

## FORMAT OF THE QUESTION PAPER

This paper comprises 2 sections – Section A and Section B. Candidates are required to answer both sections. Candidates are given 1 hour and 15 minutes to answer both sections.

### Section A

This section consists of 2 questions – Question 1 and Question 2. In each question, candidates are required to read and comprehend a science and technology-based text. Candidates are then required to use the information in the text to complete a graphic organizer. Each graphic organizer has 10 blanks.

### Section B

This section consists of 1 compulsory question. Candidates are required to write a comprehensive report on a science and technology-based topic using the information that is given in the question. Candidates are required to provide ample elaborations and additional information to show their knowledge of the given topic.

## GENERAL PERFORMANCE

On the whole, candidates were able to respond well to the tasks given. All candidates attempted all the questions given. However, there were some candidates who were unable to interpret and respond accurately to some of the tasks.

## PERFORMANCE OF CANDIDATES ACCORDING TO THEIR GROUPS

### High Achievement Group

Candidates in this group answered both questions in Section A with ease by providing the relevant information. In Section B, they displayed a sound knowledge of the topic and were able to provide substantial elaborations and additional information relevant to the topic. They displayed a good command of the language and were able to use appropriate scientific terminology.

### **Average Achievement Group**

Candidates in this group answered Question 1 of Section A with ease but they misinterpreted the graphic organizer in Question 2. Their answers were inaccurate due to incorrect subject reference and also omission of key words. In Section B, candidates were able to provide some elaborations and additional information relevant to the topic. However, their lack of proficiency affected the quality of their responses and their use of scientific terminology was also limited.

### **Low Achievement Group**

Candidates in this group were able to answer some parts of Question 1 of Section A with relative ease. However, many of them failed to provide correct answers in Question 2. Many of them copied whole sentences without understanding the requirements of the graphic organizer. In Section B, most candidates merely provided the information that was given in the question. They were generally unable to provide elaborations and additional information relevant to the topic. If they did, the elaborations were extremely limited. Furthermore, their lack of proficiency distorted ideas thus affecting the quality of their responses. They hardly used any scientific terminology.

## DETAILED ANALYSIS OF CANDIDATES' PERFORMANCE

### Section A: Information Transfer

#### Question 1 - Levers and Gears

SIMPLE MACHINES		
	Levers	Gears
Function	1. <u>To move things</u> <u>with less effort</u> <u>or energy</u>	7. <u>Change the direction of</u> <u>increase or reduce a</u> <u>force or the distance over</u> <u>which force is applied.</u>
Examples	2. <u>Pliers</u> 3. <u>Nutcrackers</u> 4. <u>Bottle openers</u> 5. <u>spanners</u>	8. <u>Gear train</u> 9. <u>Brass gears</u>
Object where principle is applied	6. <u>Excavators</u>	10. <u>Bicycle gear</u>

Proficient candidates were able to interpret the task given correctly. They were able to provide relevant and precise answers. The above sample script has all-correct answers.

This candidate was able to identify correctly one function of levers and gears respectively. The candidate also correctly provided examples of levers and gears, and examples of objects where the principle of levers and gears are applied. The answers provided were also short and to the point.

SIMPLE MACHINES		
	Levers	Gears
Function	1. <u>to move things</u> <u>with less effort or</u> <u>energy.</u>	7. <u>change the direction</u> <u>in which a force</u> <u>is applied.</u>
Examples	2. <u>pliers</u> 3. <u>nutcrackers</u> 4. <u>bottle openers</u> 5. <u>screwdrivers</u>	8. <u>gear train</u> 9. <u>meshed gears</u>
Object where principle is applied	6. <u>rods or bars</u>	10. <u>wheel and axel</u>

This candidate was able to respond correctly to all parts except parts 6 and 10. Instead of stating objects where the principle of gears and levers are applied, the candidate named parts of levers and gears. Responses to parts 6 and 10 are incorrect due to lack of understanding of what is required.

