



MAURITIUS EXAMINATIONS SYNDICATE

PSAC 2021-2022

GRADE 5 MODULAR SCIENCE

Subject code: P141/1

Examiners' Report

April 2023

INTRODUCTION

The assessment in Science is modular in nature and students are required to take the first assessment at the end of Grade 5 and the second part of the assessment in Grade 6. The first part of the assessment covers the content studied at the level of Grade 5 and the second part of the assessment covers the content studied in Grade 6.

Unlike in 2020 where there was a deloading of the content for assessment purposes, the assessment session of 2021-2022 was based on the whole syllabus. In addition, candidates are assessed on three assessment objectives; approximately 40% of the marks are for demonstrating knowledge and understanding of scientific ideas, scientific techniques and procedures (AO1), 40% on the application of knowledge and understanding of scientific ideas (AO2) and approximately 20% is based on inquiry skills (AO3).

The main purpose of the examiners' report for PSAC Grade 5 Science is to provide constructive feedback on candidates' performance and guidance for future candidates. The contents of the syllabus that gave rise to misconceptions or which candidates found to be challenging are included in this report. It also highlights gaps in the conceptual understanding of candidates. Other aspects which caused difficulty, along with possible reasons, are also commented on. Key messages are included to draw the attention of Educators to the essential areas to focus on. This report should be read in conjunction with the question paper for the examination.

PAPER OVERVIEW

The mean mark for this paper was 29 out of 50 marks.

The Grade 5 Science paper for the year 2021-2022 consisted of six questions. Question 1 comprised 5 multiple-choice questions (MCQs), which covered the three assessment objectives. Questions 2-6 included objective-type questions as well as short-answer and open-ended questions that enable candidates to demonstrate their knowledge and application of essential scientific concepts.

KEY MESSAGES

- Language is still a barrier for candidates to express themselves in open-ended questions.
- It is crucial that candidates read questions carefully as they tend to lose marks due to misinterpretation or misreading of questions. An example for MCQ is that candidates circled two answers inclusive of the correct one. No mark is awarded in such cases when the choice of the answer is left to the examiner.
- Candidates need to avoid the telescoping of answers for questions requiring two statements.
- Although misspelling of scientific terms was not penalised, candidates are encouraged to practise writing key scientific terms.

GENERAL COMMENTS

Most candidates showed a good grasp of the syllabus content and there was a range of correct responses to the open-ended questions. They started the paper well but found the last items in each question more challenging. The last items are normally items pertaining to application questions and required candidates to apply the concepts learnt in an unknown or different situation than that given in the textbook. The application of concepts and questions assessing scientific inquiry skills remain a challenge for a majority of candidates at this level.

Items relating to AO1 seem to be generally well-answered by most candidates. The weighting of the paper on the AOs ‘Application’ and ‘Inquiry skills’ is around 50%. It is, therefore, very important that these skills are developed.

The majority of candidates appeared to have sufficient time to complete the paper.

SPECIFIC COMMENTS

Question 1

Question 1 consists of 5 multiple-choice questions which ensured a broad coverage of the syllabus.

Table 1

<i>Item Number</i>	<i>Key</i>	<i>% Correct</i>	<i>Most common incorrect choice</i>
1	A	87	D
2	A	79	D
3	D	70	C
4	C	71	D
5	B	52	D

This question was generally well attempted by most candidates. Items 1 and 2 were the most accessible items, allowing most candidates to attempt them correctly. Item 5 proved to be the most challenging one. Item 1, 2 and 3 are questions that required cognitive knowledge and hence were well tackled by a good majority of candidates.

Comments on specific items

Item 1 was a relatively easy recall question on pollination. Candidates were required to identify the part of a plant that attracts insects for pollination. The correct answer, A was selected by most candidates. This suggests that candidates are well acquainted with the functions of the different parts of a plant required at this level.

Item 2 was a knowledge-based question. Candidates who identified A as the correct answer showed a good understanding of the roots of plants used as food. A few candidates opted for ‘vetiver’, which was an incorrect answer. This could have arisen due to the unfamiliarity of the word ‘vetiver’ compared to ‘grass’ and ‘sugarcane’, which were all incorrect distractors.

Item 3 was a knowledge-based question. Candidates were required to identify an amphibian from a list of four given pictures. Whilst the majority of the candidates could identify D as the correct answer, there were quite a number of candidates who chose C, which was an incorrect answer. There were some blank answers as well, revealing that there is a possibility that the candidates are not familiar with the word ‘amphibian’ itself.

