



**THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA**



**CANDIDATES' ITEM RESPONSE ANALYSIS
REPORT FOR THE FORM SIX NATIONAL
EXAMINATION (ACSEE) 2020**

155 FOOD AND HUMAN NUTRITION



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155 FOOD AND HUMAN NUTRITION

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FOREWORD

The report on Candidates' Item Response Analysis (CIRA) in Food and Human Nutrition subject in the Advanced Certificate of Secondary Education Examination (ACSEE) 2020 has been prepared to enlighten the teachers, future candidates, parents, policy makers and the public in general on the performance of the candidates who sat for this examination. The candidates' responses to the examination questions is a strong indicator of what the education system was able or unable to offer to the students in their two years of advanced secondary education.

This report analyses the candidates' performance for each question using statistical data. In addition, samples of responses from the scripts of the candidates have been used as an evidence for their performance. The report highlights possible factors which might have made the candidates to score low marks in the questions, which include: inadequate knowledge and skills on the contents of the topics and inability to understand the requirements of the questions. Similarly, it highlights some of the factors which likely enabled some of the candidates to score high marks, which include: candidates' adequate knowledge and skills on the concepts tested, and the ability to understand the requirements of the questions.

The feedback provided in this report is expected to enable the education administrators, school quality assurers, school managers, teachers and students in different capacities to come up with proper measures for improving teaching and learning of Food and Human Nutrition subject in the future, thus improving candidates' performance in this subject.

Finally, the National Examinations Council of Tanzania would like to thank everyone who directly or indirectly participated in the preparation of this report.



Dr. Charles E. Msonde
EXECUTIVE SECRETARY

1.0 INTRODUCTION

This report analyses the candidates' performance in Food and Human Nutrition Papers of Advanced Certificate of Secondary Education Examination (ACSEE) 2020. The analysis is based on the two theory papers, namely Food and Human Nutrition Paper 1 and Food and Human Nutrition Paper 2. The examination was set following the 2019 Food and Human Nutrition examination format.

The Food and Human Nutrition papers 1 and 2 were divided into two sections, that is A and B with a total of nine (9) questions each. Section A consisted of six (6) short answer questions which carried 10 marks each, while section B consisted of three (3) essay questions each carrying 20 marks. All questions in section A were compulsory. In section B, the candidates were required to attempt two (2) questions only.

A total of 181 (98.91%) candidates sat for the examination. The examination results show that, 178 (98.34%) candidates passed, albeit with different grades. The analysis indicates that 1 (0.55%) candidate obtained B grade, 17 (9.39%) C grade, 91 (50.28%) D grade, 57 (31.49%) E grade and 12 (6.63%) S grade. However, 3 (1.66%) candidates failed the examination. The analysis of the performance shows a decrease of 0.2 percent when compared to the 2019 performance. In 2019 out of 206 (98.56%) candidates who sat for the examination, 203 (98.54%) passed, and only 3 (1.46%) candidates failed.

This report provides the analysis of the candidates' performance for each question. The candidates' performance is regarded as good, average or weak if the percentage of the candidates who scored 35 percent or above of the marks allocated to each particular question fall within 60 - 100, 35 - 59 and 0 - 34, respectively. Green, yellow and red colours have been used in Figures and Appendices to indicate good, average and weak performances, respectively.

The report explains the requirements of each question, the performance of candidates, the weaknesses or strengths observed, and the possible reasons for the observed performance. In addition, samples of extracts from the candidates' responses, figures and appendices have been incorporated in this report as an evidence to support the analysis provided.

2.0 ANALYSIS OF THE CANDIDATES' PERFORMANCE FOR EACH QUESTION IN PAPER 1

2.1 Section A: Short Answer Questions

This section consisted of six (6) compulsory questions from the following topics: *Technology of specific products*, *Nutrient requirement*, *Food production*, *Food storage*, *Food composition* and *Food quality and safety*. Each question carried 10 marks. The analysis of each question is provided under the following sub-sections:

2.1.1 Question 1: Technology of specific products

Part (a) of the question required the candidates to differentiate bicarbonate of soda from baking powder leavening agents, while part (b) required them to identify four (4) weak acids that can be used with bicarbonate of soda to neutralize its effect in the mixture.

The question was attempted by all the (100%) candidates. Out of them, 165 (91.2%) candidates scored from 0 to 3 marks, 15 (8.2%) scored from 3.5 to 5.5 marks and 1 (0.6%) scored 8.5 marks. Figure 1 illustrates this performance.

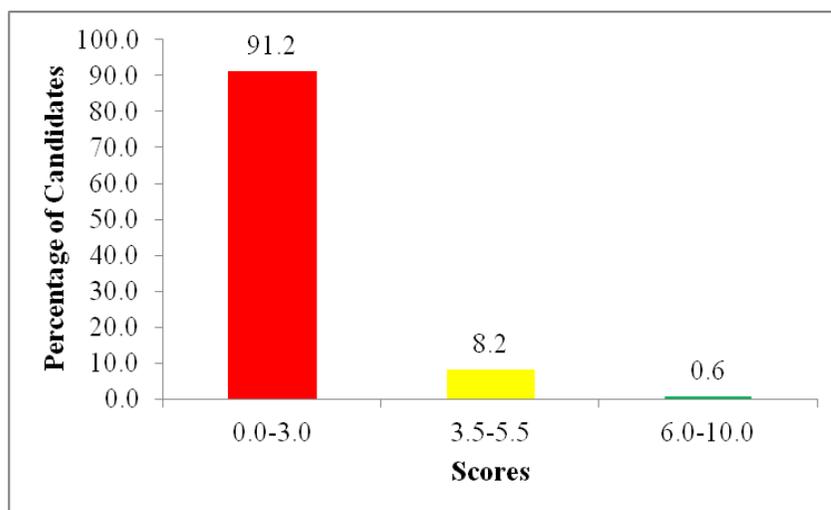


Figure 1: *The candidates' performance for question 1*

Figure 1 shows that the candidates' performance in this question was poor because the majority (91.2%) of the candidates scored from 0 to 3 marks. These candidates provided irrelevant responses due to lack of knowledge