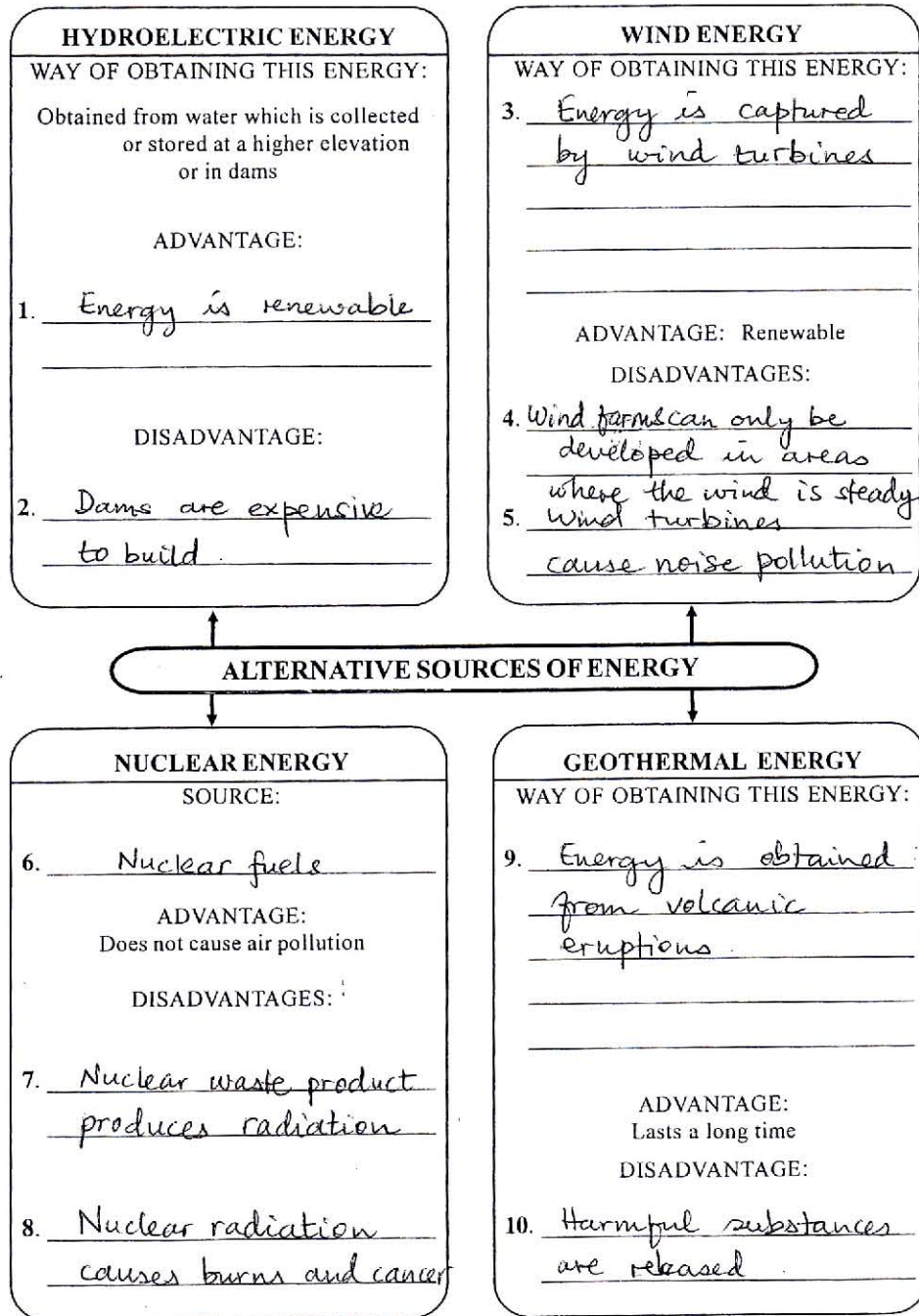
SIMPLE MACHINES		
	Levers	Gears
Function	1. levers are rods or bars used to move things	7. change the direction in which a force is applied.
Examples	2. Pilers 3. Bottle openers 4. excavators 5. pianos	8. Gear train 9. meshed gears
Object where principle is applied	6. bicycle	10. car

This candidate was able to respond correctly only to parts 3, 7, 8, 9 and 10. The response to part 1 is inaccurate because the candidate has defined levers instead of providing its function.