Item 4 was a simple application question on the topic ‘Simple Electric Circuit’. Candidates were required to identify an electrical conductor. The correct answer was C. Whilst an insignificant number of candidates opted for glass and lollipop stick, a good number of candidates opted for rubber band.

Item 5 was about the unit ‘Water’. Options A and C were clearly incorrect for the majority of candidates. This shows that the concept of refrigerator and freezer being linked to lower temperature is quite clear to a good number of candidates. Many candidates chose D, which was incorrect. Yet, this showed that candidates understand that ice will melt into water when left at room temperature. However, candidates who opted for D did not make the link that the higher the temperature the faster ice will melt. Heating implies a higher temperature compared to room temperature.

Question 2

This question was on the topic ‘Water’. The first part of the question was about the water cycle. Candidates fared generally well on this question, with most of them scoring more than 5 out of 7 marks. This question was one of the well attempted questions in the paper.

Comments on specific items

- (a) Evaporation was identified more easily than the processes of condensation and precipitation. It was also observed that confusion arose mainly between evaporation and condensation. Candidates seem to know that there is a change from the liquid state to the gaseous state, but had difficulty identifying the correct change of state to the name of the process. Although the words were given, it was noted that there were mistakes in spelling while copying the words. The attention of candidates needs to be drawn to the importance of correctly writing scientific terms.

- (b)** Only about 50% of the candidates could achieve both marks. The question was about the properties of ice. Many candidates gave uses of ice and consequently lost their marks. The expected answer was any two of the three properties that they should learn, namely ‘cold’, ‘hard’ and ‘slippery’.
- (c)(i)** A significant number of students could identify the instrument as a thermometer. Due to misreading of the question, the weaker ability student ended up writing temperature instead of a thermometer. No mark was awarded for temperature.
- (c)(ii)** Many got the correct answer by stating that 70°C as the reading shown on the thermometer. This shows that the skill regarding the use of instrument at this level has been achieved to a large extent.

Question 3

- (a)(i)** This item was generally well answered. Only 5% of candidates scored zero mark on this item. It was well attempted by the lower ability candidates who scored full marks. The correct construction of a complete circuit shows that this aspect of the unit ‘Simple Electric Circuit’ has been covered in depth. Some common mistakes were the use of one wire or of two cells. The most common mistake was the wrong wire connection with the bulb.
- (a)(ii)** Most candidates answered this question well, showing that they could easily identify the positive and negative ends of a cell.
- (a)(iii)** This item required candidates to state whether the bulb will light up if the wire is replaced by a piece of cotton thread and also to provide an explanation to it. A significant number of students left this question unanswered or answered the question only partly. As stated in the key messages, when it comes to open-ended questions and expressing in clear written sentences, many candidates face difficulties.
- (b)** The expected answer for this question was to include an additional cell in the circuit. However, many candidates referred to the size of the cell. It should be brought to the attention of students that it is not the size of the cell that matters, but rather the voltage. Common incorrect answer included adding a wire or bulb.

- (c) The majority of candidates gave the correct answer by providing the idea of preventing electric shocks. However, it was noted that a majority just mentioned electric shocks without the word 'preventing'. In open-ended questions, candidates are encouraged to write full sentences or phrases to convey the idea clearly.
- (d) Although, this item was one requiring candidates to write the word 'switch', it was left unanswered by a significant number of candidates. This could be because the candidates could not understand the term 'component'. Misspelling of the word 'switch' was also observed.

Question 4

- (a)(i) This item required candidates to identify two sources of energy from a diagram. Whilst many could identify the correct answers, a common mistake was to confuse between sources and forms of energy. The most common correct answers were sun, wind and petrol. Candidates came up with answers such as birds used as food.
- (a)(ii) 66% of the candidates scored full marks on this item. Some did not know the proper term 'chemical energy' and instead have written 'food energy'.
- (b) The common sources of energy that were given by candidates included coal and bagasse. These answers scored full marks. Some have written fossil fuels as the first answer and coal as the second one. This is an example of telescoping. Many candidates did not pay much attention to the word thermal and gave answers such as wind. This showed that some candidates were not able to differentiate between the different types of power stations.
- (c)(i) A variety of answers were obtained for this item. Among the correct accepted answers were heat energy, movement energy, light energy and sound energy. The candidates were required to understand that a transformation of energy is taking place, but also to identify the transformation. Given that the question allowed for many options, this was an item with a high percentage of correct answers.
- (c)(ii) This question proved challenging and many candidates had difficulty expressing their ideas in writing. The question required candidates to give two precautions while using an electric appliance, in this case an electric kettle. Surprisingly, a good number of

candidates mentioned precautions about using an electric kettle as per the manual of instructions when these are bought. A common mistake was to misread the questions and to give ways to save energy at home. It was also observed that there was a general lack of precision in the answers such as ‘do not stand near the kettle’ or ‘do not touch the kettle’.