on leavening agents, particularly on the types and properties. In part (a), majority of the candidates provided the properties of bicarbonate of soda and baking powder leavening agents separately instead of differentiating them. Others differentiated the given leavening agents but they provided incorrect properties. For example, one candidate wrote, *bicarbonate of soda is toxic while baking powder is non-toxic*. Another candidate wrote, *bicarbonate of soda is costly while baking powder is less costly*. These candidates failed to understand that bicarbonate of soda is an alkaline compound which requires an acid and liquid to produce carbon dioxide gas and it alters flavour, colour and taste of baked products, while baking powder contains baking soda already combined with an acid and an inert stabilizer so it only requires liquid to give the same reaction and it does not alter flavour, colour and taste of the backed products.

In part (b), the candidates failed to identify the weak acids which can be used with bicarbonate of soda to neutralize its effect in the mixture. They mentioned leavening agents which cannot be used with the bicarbonate of soda. The mentioned leavening agents include: *air, yeast, steam* and *self-rising baking flour*. The candidates who scored from 1 to 3 marks in this question (59.7%) managed to identify one to two correct weak acids which can be used with bicarbonate of soda or mentioned the acids correctly but failed to give correct explanations. Extract 1 provides a sample of incorrect responses from one of the candidates.

a	Bicarbonate of soda	Baking powder	
	It is in crystal form	It is powdered form.	
	They are insoluble in water.	They are soluble in water.	
	Is cream in colour.	Is white in colour.	
b	Dilute HCl		
	Dilute HNO_3		
	NH_3NO_2		
	NH_3Cl		

Extract 1: A sample of incorrect responses for question 1

The analysis shows that a few candidates (8.8%) who scored average marks or above failed to differentiate clearly bicarbonate of soda from baking powder leavening agents. Majority of the candidates wrote, *bicarbonate of soda require acid while baking powder does not require acid*. The candidates failed to explain that bicarbonate of soda is an alkaline/basic leavening agent so an acid and liquid are required to activate it contrary to baking powder which only needs a liquid to become activated as it contains bicarbonate of soda already combined with an acid.

In part (b), the candidates were able to identify two to four weak acids that can be used with bicarbonate of soda to neutralize its effect in the mixture. The identified acids include; *acetic acid, lactic acid, tartaric acid, citric acid* and *cream of tartar*. However, these candidates failed to score all 8 marks allocated to this part because they provided unsatisfactory explanations on the nature and use of the mentioned acids.

2.1.2 Question 2: Nutrient requirement

In part (a), the candidates were given a composition of the available raw whole milk and skimmed milk as 4.6 and 0.1 percent butter fat, respectively, and instructed to calculate the amount of each of the two types of milk to be blended together to make 350 litres of milk with a butter content of 3.8 percent. In part (b), they were required to give two (2) purposes of changing fat content of the starting milk in food processing.

The analysis indicates that the question was attempted by 148 (81.8%) candidates. Out of them, 143 (96.6%) scored from 0 to 3 marks, of which 101 (55.8%) scored 0. However, 4 (2.7%) candidates scored from 4 to 5.5 marks while 1 (0.7%) candidate scored 6 marks out of 10. Figure 2 summarizes this performance.

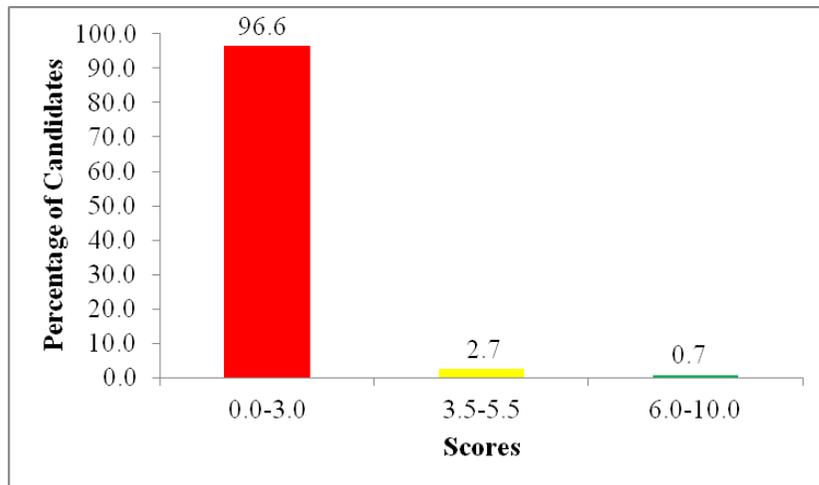


Figure 2: *The candidates' performance for question 2*

Figure 2 indicates that, the candidates' performance in this question was poor because only 3.4 percent of the candidates scored average marks or above. It was observed that the candidates who scored low marks (96.6%) had inadequate knowledge on the formulation of foods for various purposes. Those who scored 0 marks in this question failed to balance the fat content in the available milk by using Pearson's square method or other equations. Therefore, they failed to employ the given data in part (a) to calculate the required amounts of whole milk and skimmed milk. The candidates who scored from 1 to 3 marks failed to organize some of the given numbers correctly, hence lost some marks.

