

**General overview**

The 2007 paper was fairly straightforward, with definite opportunities for candidates to score marks if they made good preparations, seeing that some concepts were repeated in the paper with many opportunities to do well. Candidates could even extract some answers from certain sections of the paper if they were wide awake. For example:

- Question 1.1.1: Concepts repeated at Question 2.1.2
- Question 1.5.1: Concepts repeated at Question 4.1.4 (b)
- Question 1.3.6: Concepts repeated at Question 4.2.2
- Question 1.4.4: Concepts repeated at Question 3.3.3
- Question 2.1.4: Concepts repeated at Question 4.1.4 (a)
- Question 1.5.1: All concepts repeated at Question 4.1

There were also interesting questions requiring higher-order thinking skills and application of knowledge. Teachers need to carefully scrutinise such questions and start preparing their candidates accordingly.

**Following of instructions**

There were still centres that failed to train their candidates in following some instructions, such as instructions 1 to 8 and instruction 11.

Examples:

- Many did not start a new question on a clean page while others started a sub-question on a clean page. Such centres used two exam books per candidate. It was a nightmare to mark such centres because one has to page many times. In some cases pages had been skipped or only one or two lines of the page were written on.
- In Question 2.1.1 the instruction required candidates to give the letter and name. Many centres started with the name followed by the letter, while other centres gave only the name, resulting in a loss of marks.
- Question 5.2 – Essay: Regardless of the instructions printed in bold that “No marks will be awarded for answers given in the form of diagrams and flow charts”, some candidates disregarded this instruction and gave answers in flow chart form, while others drew a table instead of writing an essay.
- Some candidates did not number answers correctly.

**Skills required by the paper**

- Practical work:

Many candidates answers showed that they were clueless about practical work. A basic test for glucose was confused with a test for starch. This shows lack of hands-on opportunities in certain centres where candidates are drilled in facts only. An investigation on alcoholic fermentation also indicated that this had not been done by many schools.

Drawing a graph

It was very well done by the majority of centres (about 90%). However, we still had centres that transposed the axes and those who do not know how to work out the scale, especially on the Y-axis. The caption of the graph is still a problem to candidates who fail to identify the variables. It is recommended that candidates leave out enough space for drawing a graph and avoid writing other answers on top of the graph, where they might be mistakenly overlooked.

### **Interpretation of Questions**

#### Question 2.1.4 (b)

The candidates did not understand the question. They just reproduced the content they had learned on the general functions of water in nutrition.

#### Question 3.1

Candidates did not interpret the diagram with understanding. Their answers were supposed to be based on structures in the diagram, and not on memorised knowledge.

#### Question 3.2

Although the question was a giveaway for HG candidates, they did not always read the instruction carefully and could always not arrange the explanation of the breathing mechanism in correctly ordered steps.

#### Question 4.1

In Diagram B many candidates wrote “No fat” for the answer, instead of “Lowest fat content” or “6% fat”.

#### Question 5.2

Candidates at quite a few centres lost marks for poor essay lay-out. Some candidates answered the question in bullet form or, in a few cases, as a table comparing the two processes. Many candidates wasted time by writing down facts not pertaining to the question. Some described the whole photosynthesis process, in some cases even linking the dark phase to the “use of oxygen”. The second part to the essay was poorly answered at many centres.

### **Literacy levels or lack of language vocabulary in Biology/Science**

The poor level of literacy of many candidates made it difficult for them to interpret questions. Many could not use simple terms like “decrease” and “increase” correctly. Some centres could not distinguish between “breathing” and “respiration”. Others used the word “excretion” when talking about egestion or defecation. There are also candidates who have even created their own terminology, such as “cardinal valve” and “abdulla oblongata”.

A lot of answers on nutrition were based on media interpretation. It is high time that we draw the line between the two, or even campaign for the media to use the correct scientific information.

### **Analysis of Questions**

## **SECTION A**

### **QUESTION 1**

### 1.1 Multiple-choice Question.

With the exception of a few centres, this question was well answered.

### 1.2 Terminology.

Some centres encountered difficulties with the following terms:

- 1.2.1 glycerol (many candidates wrote “ester bond”).
- 1.2.3 stroma (candidates wrote “grana” and, in some instances, “stoma”).
- 1.2.4 medulla oblongata (many candidates wrote “oblongata” only, some wrote “oblongata medulla”)
- 1.2.5 deamination

### 1.3 Well answered by most centres

### 1.4 Answered poorly by most centres.

- 1.4.1 Most candidates described the aim as “the survival of”. Most candidates did not mention population size in their answer.
- 1.4.2 Many candidates lost two marks for not mentioning “100” or “all”.
- 1.4.3 Candidates of most centres had a very poor grasp of “density independent” and could not explain their answer.
- 1.4.4 Many candidates could not distinguish “inter” from “intra”. Candidates at some centres wrote “inter-competition” and “intra-competition”

### 1.5

- 1.5.1 (a) Still not fully grasped by many candidates  
(b) Answered well.
- 1.5.2 Reasonably well answered.
- 1.5.3 (a) Many candidates wrote “carbohydrates”. At some centres, examples of foods were listed, such as meat and dairy products.  
(b) Satisfactorily answered.

### 1.6 Poorly answered by many centres.

## SECTION B

### Question 2

2.1.1 On average, reasonably well answered. However, candidates did not follow instructions, and either gave only the letters or, in other cases, only the labels, thus losing marks.

- (a) Teachers must emphasize where bile is formed and where it is stored.
- (b) Although fairly well answered by many centres, other centres knew very little about the homeostatic control of glucose.
- (c) Candidates coped well in this question.