In part 2, the candidate has misspelled the word 'pliers' as 'pilers' and this has resulted in distortion of meaning. Responses to parts 4 and 5 are also incorrect as they are objects where the principle is applied instead of examples of levers. The candidate's response to part 6 is incomplete.

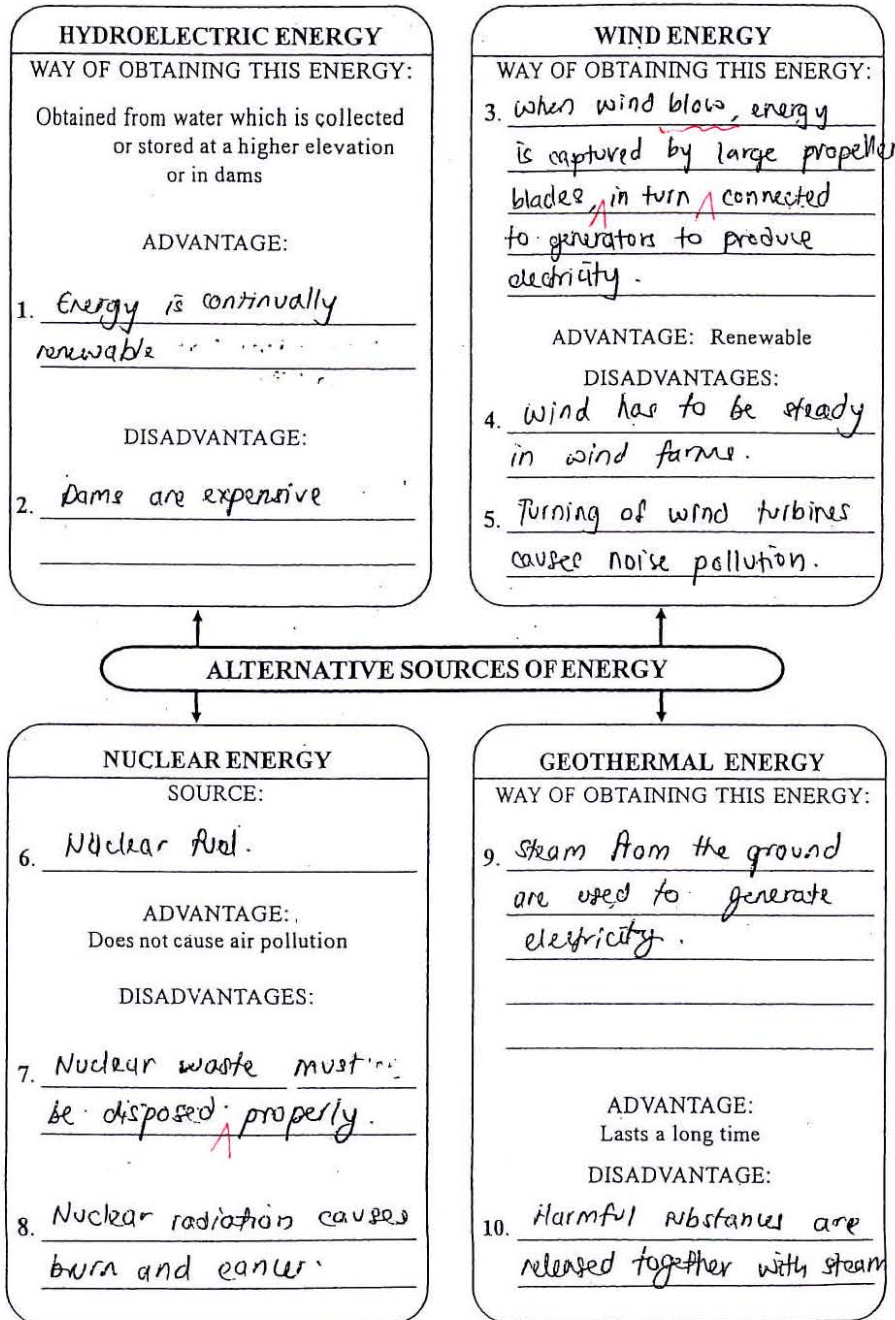
## Question 2 – Alternative Sources of Energy

Based on the information from the text, complete the graphic organiser below.