In part (b), the candidates failed to give the correct purposes of changing fat content of the starting milk in food processing. Some of them provided the purposes of food processing which include; *to make the food to stay longer, make the digestion process easy, to inactivate enzymes, prevent growth of micro-organisms and it reduces oxidative and hydrolytic rancidity*. Others mentioned points which were not related to food formulation. Extract 2 shows a sample of incorrect responses given by one of the candidates.

2.	a). Given:	
	Available whole milk = 4.6.	
	Available skimmed milk = 0.1	
	If cheese 350L \rightarrow 3.8P	
	So,	
	For whole milk	For skimmed milk
	350L \rightarrow 3.8P.	350L \rightarrow 3.8P
	x \rightarrow 4.6	x \rightarrow 0.1
	= 423	= 9.2
	423 + 9.2 = 432.2.	
	\Rightarrow 432.2 - 350 = 82.2.	
	Hence, he should make 82.2 of whole milk and skimmed to reach his target.	
	b) \rightarrow To obtain the pure fat content present in the milk	
	\rightarrow To determine the moisture present in milk or the liquid.	

Extract 2: A sample of incorrect responses for question 2

Further analysis indicates that, a few candidates (3.4%) scored average marks or above. In part (a), some of these candidates were able to draw the Pearson's square with diagonals, place the given data in correct position then calculated the percentage and volume of each type of milk needed to mix together to get 350 litres. However, the candidates failed to score all the 8 marks allocated to this part because they skipped some of the steps in the calculation. Others interchanged the values for skimmed milk and whole milk. In part (b), the candidates managed to provide one correct purpose of changing fat content of the starting milk in food processing out of the two required. Some of the incorrect purposes provided by these candidates include: *to obtain low fat taste cheese, to improve digestibility and bioavailability of nutrients, to get another type of product, to reduce fat and hence rancidity, to get diluted milk and to improve the concentration of milk for cheese making.*

2.1.3 Question 3: Food production

The candidates were required to explain how rapid population growth and HIV/AIDS influence food security in part (a) of the question. In part (b), they were required to propose seven (7) measures of improving food security in developing countries.

This question was attempted by 180 (99.4%) candidates. Out of them, 58 (32.2%) scored from 6 to 10 marks, 100 (55.6%) scored from 3.5 to 5.5 marks, while 22 (12.2%) scored from 1 to 3 marks. Figure 3 is a summary of this performance.

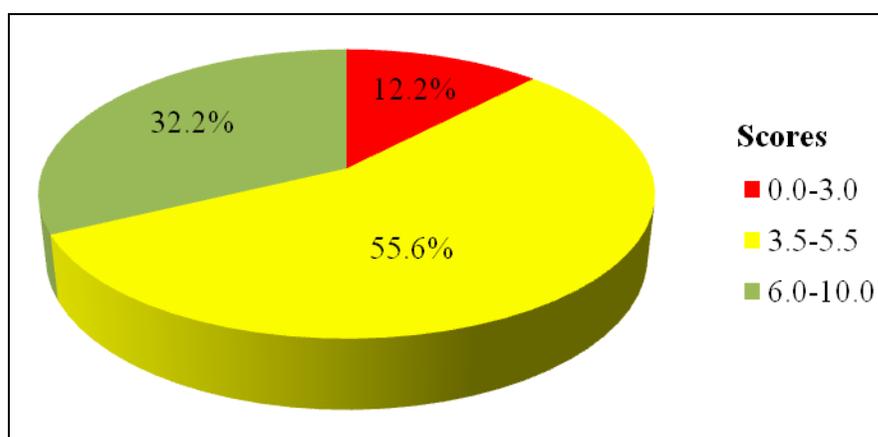


Figure 3: The candidate' performance for question 3

The analysis shows that the candidates' performance in this question was good because 87.8 percent of the candidates scored average marks or above. The candidates with average and good performances managed to explain how rapid population growth and HIV/AIDS influence food security in part (a). They were aware that rapid population growth increases food demand which results into insufficient food supply, while HIV/AIDS causes food shortage/famine due to deaths or frequent illness of adults, hence loss of assets and skills associated with adult mortality and the burden of care for sick adults and orphaned children.

In part (b), the candidates managed to provide the measures for improving food security in developing countries such as; *increasing food crop production through application of proper methods of crop husbandry, proper post harvesting and transportation, avoiding use of*

food produce for unnecessary activities, provision of food aid within the country during food crisis, promoting the application of food production systems and land use policies to alleviate ill effects of climate change, adequate knowledge of food storage and application of proper storage facilities, improving irrigation system, creation of the awareness of the pressure of increasing population growth and practicing crop diversification. However these candidates failed to score all 7 marks allocated to this part because they provided three to six correct measures of improving food security instead of seven. Other candidates provided insufficient explanations for the correctly mentioned measures.

