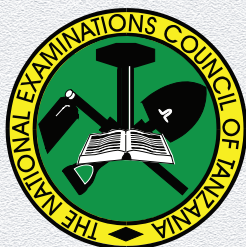


THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA



**ANALYSIS OF CANDIDATES' RESPONSES TO
PRIMARY SCHOOL LEAVING EXAMINATION
QUESTIONS FOR THE YEAR 2014**

SCIENCE

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PREFACE

This report on analysis of Examinees' responses to the Primary School Leaving Examination (PSLE) 2014 questions in science subject has been prepared to give feedback to students, teachers, policy makers, curriculum developers and other education stakeholders on how examinees responded to examination items. Students' responses in the examination items is one of the indicators of what the students were able to attain and what they did not manage to learn successfully in the seven-year period of primary education.

This report has identified various factors which led to the candidates' inability to answer the examination questions correctly. The analysis indicates that, the following factors contributed to the candidates' failure to provide correct answers: inability to identify the demands of the questions; inadequate knowledge in the respective topics; lack of knowledge of some topics; teaching which emphasize theoretical learning even for topics which need simple experiments which can be demonstrated in the classroom; inability to relate the different topics to everyday life situations; inability to transfer knowledge and skills acquired from one subject to another; inability to adhere to the examination instructions such as choosing more than one answer contrary to the instructions leaving some questions unanswered. An analysis of each item was conducted indicating the number or percentage of candidates who chose each of the given options, those who were unable to answer correctly, those who omitted items and those who gave more than one answer for the item. Possible reasons that could have led the candidates to choose incorrect answers are provided for each item.

The Examinations Council believes that, the feedback provided will enable the different stakeholders in education to take the necessary steps in

improving the teaching and learning process, for the purpose of eliminating the shortcomings identified in this report. In addition, the Council is of the opinion that if the recommendations given in this report are implemented accordingly, the knowledge and skills acquired by the students completing primary education will be enhanced and eventually, the pass rate in the future primary school leaving examination will increase.

Finally, the National Examinations Council of Tanzania would like to express sincere gratitude to the Examination Officers and all others who contributed to the preparation of this report. The Council will appreciate any fruitful comments and recommendations from teachers, students and other education stakeholders aiming at improving the quality of future reports.



Dr. Charles E. Msonde
EXECUTIVE SECRETARY

1.0 INTRODUCTION

The Science Examination Paper in the Primary School Leaving Examination was held on the 10th September 2014. The number of candidates who sat for the examination was 791,932 which was 97.99 percent of those who were registered. Analysis of candidates' responses to the questions in the science subject indicates that 333,527(42.12%) candidates passed the examination.

The Primary School Leaving Examination (PSLE) for the year 2014, for science subject consisted of 50 questions from various topics. Candidates were required to answer all questions. The candidates were instructed to choose the correct answer and shade the respective letter on the answer sheet provided. Students' answers for each item are analyzed and possible reasons for the choice of each option are provided.

2.0 ANALYSIS OF CANDIDENTS' ANSWERS

Question 1: Which of the following diseases can be spread by houseflies and cockroaches?

- A Chicken pox
- B Diarrhoea
- C Whooping cough
- D Malnutrition
- E Typhoid.

Response pattern

Option	A	B*	C	D	E	Omitted	others
No. of candidates	67,828	381,248	48,015	38,375	253,286	1,361	1,787
% of candidates	8.57	48.14	6.06	4.85	31.98	0.17	0.23

The question intended to measure candidates' knowledge on the types of insects and diseases they cause. The candidates' performance on this question was average.

Many candidates (48.14%) chose B "Diarrhoea" which was the correct answer. This indicates that the candidates had enough understanding on different diseases caused by insects. A total of 253,286 (31.98%) chose E "Typhoid". These candidates were attracted by this distractor due to the misconception between diarrhoea and typhoid as typhoid always occur with diarrhoea. Candidates who chose distractors A "Chicken pox", C "Whooping cough" and D "Malnutrition" were not sure of the disease caused by houseflies and cockroaches. On the other hand, 1,361 candidates (0.17%) did not answer this question due to lack of knowledge about different diseases caused by insects

Question 2: Which of the following is not found in the blood system?

- A Bronchiole
- B Valve
- C Auricle
- D Capillary
- E Artery.

Response pattern

Option	A*	B	C	D	E	Omitted	Others
No. of candidates	376,472	256,512	62,952	44,180	47,265	2,719	1,800
% of candidates	47.54	32.39	7.95	5.58	5.97	0.34	0.23

The question tested candidates' ability to identify different parts of the blood system. The candidates' performance on this question was average.

A total of 376,472 candidates (47.54%) chose A "Branchiole" which was the correct answer. These candidates realized that branchiole is not part of the blood system instead it is a part in the respiratory system. A total of 410,909 candidates (51.89%) who chose among distractors B "Valve", C "Auricle", D "Capillary" and E "Artery" could not realize that these are parts of the blood system consisting of the heart and blood vessels. These responses indicates that the candidates had little knowledge about the respiratory system which made them fail to recognise that bronchioles forms a network of small tubes in the lungs. Further more 2,719 candidates (0.34%) did not answer this question due to lack of knowledge about the blood system.

Question 3: Which of the following should be considered before attending a person suffering from AIDS?

- A Wear clean clothes
- B Wash yourself with soap
- C Wear gloves
- D Pray
- E Allow him/her to rest.

Response pattern

Option	A	B	C*	D	E	Omitted	Others
No. of candidates	46,753	39,831	635,031	29,792	37,121	1,806	1,566
% of candidates	5.9	5.03	80.19	3.76	4.69	0.23	0.2

The question intended to measure candidates' ability to apply the knowledge acquired in the classroom in on different preventive methods against AIDS particularly when attending AIDS victim. The general candidates' performance in this question was good.

Many candidates (80.19%) chose the correct answer C "wear gloves". These candidates had enough understanding on the things to consider before attending a person suffering from AIDS. This is because AIDS pandemic is a cross cutting issue which apart from being taught at school as a subject still there are different institutions involved in the provision of education on how to prevent the spread of HIV from a victim. Some candidates 46,753 (5.9%) chose A "Wear clean clothes" which was not a correct answer because wearing any kind of clothes does not save a person from getting Human Immunodeficiency Virus (HIV). Further more 39,831 candidates (5.03%) chose B "Wash yourself with soap" which was also not a correct answer. These candidates were attracted by this distractor because washing with soap is one of the preventive measures taken against various communicable diseases such as dysentery and colera. Other candidates 29,792 (3.76%) chose distractor D "Pray"

because praying is based on personal beliefs which lacks scientific proofs, therefore those candidates who believe on praying chose that as one of the thing to consider when attending a person suffering from AIDS. Also 37,121 candidates (4.69%) who chose E “Allow him/her to rest” failed to understand the task of the question. This is because a sick person can be allowed to rest after being attended and this may depend on the kind of service being provided. Few candidates 1,806 (0.23%) did not answer this question due to lack of knowledge about the things to consider before attending a person suffering from AIDS.

Question 4: Which of the following is a characteristic of clean and safe water?

- A Fetched from wells
- B Stored and cooled in a water pot
- C Filtered and stored in clean container
- D Boiled, filtered and stored in clean container
- E Without a lot of soda ash.

Response pattern

Option	A	B	C	D*	E	Omitted	Others
No. of candidates	20,410	21,241	44,511	685,295	17,241	1,407	1,795
% of candidates	2.58	2.68	5.62	86.54	2.18	0.18	0.23

The question tested candidates’ knowledge on the properties of water. The candidates were required to make analysis of the water properties to identify which type of water is clean and safe. The general candidates’ performance in this question was good.

A total of 685,295 candidates (86.54%) chose the correct answer D “Boiled, filtered and stored in clean container” because they had

knowledge on the properties of clean and safe water. Statistical data shows that 44,511 candidates (5.62%) chose distractor C “Filtered and stored in clean container” because they did not understand the essence of boiling water. Probably these candidates have been using unboiled water though they have been filtering the dirtiness seen by our naked eyes. Some of the candidates (2.68%) chose B “Stored and cooled in a water pot” which was not a correct answer. These candidates could have been influenced by the experience they have from the environment they live in, where drinking water is stored in pots for cooling even if they are neither boiled nor filtered. Other candidates (2.58%) chose distractor A “Fetched from wells” because many parts particularly, the rural areas use wells as the major source of water. Further more 17,241 candidates (2.18%) chose distractor E “Without a lot of soda ash” because they lacked knowledge about the use of soda ash. However, 1,407 candidates (0.18%) did not answer this question because they lacked knowledge about the properties of clean and safe water.

Question 5: Which of the following diseases does not have a vaccine?

- A Tuberculosis
- B Tetanus
- C Measles
- D Whooping cough
- E Trachoma.

Response pattern

Option	A	B	C	D	E*	Omitted	Others
No. of candidates	262,078	83,399	63,257	56,233	321,313	3,054	2,566
% of candidates	33.09	10.53	7.99	7.1	40.57	0.39	0.2

The question tested candidates' understanding on different preventive methods against diseases. The general candidates' performance in this question was weak.

The majority of the candidates (40.57%) chose the correct answer E "Trachoma". This indicates that the candidates had enough knowledge about health and preventive measures against diseases. In addition, 262,078 candidates (33.09%) chose A "Tuberculosis". The candidates in this category were attracted by this answer because the disease have been causing death to many people particularly when it is not diagnosed early or when the victim delay to start treatment. This might have been the reason for the candidates to believe that the disease have no vaccine. A total of 202,889 candidates (25.62%) who chose options B "Tetanus", C "Measles" and D "Whooping cough" had no enough knowledge on the different preventive methods against communicable diseases. Furthermore, 3,054 candidates (0.39%) did not answer this question due to the lack of knowledge on communicable diseases and its preventive measures.

Question 6: The gas used by plants to manufacture proteins is

- A carbon dioxide
- B hydrogen
- C oxygen
- D nitrogen
- E natural gas.