The above is a sample script with all-correct answers. This candidate was able to identify correctly the ways of obtaining wind energy, nuclear energy and geothermal energy. The candidate was also able to identify the source of nuclear energy, and the advantages and disadvantages of all forms of energy. This shows that the candidate understood the text as well as what was required.

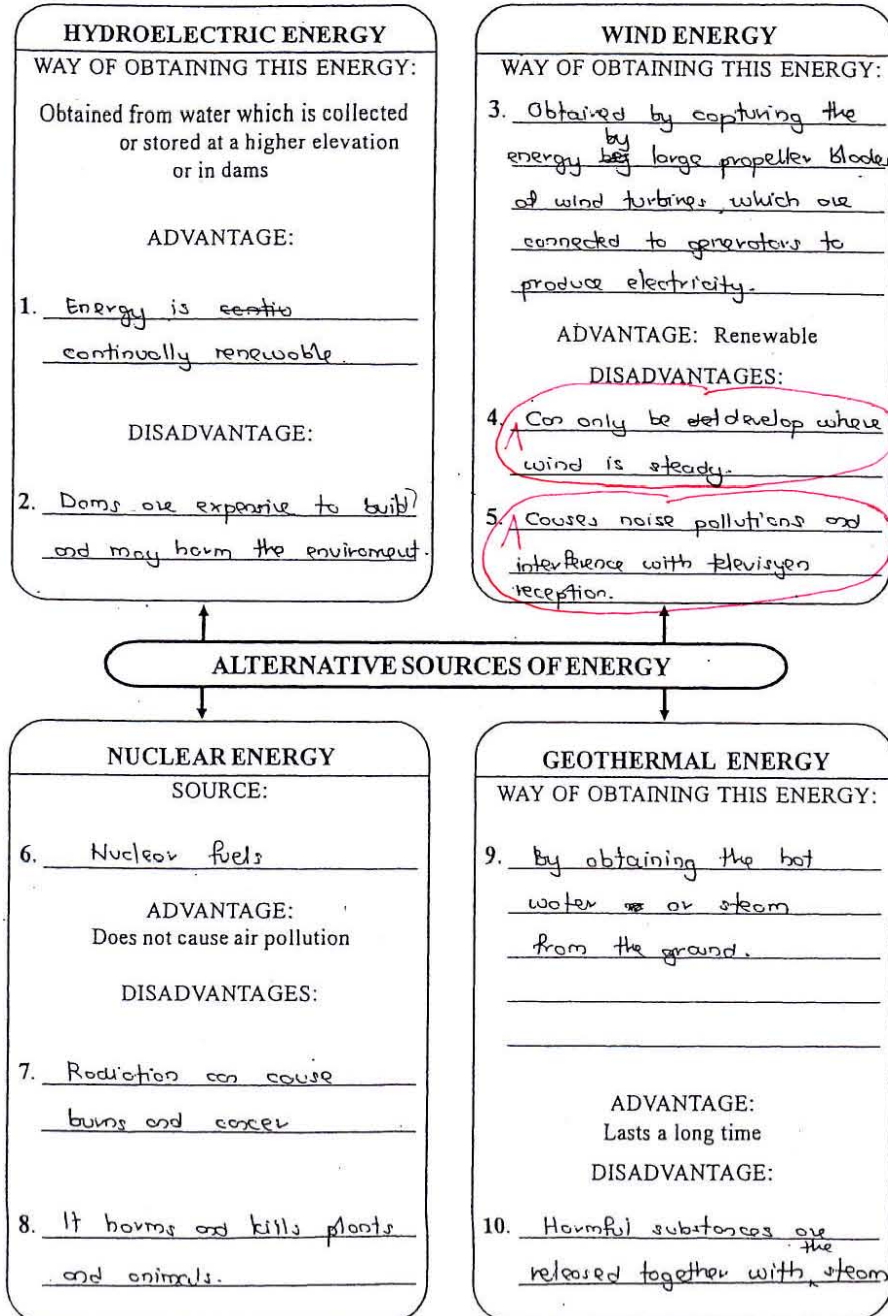
Based on the information from the text, complete the graphic organiser below.



