

This report should be read in conjunction with the question paper for Biology HG Paper 1 for 2004. The document on "Potential problems in marking Biology HG and SG – 2004" must also be consulted.

Candidates forfeited marks for not carrying out instructions to certain questions e.g. 2.1.3; 3.1; 3.2.3; 3.2.5; 4.1; 4.1.5; 4.2.2; and 5.1.5, where only the required number of answers were marked. They also lost marks in Question 5.1.2, where a table was required.

In general the manner in which the answers were provided was much better than in past years, but some candidates still failed to supply answers in a logical manner. To prepare candidates better for the final examination, it is suggested that the recommendations in this document be applied in all internal examinations in Grades 10 to 12. Educators should place emphasis on the use of correct scientific terminology in their teaching. Candidates must also follow instructions when answering questions.

## SECTION A

### Question 1

Except for the following, this section was very well answered by most candidates.

1.2.1 *Pyloric sphincter* was confused with *epiglottis*.

1.2.2 *Chewing* was provided as an answer instead of *mastication*.

1.2.3 *Sphincter of Oddi* was given instead of *ileo-cecal valve*.

1.4 Although most candidates knew the aim of this experiment, many indicated *cellular respiration* instead of *anaerobic respiration*. Many candidates had problems with the setting up of the control. They mentioned the use of *dead beans*, although the diagram clearly indicated *yeast cells*.

Candidates must be taught that, in most investigations, only one variable should be changed at a time. It is important in this experiment that the control exclude yeast cells and that yeast cells should not be replaced by any other dead organisms, thereby introducing a new variable.

1.5 Candidates must refer to the data given in the table to answer the questions.

1.6 This question caused problems for most candidates. They did not know how to present their answers. More emphasis must be placed on correct scientific definitions with scientific correctness.

1.6.1 candidates confused *immigration*, *emigration* and *migration*.

1.6.2 and 1.6.3 were poorly answered.

1.6.3 Primary and secondary production is the accumulation of energy, not the creation or production of energy. Candidates incorrectly referred to primary producers and secondary producers.

## SECTION B

### Question 2

- 2.1 was well answered by most candidates. Some candidates referred to H as the *hepatic artery* instead of *hepatic vein*. There was also confusion between *hepatic portal vein* and *hepatic vein*.
- 2.2 Many candidates had difficulty in explaining the action of enzymes. Candidates did not refer to the fact that amylase hydrolyses, digests or breaks down starch into maltose. Many candidates merely gave results instead of explaining the results at B, C and D. 2.1.5 – Some candidates still confused *glycogen* with *glucagon*.

### Question 3

- 3.1.2 and 3.1.4 The reasons provided by some candidates were very vague, with little or no use of scientific facts and terms.
- 3.2.1 This was well answered by most candidates. Many candidates confused the variables. The independent variable in this case (*Time in years*) must be placed on the x-axis and the dependent variable (*Population size in millions*) on the y-axis. Units must be included.
- Headings and captions must include both variables.
  - Many candidates did not use an appropriate scale. Some merely indicated the data provided on the table.
  - Some candidates drew a bar or column graph instead of the graph required.
- 3.2.3 Many candidates referred to the different phases of a logistic growth curve instead of giving reasons for the geometric growth shown by the graph.

### Question 4

- 4.1.3 Some candidates merely listed the requirements for an efficient gaseous exchange surface, instead of showing how the alveolus satisfies these requirements. Candidates do not refer to the structure or part, but use words like *it* instead.
- 4.1.4 Candidates merely stated that there is a high concentration of bicarbonate ions at X, but did not give a reason why this is so.
- 4.2 This question was poorly answered by most candidates. Candidates did not refer to the graphs (data) provided to answer these questions. Also, candidates did not provide sound reasons for differences displayed by the graphs.
- 4.2.5 Many candidates referred to CO<sub>2</sub> concentration and the role played by the medulla oblongata in gaseous exchange.
- 4.2.6 and 4.2.7 was well answered by most candidates.  
Educators are advised to give candidates more practice in data and graphics analysis.

### Question 5

Educators must ensure that candidates always provide headings or captions for drawings, tables, graphs, etc.

- 5.1.2 A table must have rows and columns. Each row and column must have a heading. Some candidates made reference to the concentration of CO<sub>2</sub>, rather than tabulating only the results observed. Some candidates also gave long explanations of the results.
- 5.1.5 Most candidates did not give the biological importance of respiration.

- 5.2 This question was very well answered. It was noticeable that candidates who scored well had mastered the technique in presenting their facts in a logical and orderly manner. Educators must ensure that candidates develop this skill, especially when explaining processes and mechanisms.
- Some candidates gave detailed accounts of the biochemical processes involved, but this falls outside the scope of the syllabus.
- Educators are advised to refer regularly to the syllabus and the syllabus guidelines.