Response pattern

Option	A	B	C	D*	E	Omitted	others
No. of candidates	364,347	75,713	204,067	99,342	43,605	2,571	2,255
% of candidates	46.01	9.56	25.77	12.54	5.51	0.32	0.28

The question tested candidates' knowledge in identifying the gas used by plants in protein synthesis. The general candidates' performance in this question was weak.

A total of 99,342 candidates (12.54%) chose D "nitrogen" which was the correct answer. Those candidates had enough knowledge on protein synthesis in plants which uses nitrogen gas. Further more 364,347 candidates (46.01%) chose A "carbon dioxide" due to lack of understanding of the correct use of this gas. Carbon dioxide is used by plants in synthesis of carbohydrate. Some candidates 204,067 (25.77%) chose C "oxygen" which was also not a correct answer. These candidates were attracted by this option because oxygen is a useful gas in the general living of organisms. Further more, statistical data indicates that 119,318 candidates (15.07%) who chose B "hydrogen" and E "natural gas" lacked knowledge on the properties of different gases hence, it was difficult for them to identify the correct answer. However, 0.32 percent of the candidates did not answer this question may be they were not taught or they lacked knowledge about the topic of gases.

Question 7: The amount of water lost by plants increase due to the presence of which condition in the environment?

- A Heat and water vapour
- B Water vapour and light
- C Wind and sun ray
- D Clouds and wind
- E Water vapour and wind.

Response pattern

Option	A	B	C*	D	E	Omitted	Others
No. of candidates	290,010	161,720	205,905	57,225	71,011	3,893	2,136
% of candidates	36.62	20.42	26	7.23	8.97	0.49	0.2

The question tested candidates' understanding on environmental factors that may lead into increase or decrease in the amount of water lost from a plant. The general candidates' performance in this question was weak.

The correct answer C "Wind and sun ray" was chosen by 205,905 candidates (26%) because they had knowledge about the environmental factors which cause increase in the amount of water lost in a plant. A total of 451,730 candidates (57.04%) chose distractors A "Heat and water vapour" and B "Water vapour and light". These candidates were attracted by these options due to the presence of heat and light which causes the increase in the amount of water lost in a plant. However, they could not understand that, water vapour causes the decrease of water lost in a plant. In addition a total of 128,236 candidates (16.2%) who chose distractors D "Clouds and wind" and E "Water vapour and wind" were attracted by these answers due to the presence of wind which increases the rate of water lost in a plant through transpiration. However, they failed to recognise that clouds and water vapour reduces the rate of water lost in a plant. Few candidates 3,893 (0.49%) did not answer this question because they lacked knowledge on the environmental factors that lead into increase or decrease in the amount of water lost from a plant.

Question 8: People are likely to cause soil erosion if they do one of the following:

- A Cut down trees
- B Add manure to the soils
- C Plant grass
- D Make terraces on sloppy ground
- E Plant trees.

Response pattern

Option	A*	B	C	D	E	Omitted	Others
No. of candidates	552,224	44,393	32,077	108,588	50,342	1,894	2,382
% of candidates	69.73	5.61	4.05	13.71	6.36	0.24	0.2

The question measured candidates' ability in analysing different human activities that are likely to cause soil erosion. The general candidates' performance in this question was good.

The correct answer A "Cut down trees" was chosen by 552,224 candidates (69.73%) because soil erosion is a common phenomenon in the environment. Also environmental conservation is a cross cutting issue where deforestation is being discouraged in the society for the purpose of avoiding soil erosion and turning the land into desert. A total of 235,400 candidates (29.73%) who chose distractors B "Add manure to the soils", C "Plant grass", D "Make terraces on sloppy ground" and E "Make terraces on sloppy ground" did not understand the task of the question because those distractors show different ways used to prevent soil erosion. Few candidates (0.24%) did not answer this question due to lack of knowledge on the subject matter.

Question 9: Agriculture, livestock keeping and mining are activities done by human beings and all depend on

- A Rivers
- B Springs
- C Land
- D Irrigation
- E wind.

Response pattern

Option	A	B	C*	D	E	Omitted	Others
No. of candidates	51,943	53,020	609,334	46,048	27,881	1,788	1,886
% of candidates	6.56	6.7	76.95	5.81	3.52	0.23	0.24

The question tested knowledge of the candidates to identify the best requirement for agricultural, livestock and mining activities done by human being. The general candidates' performance in this question was good.

The majority of candidates (76.95%) chose the correct answer C "land". This is because land is the primary and most important requirement for all agricultural activities, livestock and mining when compared to other requirements. In addition, the candidates had enough understanding on the topic of important requirements for health and life because land is used in food production together with other different economic activities associated with daily human life. Some of the candidates (22.59%) who chose A "rivers", B "Springs", D "Irrigation" and E "wind" which are not correct answers, did not understand the task of the question. In addition 1,788 candidates (0.23%) who did not answer this question probably, they lacked knowledge about the suitable environment for agricultural, livestock and mining.

Question 10: A chameleon usually changes its colour in order to

- A search for food
- B breath
- C reproduce
- D observe enemies
- E protect itself.

Response pattern

Option	A	B	C	D	E*	Omitted	Others
No. of candidates	53,887	34,407	30,178	129,018	538,652	2,196	3,562
% of candidates	6.8	4.34	3.81	16.29	68.02	0.28	0.2

The question measured candidates' ability to analyse different animal behaviours. The candidates' performance in this question was generally good.

The majority of candidates 538,652 (68.02%) chose the correct answer E "protect itself" because chameleon is a familiar animal to most candidates because of its characteristic to change colour according to the environment. A total of 247,490 candidates (31.24%) who chose options A "search for food", B "breath", C "reproduce" and D "observe enemies" which are not correct answers had little knowledge on the reasons which makes Chameleon to change its colour according to the environment. In addition 129,018 candidates (16.29%) were attracted by option D "observe enemies" due to failure to understand that colour change in chameleon does not save to observe enemies instead it makes difficult for the enemies to see it. Few candidates (0.28%) did not answer this question due to lack of knowledge about different animal behaviours including that of chameleon.

Question 11: How many stages are there in the growth of a cockroach?

- A Two
- B Three
- C Four
- D Five
- E Six.

Response pattern

Option	A	B*	C	D	E	Omitted	Others
No. of candidates	77,301	338,846	282,901	51,247	36,484	3,015	2,106
% of candidates	9.76	42.79	35.72	6.47	4.61	0.38	0.2

The question tested candidates' knowledge on the growth stages of different insects including cockroach. The candidates' performance in this question was generally average.

The correct answer B "Three" was chosen by 338,846 candidates (42.79%) indicating that the candidates had knowledge on the growth stages of a cockroach. A total of 447,933 candidates (56.56%) who chose options A "Two", C "Four", D "Five" and E "Six" lacked enough knowledge on the growth stages of a cockroach. Few candidates (0.38%) did not answer this question an indication that the candidates lacked knowledge on the different growth stages of insects.

Question 12: Which of the following does not have vertebral column?

- A Spider
- B Bat
- C Cat
- D Man
- E Chicken.

Response pattern

Option	A*	B	C	D	E	Omitted	Others
No. of candidates	576,352	94,208	28,743	48,857	39,013	2,317	2,410
% of candidates	72.78	11.9	3.63	6.17	4.93	0.29	0.2

The question intended to measure candidates' ability to analyse groups of animals basing on the presence or absence of the vertebral column so as to distinguish one group from another. The candidates' performance in this question was generally good.

Many candidates (72.78%) answered this question correctly by choosing A "Spider". This indicates that these candidates had enough knowledge on the characteristics of different animals, hence used that knowledge to distinguish them. Furthermore, (11.9%) candidates chose B "Bat" which was not the correct answer. These candidates were attracted by this option because among the animals listed in the question, bat is not normally seen easily as it always starts to be seen during night. Therefore, many candidates were not sure with the group of this animal. Statistical data also shows that, a total of 14.73 percent of the candidates chose C "Cat", D "Man" and E "Chicken" which are not correct answers. This shows that the candidates lacked enough knowledge on the characteristics of animal groups as all these animals' posses the vertebral column. Few candidates (0.29%) did not answer this question because they had no skills and knowledge to analyse the groups of animalsbasing on the presence or absence of the vertebral column.

Question 13: One of the functions of the muscles in the body is to

- A prevent bleeding
- B cause various movements
- C produce red blood cells
- D hold the teeth in place
- E transport blood in the body.

Response pattern

Option	A	B*	C	D	E	Omitted	Others
No. of candidates	70,884	322,103	129,856	44,606	218,598	3,062	2,791
% of candidates	8.95	40.67	16.4	5.63	27.6	0.39	0.2

The question intended to measure candidates' knowledge on the function of muscles in the body. The general candidates' performance in this question was weak.

A total of 322,103 candidates (40.67%) chose the correct answer B "cause various movements", this indicates that they had enough understanding about the functions of muscles in the body. Some candidates 218,598 (27.6%) chose E "transport blood in the body". These candidates lacked knowledge on the functions of muscles because blood transportation is performed by the blood vessels. Also 245,346 candidates (30.98%) who chose A "prevent bleeding", C "produce red blood cells" and D "hold the teeth in place" lacked enough knowledge on the functions of muscles in the body. The candidates did not understand the function of muscles in the body because there are cells which are responsible for blood clotting which prevent it from bleeding. Also red blood cells are produced in the bone marrow. Either, teeth are held by gums which are in the mouth. The candidates 245,346 (30.98%) who did not answer this question had no knowledge on the subject matter.

Question 14: Human bones are joined in order to

- A prevent breakage
- B make them of the same size
- C enable them to bend easily
- D make the shape of the body
- E enable them to straighten.

Response pattern

Option	A	B	C	D*	E	Omitted	Others
No. of candidates	67,142	41,126	15,7366	47,5181	4,6334	2,651	2,100
% of candidates	8.48	5.19	19.87	60.01	5.85	0.33	0.2

The question intended to measure candidates' knowledge on the bone system and the essence of joining bones. The general candidates' performance in this question was average.