[10 marks]

Likewise, the above is a sample script with all-correct answers although the candidate made minor errors in parts 3 and 9. The candidate's strength lies in the ability to paraphrase answers as seen in parts 4, 5, 7, 8 and 9.

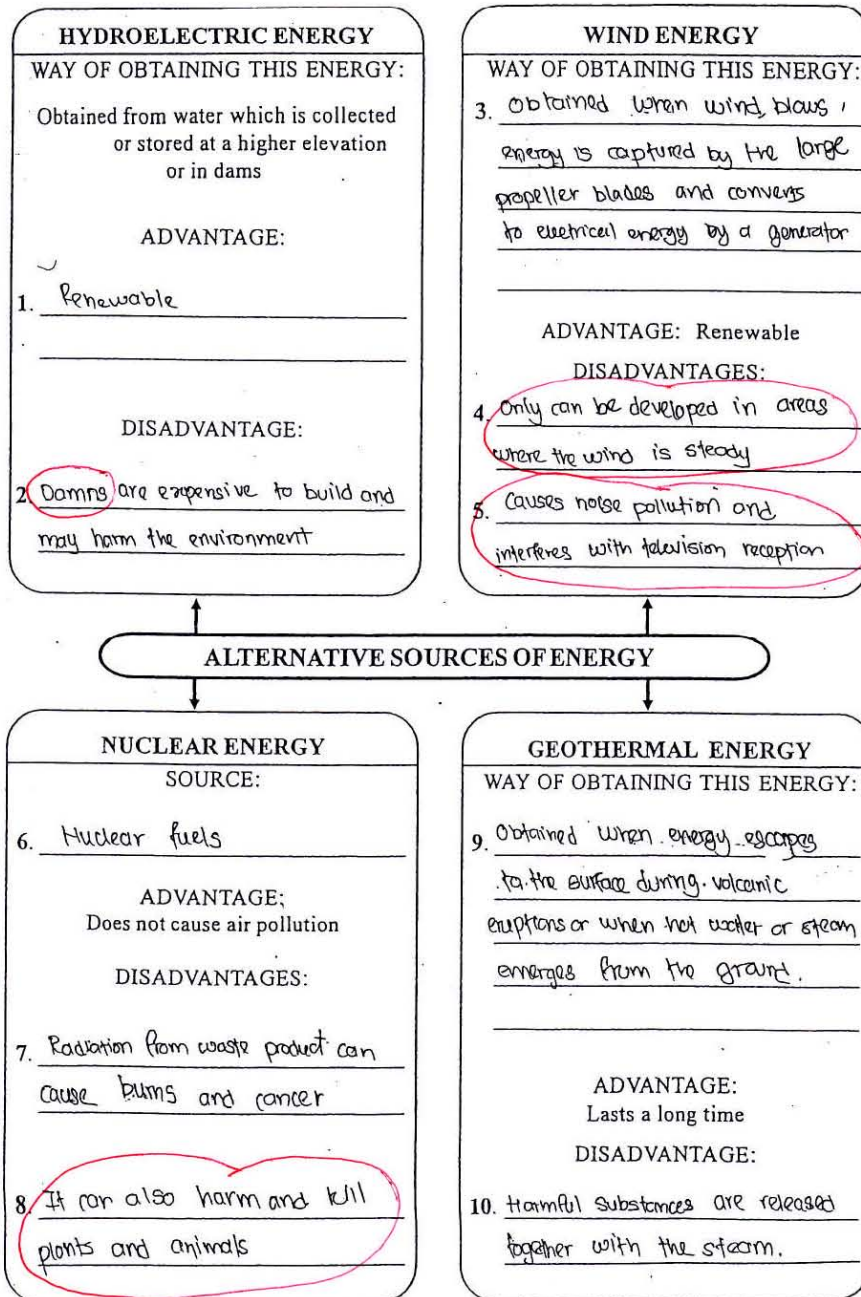
Based on the information from the text, complete the graphic organiser below.