Furthermore, the analysis indicates that the candidates who scored low marks (12.2%) had insufficient knowledge on food security, particularly on the factors which affect food security and methods of improving it. In part (a), majority of the candidates had the view that rapid population growth influences food security positively. For example, one candidate wrote that *due to rapid population growth the family members increase and produce much food and so store the excess for later use when there is shortage of food.* Another candidate wrote, *more food will be produced as more people will engage in food production activities.* These candidates failed to understand that, in rapid population growth, there is an increased food demand and the population may exceed the carrying capacity of the fragile environment in some areas, thus resulting into insufficient food supply. Moreover, a few candidates demonstrated poor English language proficiency. For example, one candidate used Kiswahili language in providing the answers as he/she wrote: *kumwagilia* and *kilimo mchanganyiko* as the methods of improving food security instead of *irrigation* and *mixed cropping/intercropping*, respectively.

In part (b), the candidates managed to provide one to two correct measures of improving food security in developing countries. The incorrect measures provided by these candidates include: *absence of wars, no rural-urban migration, good food composition tables, more data on crop pests and diseases, good climatic data records, home gardening and improve preservation of animal and fish products.* Extract 3 is a sample of incorrect responses from one of the candidates.

3a	Rapid population growth and HIV/AIDS can influence food security because most of people will need to eat food for survival so production of food will increase, also HIV/AIDS need to have high intake of food must especially rich in probiotics vitamins for probiotics, so food should be available and for people to survive as well.
b)	<p>i) Food should be available at any place; This is that food production should increase and should be available to every place that everybody can get.</p> <p>ii) Food should be affordable; This means food cost should not be very costly that other people cannot afford so should be at low price so everybody can afford.</p> <p>iii) Food taboos should be stopped; Since most of the customs still practice food taboos so everyone should eat consume the available food so as to avoid nutritional disorder.</p> <p>iv) Food production should be highly lauded for food to be available food production should increase so as food to be accessible to everyone.</p>

Extract 3: A sample of incorrect responses for question 3

2.1.4 Question 4: Food storage

This question required the candidates to explain five (5) methods used to control rodents and to give one (1) advantage of each method.

This question was attempted by all the (100%) candidates. The analysis shows that 106 (58.6%) candidates scored from 6 to 10 marks, 58 (32.0%) scored from 3.5 to 5.5 marks and 17 (9.4%) scored from 1 to 3 marks. Figure 4 is an illustration of this performance.

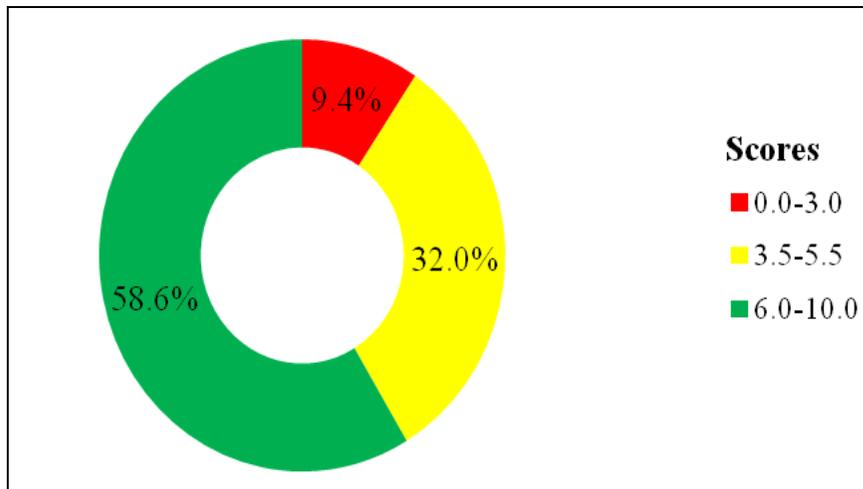


Figure 4: *The candidates' performance for question 4*

Figure 4 shows that the candidates' performance in this question was good because 90.6 percent of the candidates scored from 3.5 to 10 marks. These candidates had good mastery of the concept of food storage, particularly on the methods of controlling agents of food deterioration and losses. This enabled them to explain correctly the methods of controlling rodents and provided one advantage of using each method. However, some of the candidates failed to score full (10) marks because either they provided only two to four correct methods or provided insufficient explanations to the mentioned methods or repeated some of the methods. For example, one candidate treated sticky board and glue as two different methods, while it is actually a single method in which a hard surface (board) is covered in super sticky glue on the top of which a bait is placed to attract rodents. Extract 4.1 is a sample of correct responses from one of the candidates.

4.	Methods used to control rodents are the use of:
	i) <u>Rodents traps.</u>
	This method involves the use of traps which are set in the storage so when the rodent come in contact with it will be caught. This is mostly used in small storage.
	Advantage of the method
	- This method kill rodents without causing any effect to the stored food.
	Also it reduce number of rodents.
	ii) <u>Rodents proof</u>
	these are structures which prevents rodents from entering the storage hence avoid the loss of food caused by them.
	Advantage of the method
	- It prevent entry of rodents in the store.
	iii) <u>Biological control</u>
	This method involves the use of animal which will feed on rodents example cat which can feed on rat and reduces number of rodents.
	Advantage of the method
	- This method does not cause any effect to the stored food
	iv) <u>Rodenticides</u>
	This involve the use of chemical and toxic substance to kill rodents in the store
	Advantage of the method
	It brings kills rodents in a very short period of time
	v) <u>Proper sanitation in and around the store</u>
	This involves the removal of all wastes in the store and around the store also covering of all pits so as to ensure that rodents could not pass
	Advantage of the method
	It is a cheap method and do not has any side effect compared to the use of chemical.