The candidates who chose the correct answer D “make the shape of the body” was 475,181 (60.01%). This indicates that the candidates had enough knowledge on the importance of human bones to be joined. Some candidates 157,366 (19.87%) chose distractor C “enable them to bend easily”. These candidates were attracted by this distractor because of the facts that many parts of the body where the bones are joined are easy to bend however, they could not realise that the external structure of bones and the way they are joined forms the structure of the body we see. On the other hand 154,602 candidates (19.52%) who chose A “prevent breakage”, B “make them of the same size” and E “enable them to strengthen” had no enough knowledge on the importance of human bones to be joined. Few candidates (0.33%) did not answer this question due to lack of enough knowledge on the essence of bones to be joined.

Question 15: Which of the following bend when passing from one medium to another?

- A Rainbow
- B Parallel lines
- C Light ray
- D Lens focus
- E A ray and lens focus.

Response pattern

Option	A	B	C*	D	E	Omitted	Others
No. of candidates	149,374	50,150	441,340	53,129	92,781	2,889	2,237
% of candidates	18.86	6.33	55.73	6.71	11.72	0.36	0.28

The question intended to measure candidates' knowledge on the properties of light when travelling from one medium to another. In this question, candidates were required to identify the thing among the given alternatives which bends when passing from one medium to another. The general performance in this question was average.

The correct answer was C "Light ray" which was opted by 55.73 percent of the candidates. This indicates that, many candidates had adequate knowledge on properties of light when travelling from one medium to another. Some candidates (18.86%) opted for A "Rainbow" which was incorrect answer. These candidates failed to distinguish between light ray and rainbow because the formation of rainbow or dispersion of different colours of light when passing through glass prism tend to cause diffraction of light ray. Distractors B "Parallel lines", D "Lens focus" and E "A ray and lens focus" were opted by 34.76 percent of the candidates who lacked knowledge on the properties of light. However, few candidates (0.36%) who did not answer this question lacked knowledge on the topic of work, energy and power especially on the properties of light.

Question 16: In the light spectrum, the colour that bends earlier than others is

- A red
- B yellow
- C indigo
- D blue

E violet.

Response pattern

Option	A	B	C	D	E*	Omitted	others
No. of candidates	275,007	145,972	112,483	134,489	117,761	4,092	2,096
% of candidates	34.73	18.43	14.2	16.98	14.87	0.52	0.26

The question intended to measure candidates' knowledge on the properties of light when passes through different media. The candidates were required to make an evaluation on the properties of white light when passes through media to form its spectrum. The general candidates' performance in this question was weak.

Many candidates (34.73%) chose A "red" which is not a correct answer. The candidates were attracted with this option due to lack of understanding that rays with red colour has high speed compared to other colours hence in the spectrum takes time to bend than other rays with other colours. In addition 49.61 percent of the candidates who chose B "Yellow", C "Indigo" and D "Blue" proves that some of the candidates lacked enough knowledge on the properties of white light rays when it passes through different media. Few candidates (14.87%) chose E (Violet) which is the correct answer. This indicates that the candidates had knowledge on the topic of energy, machine and work hence identified the light colour which bends earlier than all in the light spectrum. However 0.52 percent of the candidates who did not answer this question lacked understanding about the properties of rays of white light when passes through different media.

Question 17: Study Figure 1 which shows the internal part of a bean seed.

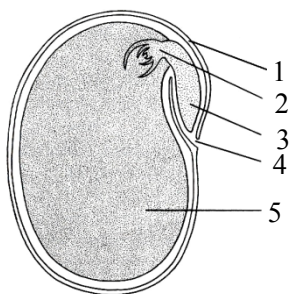


Figure 1

Which part is responsible for protecting the seed from harmful insects or changes in temperature?

- A 2
- B 3
- C 5
- D 4
- E 1.

Response pattern

Option	A	B	C	D	E*	Omitted	Others
No. of candidates	177,765	52,769	99,808	99,921	357,268	1,984	2,385
% of candidates	22.45	6.66	12.6	12.62	45.12	0.25	0.2

The question intended to measure candidates' ability to analyse and recognise the function performed by each part of the seed especially the main parts of the bean seed. The general candidates' performance in this question was average.

In this question 357,268 candidates (45.12%) who chose the correct answer E "1" had enough knowledge on the function performed by the

main parts of the bean seed. The candidates (12.6%) who chose distractor C “5” did not understand which part of the seed is responsible for protecting the seed from destructive insects and changes in temperature. This is because the part indicated by number 5 (dicotyledon) in the figure stores food used by the seed during germination. Some candidates (12.62%) who chose option D “4” failed to recognise that this part connects the seed from a fruit. It is a point where food nutrients pass from the plant to the seed. Also a total of 230,534 candidates (29.11%) who chose distractors A “2” and B “3” did not understand that those parts are important in the seed germination where the part indicated by number 2 (plumule) develops into shoot whereas the part indicated by number 3 (radicle) develops into roots. However, 1,984 candidates (0.25%) who did not answer the question lacked knowledge on the function performed by the main parts of the bean seed.

Question 18: The sky looks blue because

- A air and water are bluish
- B red colour is dispersed more than blue colour
- C vision power decreases
- D blue colour is dispersed more than other colours
- E during sunset, the sun appears yellowish.

Response pattern

Option	A	B	C	D*	E	Omitted	Others
No. of candidates	110,325	95,394	137,029	360,316	84,285	2,780	1,771
% of candidates	13.93	12.05	17.3	45.5	10.64	0.35	0.22

This question tested the candidates’ understanding on the reason for the sky to look blue. The overall performance of candidates in this question was average.

A total of 360,316 (45.5%) candidates who selected the correct answer D “blue colour is dispersed more than other colours” had enough knowledge on the concept of light especially on the characteristics of light rays of different colours. Moreover, the candidates managed to identify that, when monochromatic light passes through the clouds dispersion of light occurs, where as rays of light with blue colour are scattered more than rays of other colours. This is a reason why the sky appears blue. Option B (red colour is dispersed more than blue colour) attracted 95,394 (12.05%) candidates because light rays with red colour travels more faster than light rays with other colours. Many candidates 331,639 (41.87%) who selected options A “air and water are bluish”, C “vision power decreases” and E “during sunset, the sun appears yellowish” which are incorrect answers failed to understand what happens when monochromatic light travel from one medium to another particularly clouds. Few candidates (0.35%) did not answer this question showing that, they lacked knowledge on the properties of light rays of different colours.

Question 19: Which of the following items does not use magnet?

- A Loud speaker
- B Telephone
- C Radio
- D Mobile phone
- E Electric iron.

Response pattern

Option	A	B	C	D	E*	Omitted	Others
No. of candidates	154,069	68,066	53,366	97,749	413,911	2,326	2,413
% of candidates	19.46	8.6	6.74	12.34	52.27	0.29	0.3

This question intended to examine the candidates' knowledge on the characteristics of magnet and hence identify which among the given items or devices does not use magnet. The performance of candidates in this question was average.

The correct answer E "Electric iron" was chosen by 52.27 percent of the candidates. These candidates had enough knowledge on the characteristics of magnet. On the other hand, they were aware on the type and applications of devices which apply electric current to transmit or receive sound energy. Also, the candidates were attracted to this answer because in its function electric iron cannot receive or transmit sound energy like other devices. A total of 47.14 percent of the candidates who opted distractors A "Loud speaker", B "Telephone", C "Radio" and D "Mobile phone" failed to understand that, these devices have magnet which help in converting electric signals into sound energy. Few candidates (0.29%) did not answer this question because they lacked knowledge on magnet and its properties.

Question 20: The unit of work is

- A Kilogram
- B Newton
- C Tonne
- D Joule
- E Gram.

Response pattern

Option	A	B	C	D*	E	Omitted	Others
No. of candidates	110,966	183,206	115,020	319,908	56,814	3,520	2,466
% of candidates	14.01	23.13	14.52	40.4	7.17	0.44	0.31

The question measured the candidates' knowledge on units of various quantities in order to identify the unit of work. The general performance of candidates in this question was weak.

A total of 319,908 candidates (40.4%) selected the correct answer D "Joule" because they had ability to identify the unit of work as compared to other quantity like mass and force. Majority of the candidates (35.70%) who were attracted by option A "Kilogram", C "Tonne", and E "Gram" failed to recognize that these units represent mass and not work. On the other hand, 183,206 (23.13%) candidates chose option B "Newton" which was a misconception of the use of units because newton is a unit of force when multiplied with metre which is a unit of distance gives joule which was the correct answer. Candidates who did not attempt this question were 3,520 (0.44%) indicating that they did not have enough knowledge on different types of units.

Question 21: In the normal procedure, the first stage to be followed when conducting a scientific experiment is

- A to start an experiment
- B data collection
- C problem identification
- D data analysis
- E interpretation of results

Response pattern

Option	A	B	C*	D	E	Omitted	Others
No. of candidates	114,441	200,887	328,865	85,771	56,863	2,528	2,545
% of candidates	14.45	25.37	41.53	10.83	7.18	0.32	0.32

This question measured candidates' ability in analyzing the steps to be followed when carrying out a scientific experiment. In this question

candidates were required to identify the first step which has to be followed. The general performance of candidates in this question was average.

Most of the candidate 328,865 (41.53%) chose the correct answer C “problem identification”. This is due to the fact that the topic on methods and procedures in science is the cross-cutting issue. Therefore, candidates had enough knowledge on the various steps which have to be followed when doing a scientific experiment. Either this topic could have been taught by experiments thus making the candidates to remember the important steps to be followed. Candidates who were attracted by A “to start an experiment”, B “data collection”, D “data analysis” and E “interpretation of results” lacked the understanding of the steps which have to be followed when doing a scientific experiment starting from the first step to the last step. Few candidates 2,528 (0.32%) who did not attempt this question lacked enough knowledge on the methods and procedures in science specifically on the steps to be followed when doing experiments.