[10 marks]

This candidate was able to make the correct connections to the subject reference in parts 1, 2, 7 and 8. In parts 4 and 5, although the candidate was able to identify the disadvantages of wind energy, omission of key words rendered the answers incorrect.

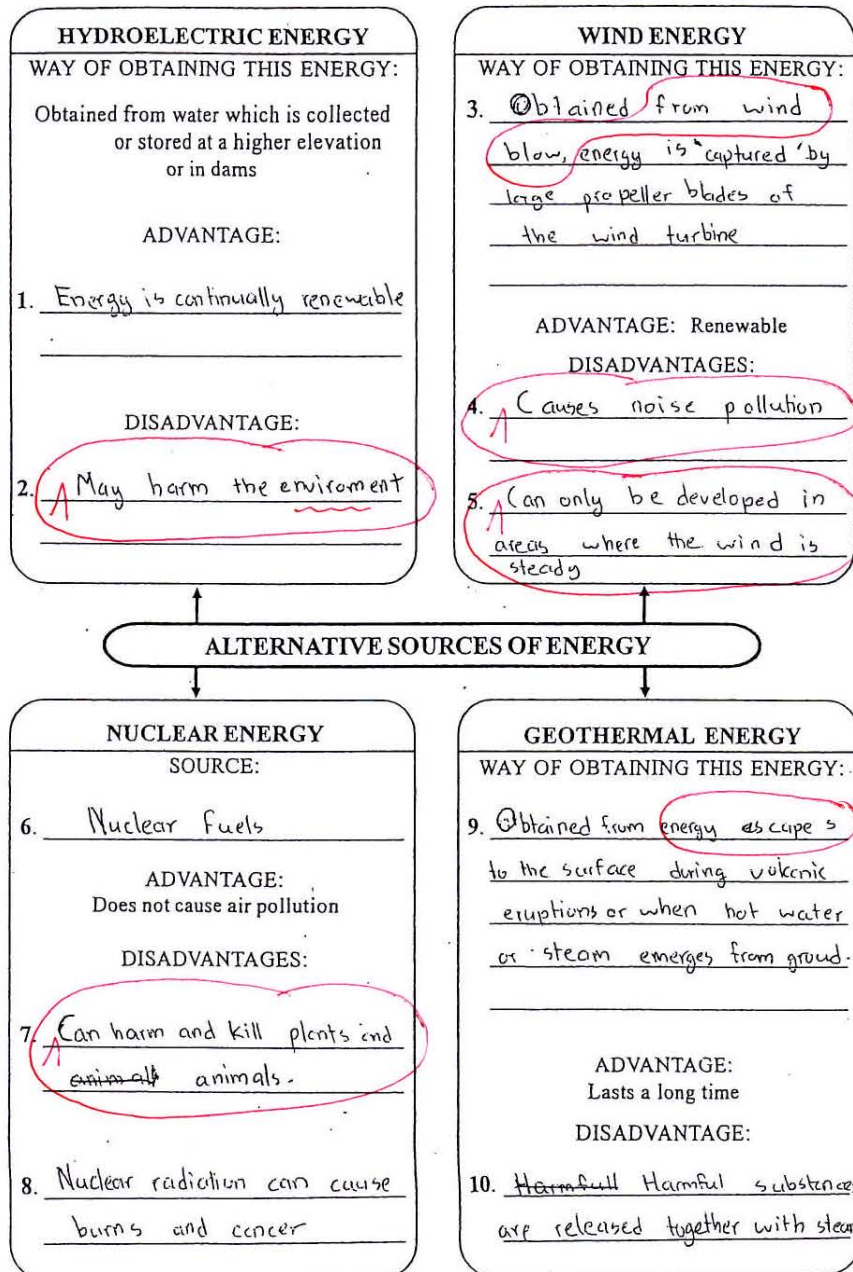
Based on the information from the text, complete the graphic organiser below.



[10 marks]

This candidate has several weaknesses. In part 2 the word 'dam' was incorrectly spelt as 'damns' thus changing the meaning of the word. In addition, the candidate copied a complete sentence from the text to answer part 8 which was not accepted as this is a graphic organizer. In parts 4 and 5 the omission of key words resulted in incomplete answers.