Extract 4.1: A sample of correct responses for question 4

Further analysis indicates that some of the candidates who scored low marks provided unsatisfactory responses or failed completely to provide correct responses. Some of them explained the types of spray formulations for pesticides instead of the methods of controlling rodents. Others provided the methods of controlling insects which include: *store in airtight structures, use of resistant varieties, early harvesting, proper drying of the crop, heat and smoke, and use of edible oils*. Extract 4.2 provides a sample of responses from the script of a candidate who performed poorly in this question.

04.	<p>Rodents: refers to vertebrates, insects, birds, fungi etc which destroy food during storage. These rodents spread highly in site of improper care. The following are methods which are used to control rodents:-</p> <p>i) Bait use</p> <ul style="list-style-type: none"> - This is a mechanical material made by ant in order to reduce incidence of rodents by trapping them and killing them. bait is composed of the following material - Bait base the site where the rodent is attached. - Bait binder materials containing glue which bind the rodents. - Die colour which is used by the people to determine bait (reduce confusion) - Attractants this may be food which can attract the rodent to come across the bait. <p>Advantage: It is very efficient and easy to use.</p> <p>ii) Spray use</p> <ul style="list-style-type: none"> - This is the other way of reducing rodents by using powder, waterable powder which when come into contact with rodent it interfere with it normal body condition like dehydration and affecting of the nervous track. <p>Advantage.</p> <ul style="list-style-type: none"> - It decrease rodent in high rate hence saving stored food.
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04.	iii) Dwt use	
	- Is the type of method of controlling rodents using materials like ashes which discourage replication and existence of rodents example use of ashes help to dehydrate rodents hence reducing or eliminating rodents easily.	
	Advantage.	
	- It is cheap and simple method of controlling rodents.	
	iv) Fumigation method.	
	- Is the method of controlling rodents by applying chemicals during period of storage chemicals which are not harmful to human being or animal feed hence will lead to reduction of pests. example rodenticides.	
	Advantages.	
	- It is highly effective hence reduce large number of rodents	
	v) Smoke use.	
	- In this method rodents are eliminated by altering of the normal gas they breathe with smoke which non-favourable to their gaseous exchange surface (trachea system) hence when breathe in smoke they die hence reducing crop loss.	
	Advantage.	
	- It is cheap and effective method.	

Extract 4.2: A sample of incorrect responses for question 4

In Extract 4.2, the candidate provided the types of pesticides formulation.

2.1.5 Question 5: Food composition

Part (a) of this question required the candidates to explain five (5) significances of sugar and starch to our health. Part (b) required them to explain five (5) significances of dietary fibre to our health.

The question was attempted by all the (100%) candidates. Among them, 88 (48.9%) scored from 0 to 3 marks, 81 (45.0%) scored from 3.5 to 5.5 marks and 11 (6.1%) scored from 6 to 9 marks. Figure 5 is an illustration of this performance.

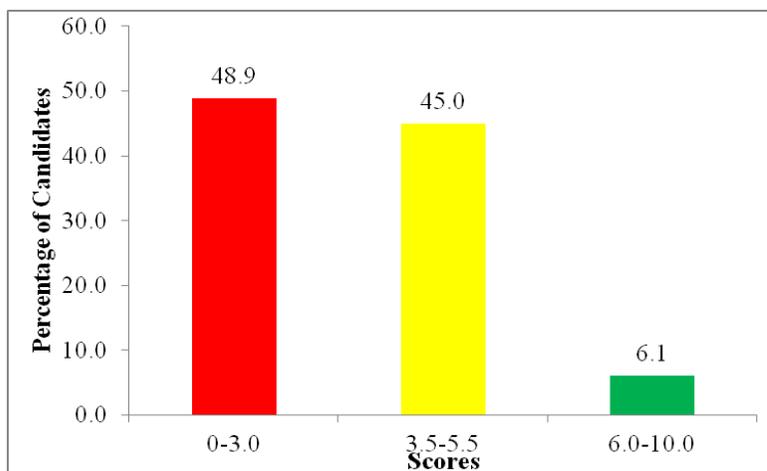


Figure 5: *The candidates' performance for question 5*

Figure 5 shows that the candidates' performance in this question was average because 51.1 percent of the candidates scored average marks or above. These candidates had adequate knowledge on the significances of various nutrients to human health. The analysis shows that, in part (a), the candidates understood that sugar and starch provide the body with energy, spare proteins and prevent ketosis. Also, they provide the only form of energy (glucose) used by the central nervous system, help certain bacteria to grow in the intestine, are essential for complete oxidation of fats, help in the absorption of minerals such as calcium and phosphorous, and they can be converted into non-essential amino acids.

In part (b), the candidates managed to explain the significances of dietary fibre to our health such as: *it binds bile acids and minerals such as calcium and iron in the body, increases faecal mass, protects the body against various diseases, controls body weight and helps maintain normal blood glucose levels by slowing down the digestion rate.* However, these candidates failed to score all the 10 marks as they provided four to nine correct significances of sugar, starch and dietary fibre instead of the required number of points which were ten. Extract 5.1 is a sample of good responses from one of the candidates.