Question 22: The third stage in a scientific experiment is

- A data analysis
- B interpretation of results
- C preparation and starting the experiment
- D data collection
- E problem identification

Response pattern

Option	A	B	C*	D	E	Omitted	Others
No. of candidates	178,081	114,554	219,973	160,846	112,280	3,417	2,749
% of candidates	22.49	14.47	27.78	20.31	14.18	0.43	0.35

The question intended to measure candidates' ability to understand how to analyse the various steps which are followed when doing a scientific experiment so that they can identify the third step. This question is among those which candidates had weak performance.

Only 27.78 percent of the candidates' chose the correct option C "preparation and starting the experiment". These candidates had enough knowledge on the various steps which are followed when doing a scientific experiment. Candidates who were attracted by distractor A "data analysis" were 22.49 percent, they failed to differentiate the steps which are followed when doing a scientific experiment and steps followed when doing a scientific investigation for a long period. Most candidates (48.96%) chose options B "interpretation of results", D "data collection" and E "problem identification" which were not correct. These candidates lacked enough knowledge on the arrangement of the steps to be followed when doing scientific experiment from the first step to the last step and thus failed to identify the third step. Few candidates (0.43%) did not attempt this question showing that, they lacked enough knowledge on the arrangement of the steps, which have to be followed when doing a scientific experiment.

Question 23: Bahati put a red litmus paper in an unknown chemical compound. The colour of the litmus paper changed to blue. This show that the chemical compound had

- A Acid
- B Ash
- C Water
- D Fat
- E spirit.

Response pattern

Option	A	B*	C	D	E	Omitted	others
No. of candidatea	353,625	120,855	96,164	69,213	145,969	3,089	2,985
% of candidates	44.66	15.26	12.14	8.74	18.43	0.39	0.38

The question intended to measure candidates' knowledge on the properties of acids and bases by using litmus paper. The candidates were required to understand that, some of the materials found in the environment have acidic or basic properties. The general candidates' performance in this question was weak.

A total of 120,855 candidates (15.26%) chose the correct answer B "Ash" because they knew that when ash dissolves in water forms a basic solution which turns red litmus paper to blue. Many candidates (44.66%) chose option A "Acid" because they didn't understand that acids turns blue litmus paper into red. Also these candidates did not adhere to the question details that, red litmus paper changed to blue. Other candidates 145,969 (18.43%) chose E "spirit" because of the colour of spirit which is pale blue. Furthermore 165,377 candidates (20.88%) chose C "water" and D "fat" because they did not understand the properties of acids and base. Statistical data also indicates that, 69,213 (8.74%) candidates chose incorrect answer because they did not understand the properties of fat. Few candidates (0.39%) did not attempt this question due to lack of knowledge on the properties of acids and bases.

Question 24: The results of an experiment may be in the following two forms.

- A True or false
- B Analysed and not analysed

- C With questions and without questions
- D Preliminary results and medium results
- E Preliminary results and final results.

Response pattern

Option	A	B	C	D	E*	Omitted	Others
No. of candidates	389,193	103,106	80,756	49,689	162,793	3,536	2,827
% of candidates	49.15	13.02	10.2	6.27	20.56	0.45	0.36

This question intended to measure candidates' ability in evaluating experimental results. The general performance of candidates in this question was weak.

A total of 162,793 candidates (20.56%) chose the correct option E "Preliminary results and final results". This was an indication that they had enough knowledge on how to make evaluation of experimental results. Candidates who were attracted by option A "True or false" were 389,193 (49.15%). These candidates knew that identifying a problem starts by an investigative question, which is experimented in order to get the truth of the problem. A total of 233,551 candidates (29.49%) chose options B "Analysed and not analysed", C "With questions and without questions" and D "Preliminary results and medium results" which were not correct options. They chose these options because they did not understand that, experimental results can have two different interpretations (preliminary results) and the explanations based on the message from the data which was used in doing the experiment (final results). About 3,536, (0.45%) who did not attempt this question lacked the knowledge on the methods and procedures in science especially on evaluating results from scientific experiments.

Question 25: What will happen if NORTH and NORTH magnetic poles approach each other?

- A They will strongly attract each other
- B They will attract each other towards one direction
- C They will repel
- D Nothing will happen
- E They will break.

Response pattern

Option	A	B	C*	D	E	Omitted	Others
No. of candidates	116,423	127,906	474,235	45,313	23,881	1,880	2,262
% of candidates	14.7	16.15	59.89	5.72	3.02	0.24	0.29

The question measured candidates' knowledge on the properties of magnets. The candidates were expected to analyse and state what will happen if north and north poles of a magnet approach each other. The overall performance of candidates in this question was average.

Candidates who chose the correct option C "They will repel" were 59.89 percent. These candidates had enough knowledge on magnets and its properties. Candidates who chose option B "They will attract each other towards one direction" were 16.15 percent. They knew that magnets have a property of attracting each other, though they failed to realize that, this only happens when two different poles of the magnet approach each other. A total of 23.44 percent of the candidates chose A "They will strongly attract each other", D "Nothing will happen" and E "They will break" because they did not have enough knowledge about magnets and its properties. Candidates who did not attempt this question were 0.24 percent. These candidates did not have enough knowledge on the properties of the magnets.

Question 26: PQ is a ruler whose length is half a metre. A load of 20 g is placed at P a distance of 0.1 m from the fulcrum. If a load is placed at Q the distance of 0.4 m from the fulcrum, what will be the weight of M when the rule is balancing?

- A 4 g
- B 10 g
- C 5 g
- D 2.5 g
- E 25 g.

Response pattern

Option	A	B	C*	D	E	Omitted	Others
No. of candidates	101,686	103,476	264,494	189,248	124,284	5,810	2,902
% of candidates	12.84	13.07	33.4	23.9	15.69	0.73	0.37

The question measured candidates' ability in using the knowledge in the calculation of weight of a load when a metre rule is balanced depending on the measurements given. The candidates displayed a weak overall performance in this question.

The correct Option C "5 g" was chosen by 264,494 (33.4%) candidates because they managed to use the knowledge they have in calculating the required weight on the well balanced lever. The incorrect option D "2.5 g" was chosen by 189,248 (23.9%). This was due to the fact that these candidates failed to use the principle of moments in calculating the weight of the load needed to make the lever in equilibrium from the fulcrum. Distractors A "4 g", B "10 g" and E "25 g" were chosen by 329,446 (41.60%) candidates who failed to interpret the requirements of the question. A drawing of a well balanced lever would have helped

them to apply the principle of moments to get the correct answer. The few candidates who did not attempt this question were 5,810 (0.73%). They lacked enough knowledge in calculating weight of a load on a well balanced lever.

Question 27: The concept of reflection of light is manifested in one of the following things:

- A Microscope
- B Television
- C Watch
- D Bulb
- E Spectacles.

Response pattern

Option	A*	B	C	D	E	Omitted	Others
No. of candidates	233,108	99,309	62,250	143,923	246,640	3,492	3,178
% of candidates	29.44	12.54	7.86	18.17	31.15	0.44	0.4

The question intended to measure the knowledge of candidates on the variety of apparatus, which use light properties. In this question candidates were expected to identify an apparatus which show the property of reflection of light when in use. The overall performance of candidates in this question was weak.

The correct option A “Microscope” was chosen by 29.44 percent of the candidates because they had enough knowledge on the things (matter) which reflect light. Many candidates (31.15%) chose the incorrect option E “Spectacles”. This may be caused by the failure of the candidates to differentiate the use of various types of matter in relation to the properties of light when travelling in a straight line which are being reflected and absorbed. They were also attracted by this option

due to the fact that spectacles use lenses, which allow light to pass through and not plane mirror which reflects light. Candidates who opted for B “Television”, C “Watch” and D “Bulb” which were not correct answers lacked in depth knowledge in the use of different types of matter which are related to the properties of light. Only 0.44 percent of the candidates did not attempt this question because they lacked knowledge on the use of a variety of matter which are related to the properties of light energy.

Question 28: Study Figure 2, which shows an electric circuit having bulbs connected in a parallel form and answer the question that follows.

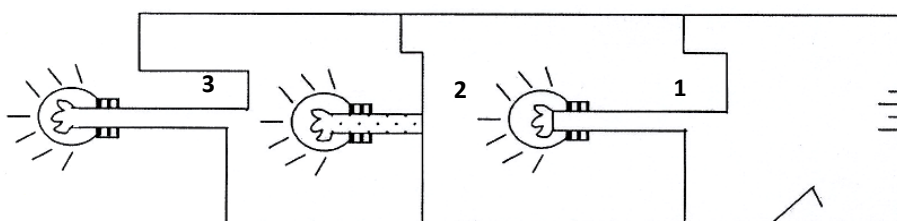


Figure 2

What will happen when bulb 2 blows? Bulb number

- A 3 only will remain alight
- B 1 and 3 will remain alight
- C 1 only will remain alight
- D 1 and 3 will blow
- E 3 will blow.

Response pattern

Option	A	B*	C	D	E	Omitted	Others
No. of candidates	81,065	322,122	133,075	166,496	83,158	3,491	2,493
% of candidates	10.24	40.68	16.8	21.02	10.5	0.44	0.31

The question measured candidates' ability in making evaluation of what will happen when bulb number 2 in the circuit blows. The overall performance of candidates in this question was weak.

A total of 322,122 candidates (40.68%) chose B "1 and 3 will remain alight" which was the correct option. These candidates had the ability to investigate the arrangement of the battery, wire, switch and the bulb which makes the circuit and evaluate what happens if bulb number 2 blows. Distractor D "1 and 3 will blow" was chosen by 166,496 (21.02%) candidates who failed to realise that, parallel circuit has more than one electric path therefore if bulb number 2 blows, electricity will continue to flow through the path which joined bulb number 1 and 3 which make them to continue lighting. This is one of the advantages of parallel circuit when compared with series circuit. A total of 297,298 candidates (37.54%) who chose options A "3 only will remain alight", C "1 only will remain alight" and E "3 will blow" did not have enough knowledge on the type of electric circuits therefore they failed to identify what will happen if bulb number 2 blows. Few candidates (0.44%) who did not attempt this question lacked enough knowledge on electric energy especially how to evaluate electric circuit.