2.1.2 Reasonably well answered. Some candidates described the functions of the liver in detail with regard to “storage”.

2.1.3 Poorly answered. Candidates confused this question with the phenomenon of constipation. It seems that candidates latched onto the word “mucous”.

2.1.4 (a) Many candidates answered at least one correctly. Functions of roughage, it seems, are not thoroughly covered at many centres.

(b) Poorly answered. Candidates listed the general functions of water.

Many wrote about water as a “transport medium”. Even students who performed well in other parts of the paper struggled to provide the answers supplied by the memo.

2.2 In general, poorly done. Probably due to no practical work done in class.

2.2.1 Many centres, surprisingly, struggled with this question.

2.2.2 Many centres wrote “glucose” as the answer, instead of “maltose”.

2.2.3 Many candidates wrote “denatured”. However, no link was made to active site or altered shape. Some candidates – maybe due to a poor grasp of enzymes - misunderstood the question and referred to the temperature (37°C) as allowing the experiment to continue. Many centres had a poor knowledge and understanding of salivary amylase experiments and food tests.

2.2.4 Well answered.

2.2.5 Many candidates described the test for starch. Many centres lost a mark for not mentioning “Heat the solution” in answer.

2.3

2.3.1 Despite the credit and printing error, well answered.

2.3.2 (a) Poorly answered. Many centres wrote “protection only”, not linking it to vocal cords or voice production.

(b) Poorly answered. But a few centres did well.

(c) Satisfactorily answered.

2.3.3 (a) Satisfactorily answered.

(b) Poorly answered.

Many candidates confused the function of the trachea with that of the oesophagus.

Question 3

3.1.1 Reasonably well answered. However, some candidates wrote “inhalation” as the answer.

3.1.2 Satisfactorily answered.

3.1.3 Satisfactorily answered.

3.1.4 Many candidates did not use the phrase “in solution” for blood plasma. Spelling of “carbaminohaemoglobin” remains a problem.

3.1.5 Poorly answered. Many candidates wrote “large surface area” as an answer. Some candidates wrote about adaptations of the “alveoli”. Not well covered at many centres. Some wrote about “cell walls”, instead of “thin membranes” or “thin walls”.

3.2 Answered well by some centres. Many candidates had the sequence wrong, which was possibly an indication of the level of understanding of the process of inhalation.

- 3.3
- 3.3.1 Answered satisfactorily.
- 3.3.2 A problem at many centres. Many candidates are still using incorrect scale and axis. The graph heading was also a problem. The zero point for both axes was incorrect at many centres.
- 3.3.3 Second part of question poorly answered.
- 3.3.4 (a) Not covered at many centres  
(b) Well answered.

#### Question 4

##### 4.1

- 4.1.1 Many candidates wrote “nutrient” instead the letter.
- 4.1.2 Candidates lost marks for generalizing and not giving specific functions related to carbohydrates and proteins.
- 4.1.3 Well answered.
- 4.1.4 Satisfactorily answered. Many candidates lost marks at 4.1.4 (b) for writing “No fat” instead of “Low fat”.

##### 4.2

- 4.2.1 Candidates at some centres described “heartburn” without linking to drop in pH or results shown in graph. The concept of pH was poorly understood at many centres. Many candidates wrote “pH rises” instead of “pH drops”.
- 4.2.2 Some candidates wrote “epiglottis” or “pyloric”, instead of “cardiac sphinctor”. Some even wrote ‘cardinal’ valve.
- 4.2.3 Many candidates could not identify the enzyme involved in protein digestion in the stomach. Others gave functions of HCl unrelated to the question.
- 4.2.4 Many repeated the functions mentioned in 4.2.3.
- 4.2.5 Not fully understood. Some candidates mentioned the role of insulin. Others had a misconception that the acid hydrolyses proteins into amino acids. Many could not state that pancreatic juice should be produced, or give its role in reducing pH. Very few mentioned the presence of “bicarbonate ions” in pancreatic juice.

- 4.3 Poorly answered. The role of hepatic portal vein and its link to the liver was poorly understood by many centres.

##### 4.4

- 4.4.1 Candidates lost a mark for not being specific about the aim of the experiment. Many candidates wrote “release of CO<sub>2</sub> during respiration” instead of “anaerobic respiration”.
- 4.4.2 (a) Many candidates wrote “absorb CO<sub>2</sub>”.  
(b) Well answered.  
(c) Many could not link to the source of energy for yeast.
- 4.4.3 Well answered. Some centres wrote “to dissolve sugar”.
- 4.4.4 Candidate’s knowledge of products formed was lacking.
- 4.4.5 Many candidates removed more than one factor in the answer. Many candidates replaced “lime water” with “water”. Generally well answered at other centres.

## SECTION C

## Question 5

Question 5.1 could not be well interpreted by many candidates. It required candidates to visualise the information given seeing that pictures were not provided. This resulted in misinterpretation by many.

5.1.1 (a) "V" identified by most candidates. Reasoning it out was a problem for many candidates. Instead of "optimum temperature", many used "high temperature" or "perfect temperature". In many cases they established no link between organisms and gases released. However, the question was answered satisfactorily.

5.1.2 Candidates at some centres misinterpreted "low temperature" for "low light intensity". At some centres the role of foil was misinterpreted as sealing the test tube. Poor interpretation of the experiment at a few centres.

5.1.3 Candidates at many centres gave environmental factors such as humidity and wind. Others described adaptations of the leaf.

5.1.4 Many struggled to score three marks.

5.2 Most candidates wrote a poor essay. They described the whole process of photosynthesis, instead of the light phase only. Those who tried to answer both parts discussed Krebs's Cycle instead of oxidative phosphorylation. Photolysis was confused with hydrolysis of water. However, a few centres produced some perfect answers.