5a)	The significances of sugar and starch to our health.	
i)	They help in providing the body with energy since when they are taken they are converted into energy which the body utilizes.	
ii)	They spare protein. Their presence in the body will help in sparing protein from being breakdown so as to release energy instead it will be used to perform it functions because they are available in the body.	
iii)	Glucose is the only energy used by the central nervous system so when they are taken they are broken down in form of glucose so it can be used by the central nervous system.	
iv)	Lactose sugar help in synthesising a bacteria in the small intestine. The bacterial flora is capable of synthesising B-complex vitamins in the gut.	
v)	Also they help in absorption of minerals such as calcium and iron in the body.	
5b)	The significances of dietary fibre to our health.	
i)	They help in preventing colon cancer in the large intestine.	
ii)	They help in preventing constipation by ensuring proper digestion of food.	
iii)	They help in lowering blood cholesterol by binding cholesterol and bile.	
iv)	They help in stimulating peristalsis and help in absorption.	
v)	They help in reducing body weight when in excess since they have a satiety value when taken.	

Extract 5.1: A sample of correct responses for question 5

In Extract 5.1, the candidate failed to score full marks because he/she failed to explain clearly two out of the required five significances of dietary fibre to our health.

Further analysis indicates that, 48.9 percent of the candidates scored low marks in this question due to misconceptions of the question or inadequate knowledge on the subject matter. In part (a), some of the candidates provided different functions of sugar and starch in food industries instead of their significances to our health. Others mentioned the properties of sugar and starch. For example, one candidate wrote, *sugars are monosaccharides or disaccharides, sugars are sweet, sugars are soluble in water, starches are insoluble in cold water and starches are not sweet.* In part (b), the candidates mentioned incorrect significances such as *it provide energy, support growth of the body, add water to the body, make food easy to be absorbed, acts as a body insulator, protect the body against diseases, forms enzymes and helps to balance nutrients.* These responses show that the candidates had inadequate knowledge on the functions of different nutrients in the human body. Extract 5.2 is part of incorrect responses from a script of one of the candidates.

05.	a) Importance of starch and sugar	
	i. Providing flavour.	
	Carbohydrate / mainly sugar is used as flavour given in food. For example in production of cake / Biscuits, soda and other.	
	ii. Used in Baking.	
	Sugar when reacting with yeast produce the amount of carbon dioxide for raising the dough in Baking industry.	
	Yeast + Sugar $\xrightarrow{(20-29)^{\circ}\text{C}}$ Fermentation \rightarrow Alcohol + Carbon dioxide	
	+ Water \rightarrow	
	+ Energy.	
	iii. Used to control amount of sugar regulation when it is low in the body.	

	iv. Starch contain fibres which when taken to the body play specific position like reducing of constipation.	
	v. Used as the sweeters in production of the drinks like Soda	
05:	b. <u>Importance of Dietary Fibres.</u>	
	i. Soak out harmful substances. Fibres can combine all harmful substances from the body and Bind them together.	

Extract 5.2: A sample of incorrect responses for question 5

2.1.6 Question 6: Food quality and safety

The candidates were required to explain three (3) food toxins which interfere with the bioavailability of minerals in part (a) and to explain two antivitamins found in our traditional foods in part (b).

The question was attempted by 174 (96.1%) candidates. The data analysis shows that 120 (69.0%) candidates scored from 0 to 3 marks, 46 (26.4%) scored from 3.5 to 5.5 marks and 8 (4.6%) scored from 6 to 8 marks. Figure 6 summarizes this performance.

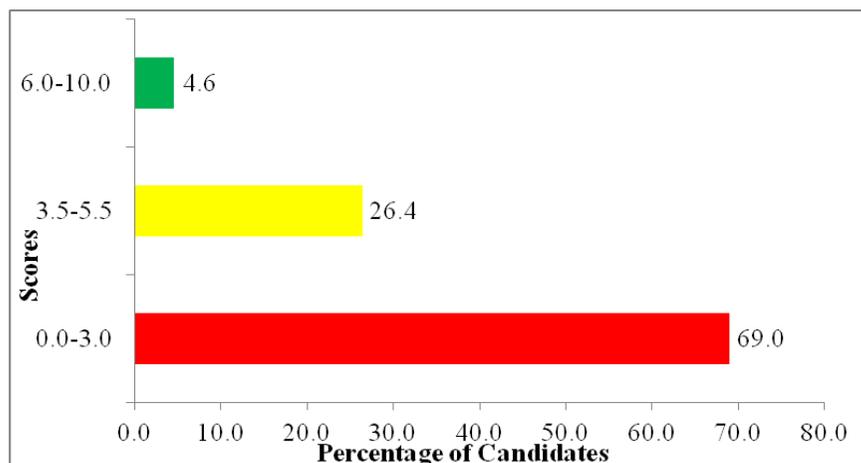


Figure 6: The candidates' performance for question 6

Figure 6 shows that the candidates' performance in this question was poor because only 31.0 percent of the candidates scored average marks or above. It was observed that, majority of the candidates with poor performance (69.0%) had inadequate knowledge on the hazards associated with various food toxicants. In part (a), some of the candidates provided the toxicants which do not interfere with bioavailability of minerals in the body. Others mentioned one to three correct food toxicants. However, these candidates either failed to provide explanations or provided incorrect occurrence and mineral(s) affected by each toxicant. A few candidates mentioned some of the minerals which are interfered by food toxicants which include *iron*, *calcium*, *zinc* and *iodine* instead of the toxicants which affect their bioavailability.