Question 29: Presence of living organisms, water and air is a characteristic of which of the following planets?

- A Mars
- B Jupiter
- C Venus
- D Earth
- E Saturn.

Response pattern

Option	A	B	C	D*	E	Omitted	Others
No. of candidates	45,068	72,168	86,798	532,434	49,990	2,967	2,475
% of candidates	5.69	9.11	10.96	67.24	6.31	0.37	0.31

This question intended to measure candidates understanding of the characteristics of different planets. In this question, candidates were expected to identify planets which have shown characteristics of presence of living things, water and air. The performance of candidates in this question was good.

The correct option D “Earth” was chosen by the majority of the candidates (67.24%). This is due to the fact that the arrangement of planets and its characteristics is a cross-cutting topic and is taught in the Social Studies especially geography which helps the candidates to have a wide knowledge. Also earth is the planet where human being, animals, insects and plants (living things) live and all of these depend on water and air. Option C “Venus” which was not correct was chosen by 86,798 (10.96%) candidates. These candidates lacked the knowledge on the arrangement of planet and its characteristics in the solar system starting from the first planet to the last planet. Venus is the second planet from the sun which experience very high temperatures thus making life impossible for living things. Candidates who were attracted by distractor A “Mars” were 45,068 (5.69%). Option A was chosen because venus planet is on the fourth position (near the earth) in the solar system which has air, hotness and other characteristics which resemble the characteristics of the earth. This makes life to be possible in this planet according to the on going different scientific investigations. A total of 122,158 candidates (15.42%) chose options B “Jupiter” and E “Saturn” which were not

correct. They lacked knowledge on the characteristics of planets. Only 2,967 (0.37%) candidates did not attempt this question because they lacked enough knowledge on the arrangement of planets.

Question 30: The earth's axis is inclined at which degrees?

- A 60
- B $18\frac{1}{2}$
- C $32\frac{1}{2}$
- D $25\frac{1}{2}$
- E $23\frac{1}{2}$.

Response pattern

Option	A	B	C	D	E*	Omitted	Others
No. of candidates	256,434	51,881	145,126	57,299	273,465	4,785	2,910
% of candidates	32.38	6.55	18.33	7.24	34.53	0.6	0.37

This question measured candidates' ability in using the knowledge they have to identify the degree of inclination of the earth. The overall performance of candidates in this question was weak.

The correct option E " $23\frac{1}{2}$ " was chosen by 34.53 percent of the candidates because they had enough knowledge on the outcome of earth rotation on its own axis when inclined at $23\frac{1}{2}$ degrees including the differences which exist between day and night in various places towards the northern and southern parts of the earth. A total of 64.50 percent of the candidates who were attracted by distractors A "60", B " $18\frac{1}{2}$ ", C " $32\frac{1}{2}$ " and D " $25\frac{1}{2}$ " lacked the knowledge on the inclination of the earth which is $23\frac{1}{2}$ degrees. These candidates failed to understand that the earth is inclined when rotating on its own axis hence leads it to differences in seasons in various parts of the earth, cyclones, low tides

and high tides in lakes and oceans. Few candidates (0.6%) did not attempt this question because they lacked enough knowledge on the structure of the earth and the way it rotates on its own axis.

Question 31: Which of the following revolves around the earth from west to east?

- A Sun
- B Star
- C Moon
- D Meteor
- E Planet.

Response pattern

Option	A	B	C*	D	E	Omitted	Others
No. of candidates	349,030	50,364	213,839	55,597	117,124	3,054	2,892
% of candidates	44.08	6.36	27	7.02	14.79	0.39	0.37

The question intended to measure candidates' comprehension on the heavenly bodies which surround the earth from the west to the east. The overall performance of candidates was weak.

Only 27 percent of the candidates chose the correct option C "Moon" because they had enough knowledge on the arrangement of planets from the sun, forces of gravity and heavenly bodies which surround the earth. Distractor A "Sun" attracted 44.08 percent of the candidates who did not understand that according to the arrangement of heavenly bodies, the sun is very big and is surrounded by all other planets including the earth. However some of the planets have small heavenly bodies which surround them. This is due to the fact that, big heavenly bodies have greater force of attraction than the small heavenly bodies thus in order to balance in the sky, small heavenly bodies surround big

heavenly bodies which are near to it. Candidates who chose options B “Star”, D “Meteor” and E “Planet” were 28.17 percent. Options B, D and E which were not correct were chosen by candidates who did not have enough knowledge on the arrangement of planets and the force of attraction among heavenly bodies which surround those planets. Few candidates (0.39%) who did not attempt this question did not have enough knowledge on the planetary system and its characteristics.

Question 32: A person having swollen neck gland (goitre) has a deficiency of which mineral salt?

- A Calcium
- B Iodine
- C Potassium
- D Phosphorus
- E Limestone.

Response pattern

Option	A	B*	C	D	E	Omitted	Others
No. of candidates	180,523	349,479	83,579	10,6715	65,037	4,009	2,558
% of candidates	22.8	44.13	10.55	13.48	8.21	0.51	0.2

The question intended to measure candidates’ ability to apply their knowledge in the daily life. The candidates were required to have enough knowledge on the effects caused by deficiency of different mineral salts in the body. The general candidates’ performance in this question was average.

In this question 349,479 candidates (44.13%) who chose the correct answer B “Iodine” had enough knowledge about the function performed by different mineral salts in the body and the effects caused by their

deficiency. The statistical data indicates that 287,238 candidates (36.28%) who chose among distractors A “Calcium” and D “Phosphorus” could not realise that these mineral salts are not the cause of goitre instead calcium and phosphorus deficiency in the body makes bones and teeth to become weak. Furthermore, a total of 148,616 candidates (18.76%) who chose among distractor C “Potassium” and E “Limestone” lacked enough knowledge about goitre and the minerals required in the body to suppress the condition because deficiency of potassium and limestone in the body may cause problems in the blood and nervous system. However, few candidates 4,009 (0.51%) did not attempt this question due to lack of knowledge about the effects caused by poor nutrition particularly the effects resulted from deficiency of a particular mineral salt in the body.

Question 33: Carefully observe Figure 3 and answer the question that follows.

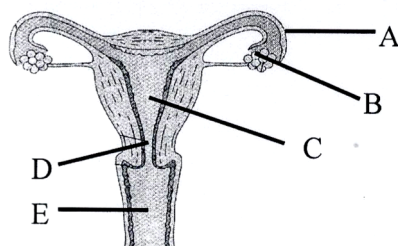


Figure 3

Which letter in Figure 3 represents the uterus?

- A C
- B D
- C E
- D A
- E B.

Response pattern

Option	A*	B	C	D	E	Omitted	Others
No. of candidates	342,019	147,522	155,751	66,126	74480	3,405	2,597
% of candidates	43.19	18.63	19.67	8.35	9.41	0.43	0.2

The question intended to measure candidates' ability to analyse different parts of the female reproductive system. The general candidates' performance in this question was average.

Only 43.19 percent of the candidates managed to choose the correct answer A "C" because they had enough knowledge on the female reproductive parts which led them to identify a letter which represents uterus in the given figure. Furthermore, statistical data indicates further that 38.3 percent of candidates who chose among options B "D" and C "E" could not identify the correct part of the uterus in the figure given. These candidates were attracted by these distractors with their respective parts in the figure represented by letter D "Cervix" and E "Vagina" because these parts form a continuous canal with the uterus. In addition, 17.76 percent of candidates who chose option D "A" and E "B" did not have knowledge about the parts forming the female reproductive system. There were 0.43 percent of candidates who did not attempt this question because they lacked knowledge about the parts forming the female reproductive system.

Question 34: One of the functions of the bones is to manufacture

- A blood platelets
- B blood plasma
- C white blood cells
- D red blood cells

E blood clotting cells

Response pattern

Option	A	B	C	D*	E	Omitted	Others
No. of candidates	145,725	110,368	15,1971	29,8316	7,8649	4,868	2,003
% of candidates	18.4	13.94	19.19	37.67	9.93	0.61	0.2

The question intended to measure candidates' understanding on the functions performed by bones in the body. The general candidates' performance in this question was weak.

In this question, 37.67 percent of the candidates chose the correct answer D "red blood cells" because they had enough knowledge on the function performed by bones in the body including formation of red blood cells. A total of 61.46 percent of the candidates who chose among options A "blood platelets", B "blood plasma", C "white blood cells" and E "blood clotting cells" lacked enough knowledge to recognise the type of blood cells formed in bones. However, there were 0.61 percent of candidates who did not attempt this question due to lack of understanding on the functions performed by bones in the body.

Question 35: Uhuru has a problem of having broken teeth and weak legs. What type of food nutrients would you advise him to eat in order to solve the problem?

- A Iron minerals
- B Phosphorus minerals
- C Calcium minerals
- D Iodine minerals
- E Vitamin K.

Response pattern

Option	A	B	C*	D	E	Omitted	Others
No. of candidates	95,759	149,300	298,787	7,6047	16,7729	2,363	1,915
% of candidates	12.09	18.85	37.73	9.6	21.18	0.3	0.2

The question intended to measure candidates' ability to apply the knowledge acquired in the class in their daily life. The candidates were required to have enough knowledge about the topic of nutrition in animals particularly the essence of minerals in the body. The general candidates' performance in this question was weak.

A total of 298,787 candidates (37.73%) who chose the correct answer C "Calcium minerals" had knowledge about the importance of proper nutrition in animals particularly human being that led them to realise that, the problem of broken teeth and weak legs is caused by deficiency of calcium in the diet. On the other hand 149,300 candidates (18.85%) chose option B "phosphorus minerals" because phosphorus minerals are important in building teeth and bones but they could not realise that, calcium minerals perform the role of strengthening teeth and bones. Also a total of 339,535 candidates (42.87%) who chose among options A "Iron minerals", D "iodine minerals" and E "Vitamin K" lacked enough knowledge on the type of mineral which play the role of strengthening teeth and bones. Few candidates 2,363 (0.3%) did not attempt this question due to lack of knowledge about the importance minerals in the body.