Based on the information from the text, complete the graphic organiser below.



[10 marks]

This candidate was only able to answer a few parts correctly i.e. parts 1, 6 8 and 10. Generally, the candidate understood the task. Like most candidates, this candidate knew what was required but failure to consider the importance of the subject reference (subject heading) affected the preciseness of the responses as seen in the answers to parts 2, 4, 5 and 7.

In parts 3 and 9, the candidate had an idea of the answers but poor rephrasing of answers and poor understanding of the noun forms distorted the meaning conveyed.

## Section B: Open Response

### Report on Nutrients

Nutrients

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The human body is a complex structure that carries out many life processes such as respiration and also urination. In order for <sup>the</sup> ~~this~~ human body to carry out <sup>all</sup> the life processes ~~more~~ more efficiently, the human body requires <sup>nutrients.</sup> ~~nutrients.~~

Nutrients can be obtained from the food we ~~eat~~ <sup>eat</sup> and consume. <sup>R</sup>

Every food that is <sup>eaten</sup> ~~taken~~ has its nutritional value and this value varies with the food <sup>that</sup> we consume.

A  
A A  
A  
A  
A  
A  
A

A good introduction is crucial to any report. Many candidates included an introduction in their reports but only some were able to provide a good introduction to the topic as shown in the above excerpt. This candidate managed to specify why nutrients are important for the human body before linking it to the points provided. In doing this, the candidate successfully provided additional information as required by the task.

The major source of nutrients ~~is~~ is our diet. A

The food we take in affects our health and defines our A

life. A well balanced diet which contains suitable

amounts of all seven classes of food is compulsory for A

one to lead a healthy life. A

Report by,

*[Signature]*

A good conclusion is also necessary to sum up what one has written. Many candidates did this but only some were able to conclude their reports in an effective manner. Candidates managed to do this, to their advantage, by including some additional information as shown in the excerpt above.

First, our core energy supplier, carbohydrates. EI

They not only provide us with massive amounts of energy, EI

they also provide them quickly. As energy is needed for (PI)

all actions as well as biochemical reactions, we will not EI EI

survive for long without carbohydrates. Carbohydrates can be EI

obtained from consuming grain products such as rice and EI

bread. As it goes through our alimentary canal, it is broken EI EI

down ~~to~~ into its most basic form, monosaccharides. These EI EI EI

molecules are then carried to every part of our body to EI

supply energy. However, having excess carbohydrates in

our body also poses a problem. Glucose, a form of

This candidate displayed a good command of the language although some minor errors were made. The candidate was able to produce a good piece of writing, having taken into consideration the subject matter, writing conventions and the usage of technical and semi-technical terminology. The ideas were well-expressed and well-organised. The choice of words was appropriate for a text of this nature and this ability was sustained throughout the report. Appropriate linkers were used to link the ideas.

In terms of content, the candidate was equally adept at using the given points and providing substantial elaborations related to the points. Sound knowledge of the topic was also demonstrated and, the points were well- presented and well-substantiated.

All in all, nutrients are very important. A <del>fact</del> <sup>study</sup>	
done by <sup>^</sup> University of Dublin, Ireland shows	
that the rate of death nowadays <sup>^</sup> <u>increases</u>	
by <u>5%</u> as a result of nutrient deficiency	
especially in third world countries like Somalia,	A
Uganda, Kenya and <sup>^</sup> Bahamas. People <del>from</del> <sup>from</sup> all over	A
the world must ensure that they get	
sufficient nutrients and <u>lend their hands</u>	A
to these people for the betterment of the	
world. However, excessive intake of nutrients	

This candidate was proficient but used inappropriate expressions for a text of this nature. Phrases like 'all in all' and 'lend their hands' are informal and not suitable for a scientific report. The statistic cited lacks authenticity and accuracy, rendering the statement doubtful.