In part (b), some of the candidates gave examples or types of vitamins instead of natural toxicants which are antivitamin. Others mentioned the toxicants which interfere with the bioavailability of other nutrients or with different body systems such as *glucosinolates*, *flavonoids*, *lectins*, and *saponins*. Extract 6 is a sample of incorrect responses from one of the candidates.

6	a) 1) Alkaloids:	
	is the natural food toxicants found in tomatoes and potatoes. It affects the nutrients required by the body since when taken in excess causes diarrhoea, Oedema also it binds up vitamins that acts as insulator in the body of an organisms.	
	also they can cause lung cancers due to the highly toxic and can be removed by well washing and peeling of the tomato or potato.	
	ii) Avidin	
	is a natural toxicants that is found in eggs. when taken in excess binds up calcium and make it unavailable in the body of an organism causing poor formation of teeth, bones and also strong body lacks enough calcium as it manages muscles and bones found in the body.	

	<p>iii) Gynogens is the natural toxicants found in brown bread that leads to oedema, diarrhoea, vomiting, and when taken in excess it binds some nutrients making them available in the body. For example vitamin C and B. They can only be released by will boiling or cooking or baked bread.</p>	
	<p>b) Antivitamins ↳ Fat soluble vitamins A, D, K and E. The fat soluble vitamins each have its function in the body of an organism eg Vitamin A ability of eyes to focus or improve vision or light. Vitamin E improvement of skin pigments and colour.</p>	
	<p>↳ Water soluble vitamin B and C. The water soluble vitamins provides protection to the body of an organism example vitamin C provide resistance to diseases that are likely to invade the body.</p>	

Extract 6: A sample of incorrect responses for question 6

Further analysis of candidates' responses indicates that, the candidates with average and good performances (31.0%) were able to explain correctly two to three food toxicants that interfere with the bioavailability of minerals in part (a). The mentioned toxicants include: *goistrogens*, *oxalates*, *tannins* and *conalbumin*. However, most of them managed to explain one out of the required two antivitamin found in our traditional foods, hence failed to score all the 4 marks allocated to part (b) of this question. It was also observed that some of the candidates mixed up antivitamin and other nutrient inhibitors in responding to this part.

2.2 Section B: Essay Questions

This section consisted of three essay questions from three (3) topics, namely *Food storage*, *Nutrient requirement* and *Food processing and preservation*. Each question carried 20 marks and the candidates were required to answer two questions only. The analysis of each question is provided in the following sub-sections:

2.2.1 Question 7: Food storage

The candidates were required to: (a) explain seven (7) conditions under which human poisoning can occur during handling and applying pesticides, (b) explain three (3) safety standards that should be taken in handling and applying pesticides and (c) explain eight (8) rules to be followed when handling and applying pesticides in order to prevent oral and dermal toxicity to the people.

The question was opted by 165 (91.2%) candidates. The analysis shows that 99 (60.0%) candidates scored from 12 to 16.5 marks, 55 (33.3%) scored from 7 to 11.5 and 11 (6.7%) scored from 1.5 to 6.5 marks. Figure 7 summarizes this performance.

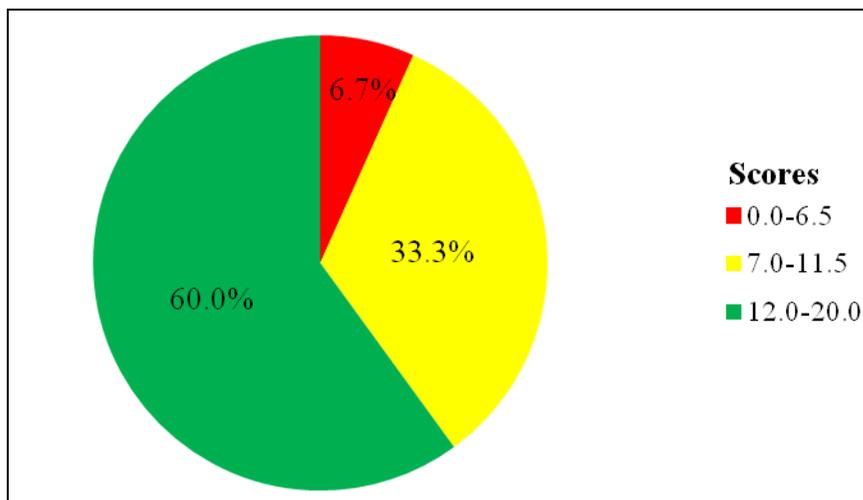


Figure 7: *The candidates' performance for question 7*

Figure 7 shows that the candidates' performance in this question was good since 93.3 percent of the candidates scored average marks or above. These candidates had adequate knowledge on the concept of pesticides used in food storage. In part (a), they were aware that human poisoning can occur during handling and applying pesticides when there is a delay in washing any part of the body or cloth which comes into contact with the pesticide, if handled by untrained personnel, if the pesticide is applied in unrecommended circumstances, when the pesticide is not clearly labelled in an understandable manner, when pesticide containers are used to handle food stuffs or drink, if pesticide is not properly stored, if handled by personnel with no protective gear, or when pesticide is sold in

containers not intended to contain the chemical. The candidates were also able to explain three safety standards that should be taken in handling and applying pesticides in part (b).

