fuels.
<b>Credit PS</b> -	6(b)(i)	Completing a table with information from a passage.
	10	Extracting information from a passage.
	14(a)	Calculating a ratio.
	15	Completing a paired statement key.

## Areas of external assessment in which candidates had difficulty

Markers have reported the following areas of poor performance:

- General KU** - 4(b) Sequencing stages in the life cycle of a flowering plant.  
5(b)(i) Naming starch as a storage carbohydrate produced during photosynthesis.  
10(a) Naming migration as an example of rhythmical behaviour.  
12(b)(i) Defining the term 'catalyst'.  
(ii) Naming an enzyme involved in synthesis.  
13(a) Giving the number of chromosome sets present at different stages of sexual reproduction.  
(d) X and Y chromosomes in the inheritance of sex.
- General PS** - 5(a)(i)(ii) Experimental procedures for the investigation of the need for CO<sub>2</sub> in photosynthesis.
- Credit KU** – 1(c)(i)(ii) Pyramid of biomass and features of food chains.  
4(c) Naming the bacteria present in the root nodules of leguminous plants.  
7(c) Naming respiration as the process of energy release in cells.  
8(a)(ii) Describing stages in mitosis.  
12(b)(i) Identifying the genotypes used in a cross.  
(ii) Explaining the reason for actual and predicted ratios in a genetic cross.  
(c) Predicting the genotypes and phenotypes of a genetic cross.  
13(a)(i)(ii) Explaining what is meant by the immobilisation of enzymes and giving an advantage of their use.  
9(a) Structure and function of a joint.  
9(b) Features of the breathing system.  
11 The carbon cycle and difference between fossil and nuclear fuels.
- Credit PS** - 3(b) Explaining the advantage of using fresh mass rather than dry mass as a measurement of plant growth.  
(c) Identifying changes in plant growth using information from a line graph.  
13(b)(i) Calculating a percentage decrease.  
Calculation involving proportions, using data from a line graph.

## Areas of common misunderstanding

Many gaps in candidates' knowledge are apparent. It is worthwhile noting two areas in which candidates produced answers which demonstrated some knowledge but which still failed to gain marks. What was surprising was the significant support voiced at the Markers Meeting for accepting such answers, although the decision was taken not to accept them.

1. The definition of a catalyst. Many candidates stated that a catalyst alters/speeds up a chemical reaction but did not say that it remains unaltered after the reaction.
2. The number of chromosome sets present in body cells, gametes and zygotes. The question was not specific to any species but the majority of candidates gave answers of 46, 23 and 46. This demonstrated knowledge of the mechanisms involved but failed to recognise the point of the learning outcome, i.e. that the haploid chromosome number constitutes one complete set of chromosomes.

## **Recommendations**

### **Feedback to centres**

Centres must continue to stress to candidates the importance of learning the facts associated with the Standard Grade course. Too many marks are lost on questions requiring candidates simply to remember names, functions, definitions etc.

The Problem Solving element continues to be tackled well but more marks could be gained by many candidates through the use of rulers when completing graphs and charts. Calculations involving percentage increases or decreases also cause difficulties for some.