Question 36: When Ahadi was asked a science question on solar eclipse, he thought for a while before giving the correct response to the teacher. Which part of the brain did he use to answer the question?

- A The front brain
- B The hind brain
- C The mid brain
- D The front and hind brain
- E The mid and hindbrain.

Response pattern

Option	A*	B	C	D	E	Omitted	Others
No. of candidates	338,138	139,957	170,179	87,225	51,466	2,853	2,082
% of candidates	42.7	17.67	21.49	11.01	6.5	0.36	0.26

The question intended to measure the candidates' understanding on the various parts of brain and their functions. The overall performance of candidates in this question was average.

Candidates who chose the correct answer A "The front brain" were 338,138 (42.7%). They chose this correct answer because the function of this part of the brain is to control voluntary actions, such as record keeping, thinking, and decision-making. Candidates who chose distractor B "The hind brain" which was not correct were 139,957 (17.67%). They chose this option because they did not know that, this part of brain is responsible for involuntary actions such as breathing, sneezing, contraction and relaxation of blood vessels. However 170,179 candidates (21.49%) of who chose distractor C "The mid brain" did not understand the functions of this part of brain. The

function of the mid brain is to coordinate body movements such as movements of the ciliary muscles of the eye. This part acts as a joint between the front brain and the hind brain. About 138,691 candidates (17.51%) chose among distractors D “The front and hind brain” and E “The mid and hind brain” because they did not understand the functions of the parts of the brain. Few candidates 2,853 (0.36%) did not attempt this question because of lack of knowledge on the functions of the various parts of the brain.

Question 37: The function of the spinal cord in the human nervous system is to

- A deal with involuntary actions
- B deal with voluntary actions
- C coordinate movement of the body
- D maintain the shape of the body
- E transport impulses to the central nervous system.

Response pattern

Option	A*	B	C	D	E	Omitted	Others
No. of candidates	150,231	96,913	172,804	102,858	261,934	4,442	2,718
%of candidates	18.97	12.24	21.82	12.99	33.08	0.56	0.34

The question intended to measure the candidates’ knowledge on the functions of the spinal cord in the nervous system. The question had weak overall performance.

Only 150,231 candidates (18. 97%) managed to get the correct answer in this question by choosing A “deal with involuntary actions”. Most of the candidates (33.08%) chose E “transport impulses to the central nervous system” which was not correct answer. The candidates chose

this option due to the fact that, the spinal cord is one of the parts, which form the central part of the nervous system. About 172,804 candidates (21.82%) chose C “coordinate movement of the body”. Candidates who chose this distractor had a misconception between the functions of spinal cord and those of the mid brain, as opposed to the spinal cord, which deals with involuntary actions, the mid brain coordinates movements in the body.

Candidates who chose D “maintain the shape of the body” were 102,858 (12.99%). These candidates were attracted by this option due to the fact that, the bone system of which the spinal cord is part of it, makes the definite shape of the body thus failing to understand that, the shape of the body is made by the whole bone system and not specifically the spinal cord. A total of 96,913 candidates (12.24%) chose B “deal with voluntary actions”. These candidates had misconception between the functions of the brain and spinal cord. This may be due to the fact that brain and spinal cord are part of the nervous system and the control of the voluntary actions is the function of the front brain and not the spinal cord. Few candidates 4,442 (0.56%) did not attempt this question because they lacked knowledge of the functions of the parts of the nervous system.

Question 38: High tide and low tide in oceans and great lakes is caused by

- A revolution of the earth around the sun
- B rotation of the earth on its axis
- C moon eclipse
- D solar eclipse
- E attraction force between the earth and the moon.

Response pattern

Option	A	B	C	D	E*	Omitted	Others
No. of candidates	97,903	177,189	102,707	69,710	337,973	3,683	2,735
% of candidates	12.36	22.38	12.97	8.8	42.68	0.47	0.35

The question measured candidates' understanding on the effects of force of gravity between the moon, earth and the sun. The general performance of candidates in this question was average.

A total of 337,973 candidates (42.68%) chose the correct answer E "attraction force between the earth and the moon" because they understood the effects of force of gravity between the earth and the moon. The force of gravity of the moon can attract water which is lighter in comparison with other matter which is on the earth surface, thus causing water on the side facing the moon to move hence leading to high tide on that part of the earth. Nevertheless if the moon is on the west side of the earth, water found on the eastern and western side is more than water found on the northern and southern parts thus causing water on the eastern part to move slightly towards west due to force of gravity caused by the water attracted to the western part. This cause the northern and southern parts to remain with little water which is known as low tide.

About 97,903 candidates (12.36%) chose distractor A "revolution of the earth around the sun" because they did not understand the effects of earth rotation around the sun which are seasons of the year. Candidates who chose distractor B "rotation of the earth on its axis" were 177,189 (22.38%). These candidates chose this option because

they did not understand that the effect of this movement was day and night. Either 440,680 candidates (21.77%) chose among distractors C “moon eclipse” and D “solar eclipse” because they did not know the effects of moon and sun eclipses. The moon eclipse occurs in the night when the earth is between the sun and the moon causing the moon light to be faint. On the other hand sun eclipse occurs during the day when the moon is rotating and is found between the earth and the sun which make the earth surface to experience slight darkness or total darkness. Only few candidates 3,683 (0.47%) did not attempt this question because they lacked enough knowledge on the effects of force of gravity between the earth, moon and the sun.

Question 39: Under normal circumstances, rust is the result of a

chemical reaction between

- A copper, water and oxygen
- B sodium, water and oxygen
- C calcium, water and oxygen
- D iron, oxygen and water
- E water, oxygen and potassium.

Response pattern

Option	A	B	C	D*	E	Omitted	Others
No. of candidates	100,202	80,399	76,470	475,402	53,383	3,880	2,164
% of candidates	12.65	10.15	9.66	60.03	6.74	0.49	0.27

The question intended to measure the candidates' ability in understanding the changes of matter when they are involved in the chemical combination leading to rust. The overall performance of candidates in this question was average.

Most of the candidates 475,402 (60.03%) chose the correct option D “iron, oxygen and water” because they had enough knowledge about rust and the materials which contribute to rust formation. A total of 39.2 percent of the candidates who chose among options A “copper, water and oxygen”, B “sodium, water and oxygen”, “calcium, water and oxygen” and E “water, oxygen and potassium” did not understand that when copper, sodium, calcium and potassium are combined with oxygen and water, they do not form rust. Either when sodium and potassium react with water explosion occurs and strong heat is evolved and the solution formed is alkaline. About 3,880 candidates (0.49%) did not attempt this question because they were not knowledgeable on changes which occur in various types of matter.

Question 40: Vegetables and fruits help in the formation of

- A red blood cells
- B white blood cells
- C blood platelets
- D blood plasma
- E bone marrow.

Response pattern

Option	A	B*	C	D	E	Omitted	Others
No. of candidates	271,273	226,192	98,293	75,786	113,546	4,083	2,727
% of candidates	34.26	28.56	12.41	9.57	14.34	0.52	0.34

This question measured candidates ability on the importance of foods particularly vegetables and fruits in the manufacture of various blood cells. Candidates displayed weak performance in this question.

A total of 226,192 candidates (28.56%) chose the correct option B “white blood cells” because they knew the functions of white blood cells

which is to build body immunity against various diseases. There is a relationship between vegetables, fruits and white blood cells because both are responsible for the body immunity against various diseases. About 271,273 candidates (34.26%) who chose distractor A “red blood cells” did not understand that the major source of red blood cells is the bone marrow found in the bones, fish, sardines and milk. Candidates who chose among options C “blood platelets”, D “blood plasma” and E “bone marrow” did not have enough knowledge on the type of food stuff which is responsible for the manufacture of the blood cells mentioned. However 4,083 candidates (0.52%) did not answer this question because they lacked the knowledge of the type of food which is responsible for the manufacture of the various blood cells mentioned.

Question 41: The following methods can be used for food preservation
except

- A baking
- B using honey
- C drying
- D salting
- E using water.

Response pattern

Option	A	B	C	D	E*	Omitted	Others
No. of candidates	133,891	232,071	106,963	73,270	238,622	4,112	2,971
% of candidates	16.91	29.31	13.51	9.25	30.13	0.52	0.38

This question intended to measure the candidates understanding of the proper ways of food preservation and reasons for using those methods. The candidates had weak performance in this question.

A total of 238,622 candidates (30.13%) chose the correct answer E “using water” because they knew that water is not used to preserve any type of food. Water is not used for preserving food because bacteria reproduce in large amount in a watery environment. Candidates who chose among distractors A “baking”, B “using honey”, C “drying” and D “salting” were 546,195 (68.98%). These candidates did not understand the requirements of the question which was to choose the method which is not used in preserving food. The answers provided in distractors A, B, C and D are the correct methods of preserving food. Candidates who did not attempt this question were 4,112 (0.52%) indicating that, they did not know the methods of preserving food.

Question 42: The following are types of food nutrients **except**

- A mineral salts
- B vitamins
- C water
- D protein
- E carbohydrates.

Response pattern

Option	A	B	C*	D	E	Omitted	Others
No. of candidates	187,429	58,741	384,127	41,589	114,153	2,964	2,897
% of candidates	23.67	7.42	48.51	5.25	14.42	0.37	0.37

The question measured the candidates’ ability in the understanding of the essential food nutrients and those, which are not essential. The overall performance in this question was average.

A total of 384,127 candidates (48.51%) chose C “water” which was correct because water is used as a solvent to the nutrients and also transports them to various parts of the body, though water itself is not a nutrient. Candidates who chose among distractors A “mineral salts”, B “vitamin”, D “protein” and E “carbohydrates” were 401,912 (50.76%). These candidates did not understand the task given by the question on the food nutrients because all of the answers given in the distractors are food nutrients. About 2,964 candidates (0.37%) did not attempt this question because they lacked knowledge of various food nutrients.

Question 43: Which of the following foods can be preserved by deep freezing?

- A Fruits and vegetables
- B Vegetables and grain
- C Fish and fruit
- D Meat and fish
- E Meat and grain.