Question 5

- (a) A good majority of candidates could correctly differentiate between the habitats for the different animals mentioned. A variety of habitats was given for worm.
- (b) Most candidates scored full marks and were able to identify the two endemic birds from the pictures given. The lower ability candidates ticked more than two boxes, leaving the choice to the examiner, which is a practice to be discouraged.
- (c)(i) Many candidates gave the right answers, for example ‘Round island’ or ‘Ile aux Aigrettes’, as nature reserves. Many who gave incorrect answers did not pay attention to the word islet.
- (c)(ii) Candidates were required to name an endemic animal that lives on the islet they mentioned. Here, many candidates failed to realise that they have to answer this part in connection to the islet mentioned in part(i).
- (c)(iii) This question proved challenging to many candidates, both in terms of understanding the question and expressing themselves in writing to convey their ideas. The major confusion for candidates was to misread the question and to give measures that they would take at an individual level, rather than mentioning measures that the Government would be taking. Answers such as Government has declared ‘natural forest as nature reserves’ suggest that candidates did not read the stem of question properly.

Question 6

- (a)(i) This question was not well attempted by many candidates. Although candidates are required to learn about flowering and non-flowering plants, they seem more at ease with questions about flowering plants. Many scored only 1 mark for this question. The most common answers were ‘soft’ and ‘green’. Many candidates mentioned the

conditions such as ‘damp and shady places’ required for moss to grow well. There is value in going over key words, for instance the word ‘characteristics’ here which should guide the candidate in answering the question. Other such words include ‘features’ or ‘properties’ and should be differentiated with ‘uses’ or ‘advantages and disadvantages’ for instance.

- (b)** This question required a precise knowledge of the features of cacti that allow them to grow in deserts. Many candidates gave too elaborate answers. In so doing, they tend to give contradictory answers, and hence end up losing marks. Pointy spines and thick stem were the correct answers. A variety of misspelt words were given for spines. While it is important for candidates to be able to convey their ideas in writing, they should also do so in a clear and concise manner.
- (c)(i)** Heavy rainfall and strong winds were correct answers for natural causes of soil erosion. Many ignored the word ‘natural’ and gave man-made causes of soil erosion. Others could not score the marks as they mentioned the effects instead of the cause. Another important area to stress upon is the difference between the cause and the effect or consequences which are often confused.
- (c)(ii)** This item required candidates to provide a complete explanation of how soil erosion affects the environment. A good majority of candidates gave the definition of soil erosion, but failed to explain how the environment is affected. A significant number of candidates understood that the land becomes less fertile and hence difficult to grow crops. Another correct answer mentioned about soil being deposited at the mouth of rivers and hence affecting aquatic life. A further correct answer mentioned soil blocking drains and hence causing flooding.
- (d)(i)** This question required candidates to reflect about the reason for the non-germination of seeds. The most obvious correct answer was to mention the lack of one of the conditions required for germination. There were other answers which focused on the poor quality of the seed, which was also accepted. This question revealed the misconception about sunlight being a condition for germination.
- (d)(ii)** A good majority of candidates could identify the root as the part appearing first during germination.

- (d)(iii) This question was the least popular and was not well-answered by many. During germination, the seed becomes smaller as the food stored in the seed is used up by the growing roots and shoot. This concept did not seem quite clear to a good majority, who mentioned about seed coat coming off or about the process of photosynthesis.

CONCLUSION AND RECOMMENDATIONS

This assessment reveals that there are some concepts that require some further grounding with students of Grade 5. Units such as water and animals seem to be well mastered by students. Drawing of a simple electric circuit reveals that this unit has been tackled at an experimental level, hence allowing for all categories of learners to respond quite well on question 3. Experimentation forms an integral part of the teaching of science. Hands-on experiments and demonstrations are encouraged as they promote observation skills, which are primordial in the learning of Science. Experiments promote learning for all types of learners and linking the skills acquired during an experiment to various scenarios can make students relate scientific concepts to everyday-life situations. It is definitely beneficial for students to carry out experiments in science laboratory/room. However, in the absence of a science room, it is encouraged that a science corner be created so that students have the opportunity to perform the experiments in their textbooks.

Open-ended questions remain a challenge for the majority of candidates and they should be discouraged in class to give one-word answers for questions that require an elaborate answer. The language barrier is one major issue when it comes to these types of questions. Students should be encouraged to read the questions attentively and extract the important information from the stem of the question. This will allow them to know exactly what is required from them in terms of answers.