Proteins help the body grow, make new cells and repair damaged ones through a process called mitosis. The body can regenerate new cells when the body is damaged with the presence of protein. Other than that, proteins also supply energy in an emergency. That is why an athlete diet include proteins. The energy derived from proteins can be used ~~immediately~~ immediately when it is needed by the body. Protein deficiency affects growth, ~~musl~~ muscles become weak and also causes marasmus and ~~kwashiokor~~ kwashiokor. Individuals that have a deficiency of proteins in their diet are easily fatigued and more prone to be lethargic.

This candidate was not very proficient linguistically as seen from the errors that were made. Some words were omitted as seen in 'other that...' and '...and more prone to have deficiency...'. Some errors in spelling were also evident such as 'athelete', 'immediately' and 'kwashiokor'. The candidate also had some problems with subject-verb agreement and past tense verb forms (*fatigued*) as shown in the excerpt above.

Despite having average proficiency, this candidate displayed a good understanding of the task. The given points were utilized but they were not well-developed. The candidate only provided a few elaborations which were fairly simple. A factual error was also made when the wrong word 'regenerate' was used instead of 'generate'.

In addition for a healthy body, vitamin also applied as a branch of cosmetic. Vitamins make a healthy body looks healthier. Vitamin C is needed for healthy skin and gums. Vitamin C deficiency can cause scurvy and sore gums. Vitamin D is needed for a strong bones and teeth, but deficiency causes soft bones and poor development of teeth.

It appears as if this candidate had good linguistic ability but a closer inspection of the excerpt above reveals otherwise. Poor linguistic ability is evident in the first two sentences which were the candidate's own where multiple linguistic errors were made (such as omission of verb forms, incorrect plural form and inappropriate choice of word). The other four sentences were correct because they had been copied in their entirety from the information provided and thus enabling the candidate to express the content points. There was some attempt to elaborate on the points but the ideas did not come through due to lack of competency.

## Functional And Pt Problems of Nutrients

### In Our Daily Food

In our daily feeds, there are a lot of nutrients ea A  
that we can get for our body. Every nutrients  
have their functions for us. Such as For examples  
are carbohydrates, fats, proteins, vitamins and  
mineral salts. However, we must know that certain  
nutrient ~~we~~ we must take ~~less of~~ nutrient either  
less or more of nutrients. Planning the quantities  
e in taking of nutrients is the very important.  
Thus, we must ~~see~~ follow the pyramid diet of  
food.

The excerpt above shows some attempt on the part of the candidate to discuss the topic given. The first two sentences are quite clear but little sense can be gleaned from the rest of the paragraph. Meaning is blurred due to multiple linguistic errors.

## **SUGGESTIONS FOR CANDIDATES**

1. Candidates should familiarise themselves with texts that are scientific in nature. Knowledge of scientific texts and scientific terminology is vital.
2. Candidates should make attempts to improve their language proficiency and competency. Ability to understand a variety of sentence structures is crucial for comprehension and writing purposes.
3. Candidates should practise identifying main ideas and supporting details to enable them to complete information transfer tasks.
4. Candidates should practise elaborating on ideas and providing additional information to enable them to write effective and comprehensive reports.
5. Candidates should develop their critical thinking skills as these are crucial for all the tasks in this paper.
6. Candidates should familiarise themselves with a variety of graphic organisers such as charts and tables.
7. Candidates should practise transferring information from linear texts to non-linear texts and vice-versa.

## **SUGGESTIONS FOR TEACHERS**

1. Teachers should provide students with a variety of scientific and technical reading materials or resources from scientific journals, newspaper articles and screen texts (Internet materials).
2. Teachers should cover a variety of topics on ALL themes specified in the syllabus.
3. Teachers should get students to talk about and discuss these topics via presentations and projects.
4. Teachers should make difficult and complex reading texts accessible to students by simplifying them.
5. Teachers should give students ample practice in writing simple, compound and complex sentences.
6. Teachers should give students practice in interpreting linear and non-linear texts.
7. Teachers should give students practice in summarizing and paraphrasing sentences.
8. Teachers should give students tasks which require them to use their critical thinking skills by getting them to interpret and analyse information.
9. Teachers should give students practice in interpreting mind maps and elaborating ideas.
10. Teachers must read widely and be competent in terms of content so that their students will have confidence in them.