Response pattern

Option	A	B	C	D*	E	Omitted	Others
No. of candidates	172,474	91,343	130,568	333,558	57,219	4,280	2,458
% of candidates	21.78	11.53	16.49	42.12	7.23	0.54	0.31

The question measured candidates’ understanding of the various types of foods which can be preserved by deep freezing method and the reason to do so. The overall performance of the candidates in this question was average.

Candidates who chose D “Meat and fish” which was the correct answer were 333,558 (42.12%). These candidates understood the type of food which can be preserved by deep freezing methods without

being spoiled. Many candidates 451,604 (57.03%) chose among distractors A “Fruits and vegetables”, B “Vegetables and grain”, C “Fish and fruit” and E “Meat and grain” because they did not understand the type of food which can be preserved by deep freezing without being spoiled. Foods from plants such as vegetables, fruits and grains mentioned in the distractors are spoiled when preserved by deep freezing method they absorb water and swell hence, they lose the natural flavor. However, 4,280 candidates (0.54%) did not attempt this question due to lack of knowledge of preserving food by using refrigeration methods.

Question 44: The deficiency disease caused by lack of iron in the diet is

- A rickets
- B kwashiorkor
- C anaemia
- D marasmus
- E beriberi.

Response pattern

Option	A	B	C*	D	E	Omitted	Others
No. of candidates	256,454	126,217	163,842	122,498	116,036	4,115	2,738
% of candidates	32.38	15.94	20.69	15.47	14.65	0.52	0.35

The question intended to measure the candidates' ability in understanding the effects of deficiency of iron mineral salt in the human body. Candidates had weak performance in this question.

Candidates who chose option C “anaemia” were 163,842 (20.69%). These candidates understood the importance of iron in the red blood

cells. Distractor A “rickets” was chosen by 256,454 candidates (32.28%) who could not realize that rickets is caused by deficiency of calcium which is responsible for strengthening bones and it is also caused by deficiency of vitamin D. A total of 248,715 candidates (31.41%) chose among distractors B “kwashiorkor” and D “marasmus” because they did not know that kwashiorkor is caused by lack of balanced essential nutrients in the diet and marasmus is caused by lack of protein in the diet. Candidates who chose distractor E “beriberi” could not realize that, this disease is caused by deficiency of vitamin B₁. A total of 4,115 candidates (0.52%) did not attempt this question because they did not understand the effects of iron mineral salts in the body.

Question 45: Carefully observe the foods represented in Figure 4 and then answer the question that follows.

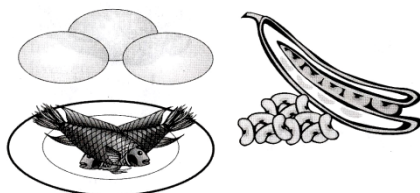


Figure 4

The function of the foods shown in Figure 4 is to

- A build up the body
- B give energy to the body
- C protect the body
- D generate heat to the body
- E build up bones.

Response pattern

Option	A*	B	C	D	E	Omitted	Others
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No. of candidates	455,177	101,081	114,541	79,611	35,952	3,083	2,455
% of candidates	57.48	12.76	14.46	10.05	4.54	0.39	0.31

The question measured the candidates' ability in understanding the functions of various types of food in the human body. The overall performance of candidates in this question was average.

Candidates who chose the correct answer, A “build up the body” were 455,177 (57.48%). These candidates understood the functions performed by protein. These nutrients can be obtained in the foods shown in figure number 4. Distractor B “give energy to the body” which was chosen by 101,081 candidates (12.76%) who lacked knowledge on the foods which give the body energy which are starch (carbohydrates) in origin. Candidates who chose distractor C “protect the body” were 114,541 (14.46%). These candidates failed to understand that, the type of foods which protect the body include vegetables and fruits. Distractors D “generate heat to the body” and E “build up bones” were chosen by 115,563 candidates (14.59%) who did not know the types of food which generate heat to the body and build bones. About 3,083 candidates (0.31%) did not attempt this question showing that they lacked enough knowledge on the functions of various types of food in the body.

Question 46: A fish which is in the water seems to be at the surface of the water while it is actually deep in the water because

- A the fish is not stationary in the water
- B the water is calm and clean
- C the depth of water is reduced by the light rays
- D fish scales make it appear big
- E light rays are refracted in the water.

Response pattern

Option	A	B	C	D	E*	Omitted	Others
No. of candidates	153,876	95,060	191,936	81,362	263,066	3,940	2,660
% of candidates	19.43	12	24.24	10.27	33.22	0.5	0.34

The question intended to measure candidates' ability in understanding the properties of light rays when passes through different media particularly water. The candidates had weak overall performance in this question.

A total of 263,066 candidates (33.22%) chose E "light rays are refracted in the water" which was correct answer because they had enough knowledge on the properties of light rays which bend when entering in a new medium from another medium. Candidates who chose A "the fish is not stationary in the water" were 153,876 (19.43%). They lacked the knowledge on the properties of light rays. Candidates who chose B "the water is calm and clean" were 95,060 (12%). These candidates did not understand the truth that not all calm water is clean. There is a difference in cleanliness of water in the rivers, dams, lakes and in the ocean. Option C "the depth of water is reduced by the light rays" was chosen by 191,936 (24.24%) candidates. These candidates lacked enough knowledge on the properties of light rays. Candidates who chose D "fish scales make it appear big" were 81,362 (10.27%). These candidates did not have enough knowledge on the importance of fish scales in the water environment. Some fish use its scales to hide so that they are not detected by prey animals. About 3,940

candidates (0.34%) did not attempt this question as an indication of lacking enough knowledge on the properties of light rays.

Question 47: The correct food chain is

- A *eagle → grass → leopard → goat*
- B *grass → eagle → leopard → goat*
- C *leopard → eagle → grass → goat*
- D *grass → goat → leopard → eagle*
- E *eagle → leopard → goat → grass*

Response pattern

Option	A	B	C	D*	E	Omitted	Others
No. of candidates	91,079	91,760	132,691	258,365	210,914	4,646	2,445
% of candidates	11.5	11.59	16.76	32.63	26.63	0.59	0.31

The question intended to measure the ability of candidates' to analyze the food chain relationship which exists between plants and animals. The overall performance of candidates in this question was weak.

A total of 258,365 candidates (32.63%) chose D "*grass → goat → leopard → eagle*" which was not a correct answer because they did not have enough knowledge on the relation among living things (plants and animals) in the food chain in the environment. In addition 210,914 (26.63%) candidates chose option E "*eagle → leopard → goat → grass*" which was not a correct answer because the ending part of the chain showed that grass eat goat which is not true under the normal circumstances. Candidates who chose among distractors A "*eagle → grass → leopard → goat*" and

B"grass → eagle → leopard → goat" were 182,839 (23.09%). These candidates did not have enough knowledge on food chain because they failed to note that the ending part showed goat eating leopard which is not true due the fact that, goat is herbivorous. Option *C"leopard → eagle → grass → goat"* was chosen by 132,691 (16.76%) candidates this was not correct because the chain shows that grass eat eagle which cannot occur under normal circumstances. However, 4,646 candidates (0.59%) did not attempt this question because they lacked enough knowledge on food chain in the ecosystem.

Question 48: The three main parts of the circulatory system are

- A arteries, veins and capillaries
- B blood, heart and lungs
- C blood, blood vessels and heart
- D blood vessels, heart and valves
- E heart, aorta and arteries.

Response pattern

Option	A	B	C*	D	E	Omitted	Others
No. of candidates	130,738	166,767	227,729	71,211	189,087	3,851	2,517
% of candidates	16.51	21.06	28.76	8.99	23.88	0.49	0.32

The question measured candidates' understanding of the three major parts of the circulatory (blood) system. Candidates had weak performance in this question.

A total of 227,729 candidates (28.76%) chose the correct option C "blood, blood vessels and heart", this indicates that they had enough knowledge on the three major parts of the circulatory (blood) system. Candidates who chose option A "arteries, veins and capillaries" were

130,738 (16.51%) did not have knowledge on blood vessels because this option mentioned blood vessels only. Option B “blood, heart and lungs” which was not correct, was chosen by 166,767 (21.06%) candidates because lungs are not major part of the circulatory (blood) system instead they form part of the breathing (respiratory) system. About 71,211 candidates (8.99%) chose option D “blood vessels, heart and valves” which was not correct because valves are found in the heart thus making them not part of the circulatory (blood) system. Candidates who chose option E “heart, aorta and arteries” were 189,087 (23.88%). These candidates did not understand that aorta and arteries are blood vessels. Few candidates 3,851(0.32%) who did not attempt this question lacked knowledge on the major parts of the circulatory (blood) system.

Question 49: Man uses the following sensory organs when doing scientific investigation:

- A Tongue, eyes, nose, skin, ears
- B Brain, nose, eyes, sensory nerves
- C Brain, nose, ears, eyes, skin
- D Brain, tongue, eyes, skin, ears
- E Eyes, skin, ears, sensory nerves.

Response pattern

Option	A*	B	C	D	E	Omitted	Others
No. of candidates	387,445	111,880	126,716	81,051	79,842	2,840	2,126
% of candidates	48.93	14.13	16	10.24	10.08	0.36	0.27

This question measured the candidates’ ability on the use of the five sensory organs in the human nervous system. The overall performance of candidates in this question was average.

A total of 387,445 candidates (48.93%) chose A “Tongue, eyes, nose, skin, ears” the correct answer because they had enough knowledge on the five sensory organs in the human nervous system. Candidates who chose option B “Brain, nose, eyes, sensory nerves” were 111,880 (14.13%). These candidates could not realize that the brain and sensory organs are parts where different informations are received and given interpretation. A total of 287,607 candidates (36.31%) chose among options C “Brain, nose, ears, eyes, skin”, D “Brain, tongue, eyes, skin, ears” and E “Eyes, skin, ears, sensory nerves” because they did not understand that brain is not part of the five sensory organs instead it is the part which receive information from different parts of the body, interpret and send them to parts of the body which require responses. However, the nervous system is not part of the sensory organs because its function is to take and transport informations to the brain and from the brain to different parts of the body. Few candidates (0.36%) did not answer this question because they did not have enough knowledge on the five sensory organs in the human body.

Question 50: Which of the following hormones when insufficient cause defect in female reproductive system?

- A Pituitary and insulin
- B Estrogen and progesterone
- C Thyroxine and pituitary
- D Estrogen and insulin
- E Thyroxine and estrogen.

Response pattern

Option	A	B*	C	D	E	Omitted	Others
No. of candidates	166,071	358,784	108,568	71,546	81,628	3,481	1,822
% of candidates	20.97	45.31	13.71	9.03	10.31	0.44	0.23

This question intended to measure candidates' understanding on the hormonal system and how it works in female bodies. The candidates were expected to understand that hormones are produced by the glands which control different body processes such as growth, changes which occur during maturity and respond when the person receives bad or good news. The performance of candidates in this question was average.

The correct option B "Estrogen and progesterone" which was correct was chosen by 358,784 (45.31%) candidates because they were knowledgeable in the functions of estrogen and progesterone in the women body. Estrogen is responsible for the control of growth and other body changes during girls puberty stage. Progesterone is responsible for the preparation and expansion of the uterus after woman has conceived. Distractors A "Pituitary and insulin" and D "Estrogen and insulin" which were not correct answers were chosen by 237,617 candidates (30%). These options were not correct because insulin is responsible for the regulation of sugar in the human body. A total of 190,196 candidates (24.02%) chose among options C "Thyroxine and pituitary" and E "Thyroxine and estrogen" which were not correct because thyroxine hormone controls the speed of metabolic processes in the body. Few candidates who did not answer this question were 3,481 (0.44%) which indicates that they did not understand the functions of hormonal system in the females.

3.0 EVALUATION OF CANDIDATES' PERFORMANCE IN EACH TOPIC

The analysis of the candidates overall performance in the Science examination in PSLE 2014 indicates that there is a general improvement in the performance in each topic. Topics in which the performance were average in this examination include Living Things (42.39%), Changes in Objects and States of Matter (41.54%), Essential Needs for Health and Living (51.67%), Health, Health Services and Methods of Preventing Diseases (42.30%) and Energy, Machine and Work (40.68%). Either, further analysis has revealed that the topic in which candidates had weak performance in this examination was Methods and Procedures in Science (34.7%). Though the performance in this topic was weak in PSLE 2013 and 2014, yet there is an increase of 14.11 percent in the performance of candidates. Comparison of performance of candidates in the topics mentioned in PSLE 2013 and PSLE 2014 show that performance in the respective topics has increased as shown in the **Appendix**.

This general increase in overall performance in all topics is a result of concerted efforts shown by teachers in the teaching of all topics by combining theory and experiments together with candidates' proper participation in the learning process including doing adequate exercises.

The analysis also indicated that, most of the candidates had little knowledge on topics related to daily life in their immediate environment. This challenge is a clear indication that these topics are not given their due weight during the teaching and learning process. Either, the teaching-learning process is not participatory, because

some of the topics could be taught by involving students together with the society.

4.0 CONCLUSION

The analysis conducted on the items, indicated that challenges emanated from limited understanding of questions or the various concepts in the Science subject in the Primary School Leaving Examination (PSLE) 2014. It seems that many topics are taught without involving experiments. For example, the topic on Energy, Machine and Work specifically the sub topic of light when taught by using experiments, the understanding ability of students can be enhanced. The question on light spectrum was weakly performed (14.87%) by the candidates indicating that they did not learn this topic by use of experiments. However, the question on identification of properties of acids and bases by the use of litmus paper which came from the topic on Changes of Objects, States and Events was weakly performed by the candidates. This is an indication that students learnt this topic theoretically without using simple experiments.

Although there are some topics which are taught in more than one subject, candidates failed to transfer the knowledge required to perform well in the Science examination. For example, there were topics which are taught in Home Economics especially in nutrition and health; and in Geography topics on the environment, natural hazards and astronomy etc. These items were poorly answered because the candidates did not have adequate knowledge of the topics and failed to transfer the knowledge acquired from the science related subjects.

In the topic on Living Things particularly the question on how plants manufacture protein was very weakly performed (12.54%) by the

candidates. This is an indication that students had studied the process of photosynthesis by plants without expanding the coverage of learning how protein synthesis occur by the use of nitrogen gas.

Candidates had good performance in the topic on HIV/AIDS in PSLE 2014. The general performance in this topic was 80.19%. In PSLE 2013, the performance was average (56.60%) which shows that there is an increase of 23.59 percent in the performance of candidates in PSLE 2014.

5.0 RECOMMENDATIONS

In order to improve the pass rate of the Science subject, it is recommended that teachers and pupils should adhere to the following things.

- (a) Ensure that all the topics indicated in the Science syllabus are taught adequately. The teaching methodology should be participatory by involving fully the students and experts who are in the school surroundings; so that they help in teaching topics which teachers have no enough knowledge.
- (b) Analysis should be made in topics which are taught in Science and in other subjects, in collaboration with the subject teachers, e.g. Home Economics. Geography and Mathematics, so that they can come up with ways of helping the students learn these topics adequately.
- (c) Teachers should read different books that have topics indicated in the science syllabus in order to widen the understanding of the topics and thus teach them effectively. Also nearby schools should establish subject cooperation among students and

teachers. For example teachers should meet to discuss ways of improving the teaching of 'difficult' topics.

- (d) Students should be given questions on the various topics to assess the skills and ability on the knowledge they receive in the classroom which are related to their daily learning environment. In addition, the pupils should be given feedback on the correct answers of the questions so that they can discover reasons for the incorrect options though they look similar to the correct answer.
- (e) Students should make sure that they study all topics thoroughly by discussing among themselves or by forming subject groups/clubs which will help teachers and students to learn about the different topics in the subject through discussion and practical instead of learning theoretically.
- (f) Science teachers should be given in-service training which will help them to be creative and innovative in the teaching of various topics according to the syllabus.
- (g) The Ministry in collaboration with District Councils should see the possibility of reviving the existing Teachers' Resource Centres(TRCs) so that they are used as meeting place for teachers with the aim of discussing new or alternative methods of teaching using the environment. The TRCs should be used as mini – libraries which will be stocked with a variety of books to be used by both teachers and students within the ward.
- (h) Tanzania Institute of Education (TIE) should be directed to identify topics, which appear in more than one subject with the aim of harmonizing them in order to avoid repetition in more than one subject. When topics appear in more than one subject there is a tendency for the teachers not to teach them effectively in one

subject relying on the expectation that it will be taught in another subject as a result the topic remain untaught.

- (i) The Ministry should do research aiming at identifying difficult topics in order to help teachers come out with strategies of teaching them properly.
- (j) The Ministry should make sure that there is one or two textbooks in all primary schools in Science subjects which adequately covers the syllabus in order to help teachers, students and other stakeholders not to use too many reference books in search of content stipulated in the syllabus.

COMPARISON OF CANDIDATES PERFORMANCE BY TOPIC IN PSLE 2013 AND PSLE 2014 SCIENCE SUBJECT

S/N	TOPIC	PSLE 2013				PSLE 2014			
		NO. OF QUESTION	PERFORMANCE (%)	AVERAGE PERFORMANCE (%)	REMARKS	NO. OF QUESTION	PERFORMANCE (%)	AVERAGE PERFORMANCE (%)	REMARKS
1.	HIV/AIDS	44	48.81	56.60	Average	3	80.19	80.19	Good
		47	68.39						
2.	Living Things	1	74.89	42.24	Average	2	47.54	42.39	Average
		2	38.77			6	12.54		
		3	73.35			7	26		
		4	44.48			10	68.02		
		5	41.31			11	42.79		
		6	33.68			12	72.78		
		7	48.54			17	45.12		
		8	40.81			29	67.24		
		9	40.36			33	43.19		
		12	17.94			36	42.7		
		13	65.77			37	18.97		
		14	31			47	32.63		
		19	45.19			48	28.76		
		31	39.38			50	45.31		
		32	30.76						
		49	23.58						
		50	28.22						
3	Changes of Objects, States and Events	10	83.68	41.03	Average	8	69.73	41.54	Average
		29	26.19			23	15.26		
		30	25.33			30	34.53		
		33	24.82			31	27		
		34	53.29			38	42.68		
		35	25			39	60.03		
		43	48.88						
4	First Aid	22	64.58	40.60	Average	-	-	-	-
		23	25.41						
		24	28.28						
		25	44.18						
5	Energy, Machine and Work	28	36.79	37.02	Weak	15	55.73	40.68	Average
		36	51.98			16	14.87		
		37	28.53			18	45.5		
		38	28.52			19	52.27		
		39	35.13			20	40.4		
		40	44.98			25	59.89		
		41	27.31			26	33.4		
						27	29.44		
						28	40.68		
						43	42.12		

S/N	TOPIC	PSLE 2013				PSLE 2014			
		NO. OF QUESTION	PERFORMANCE (%)	AVERAGE PERFORMANCE (%)	REMARKS	NO. OF QUESTION	PERFORMANCE (%)	AVERAGE PERFORMANCE (%)	REMARKS
						46	33.22		
6	Health, Health Services and Methods of Preventing Diseases	11	33.56	33.15	Weak	1	48.14	42.30	Average
		16	53.08			5	40.57		
		17	23.49			40	28.56		
		26	26.48			44	20.69		
		45	29.14			45	57.48		
						13	40.67		
						14	60.01		
7	Essential Needs for Health and Living	15	23.62	32.01	Weak	4	86.54	51.67	Average
		18	32.36			9	76.95		
		20	50.86			32	44.13		
		21	29.82			34	37.67		
		27	28.38			35	37.73		
		46	27			41	30.13		
						42	48.51		
8.	Methods and Procedures in Science	48	20.59	20.59	Weak	21	41.53	34.7	Weak
						22	27.78		
						24	20.56		
						49	48.93		