In part (c), the candidates were able to explain the rules to be followed when handling and applying pesticides. They recognized that, the rules to be followed when handling and applying pesticides are just, the measures of controlling the conditions they mentioned in part (a) so as to prevent human poisoning. However, the candidates failed to score all the 20 marks because they could not provide the required number of points in either of the parts of the question. Extract 7 is a sample of good responses from one of the candidates.

7	a) Conditions under which human poisoning can occur during handling and application of pesticides.	
	i) If the pesticides is applied under circumstances which were not recommended eg; using insecticides to pe plants it may lead to poisoning.	
	ii) If there is failure in handling the pesticide in the concentration which was required it may lead to poisoning or toxic effects.	
	iii) If the pesticides is handled without protective gears such as gloves, boots and safety goggles may cause harm on the skin when it comes into contact with the skin.	
	iv) Poisoning may occur also if the pesticide is handled by an untrained personnel who is not knowledgeable enough to adhere to the instructions and rules of application.	
	v) When there is delay in washing any part that comes into contact with the pesticides may lead to skin damage or skin corrosion.	

vi) Eating, drinking or smoking while applying the pesticide may lead to consumption of the pesticide unconsciously which may lead to poisoning.

vii) If the pesticide containers are not well labelled it may cause confusion as they can be used in other household containers to store food and hence food poisoning.

7 b) Safety standards that should be taken in handling and applying pesticides include;

i) → Pesticides should be handled by people who are physically and mentally fit; people with cuts and bruises should not be allowed to handle pesticides.

ii) → Pesticides should When applying pesticides one should put on protective gears to prevent coming into contact with the pesticide.

iii) → In case of any accident during application consult a doctor for treatment.

7 c) Rules to be followed when handling and applying pesticides in order to prevent oral and dermal toxicity to the people;

-i- Follow instructions on the label of the container as well as the recommendations on the label of the container.

-ii- The concentration at which the pesticide is to be applied or handled should be followed to prevent damage on the areas of application

-iii- Wash immediately any part that comes into contact with the pesticide

-iv- Wash clothes immediately after application to prevent risks of poisoning.

	-v- Donot eat, drink or smoke when handling the pesticides to prevent the risk of consumption of the pesticide.	
	-vi- When handling concentrated pesticides make sure you put on protective gears like clothes, boots, gloves and safety goggles.	
	vii- At Empty containers and bottles of the pesticides should be disposed properly where they cannot be used again.	
	viii- The remaining pesticides in the containers should be well labelled and store properly and securely out of reach of children.	

Extract 7.1: A sample of correct responses for question 7

In Extract 7.1, the candidate failed to score all the 20 marks because he/she did not include introduction and conclusion in his/her responses.

The analysis shows further that 6.7 percent of the candidates performed poorly in this question because some had insufficient knowledge on pesticides used in food storage, particularly on the abuse and safety in their use. Others failed to understand the demands of the question. In part (a), some of the candidates explained the types of pesticide formulations such as *dust, spray, baits, granules* and *fumigants* instead of the conditions under which human poisoning can occur during handling and applying pesticides. Other candidates mentioned the problems which are associated the wide use of broad spectrum pesticides. In part (b), some of them provided irrelevant safety standards that must be applied in handling and applying pesticides due to lack of knowledge. Those who failed to understand the demands of this part, mentioned the standards that must be met for insecticides to be used in the protection of the stored food products. For example, one candidate wrote, *they must be non-toxic to human being, must not react chemically with food nutrients and must be stable under different climatic conditions*. Other candidates interchanged the points by writing the rules to be followed when handling and applying

pesticides in the place of safety standards that should be taken in handling and applying pesticides and vice versa. In part (c), most of the candidates managed to provide one to six correct rules to be followed when handling and applying pesticides in order to prevent toxicity to the people. This enabled them to score from 1.5 to 6.5 out of the 20 marks allocated to this question. Extract 7.2 is a sample of responses from a script of one of the candidates with poor performance.

7a)	Unconsciousness. the human poisoning will get this problem.	
ii)	Headache- they will get headache.	
iii)	Vomiting. the poisoned human will get vomiting.	
iv)	Lack of enough air as the poison enter in the lungs.	
v)	Nausea will occur to the victim.	
vi)	fainting will occur.	
vii)	fail to see well.	
7b)	Store the pesticide far away from children	
i)	Do not drink or swallow the poison.	
ii)	Do not place the pesticide near the fire as it make the explosive.	
7c)	Apply the pesticides in a ventilated room.	
i)	Wear the cloth which are needed during the application of pesticide.	
ii)	Do not throw the bottle or washing the- equipment in the water. source of water.	
iii)	Apply pesticides according to the precaution and safety needed.	
iv)	When swallowing a poison, please may you see a physician for treatment.	
v)	After applying the pesticides wash your body through with tap water and soap.	
vi)	Avoid inhalation of the poison.	

Extract 7.2: A sample of incorrect responses for question 7

In Extract 7.2, the candidate managed to give only two correct points in part (c).

2.2.2 Question 8: Nutrient requirement

The candidates were required to describe six (6) factors which affect the nutrient intake to elders in part (a). In part (b), they were required to suggest nine (9) features of the diet of elders to meet their nutritional requirements.

The question was opted by 150 (82.9%) candidates. The analysis indicates that 30 (20.0%) candidates scored from 12 to 15 marks, 91 (60.7%) scored from 7 to 11.5 marks and 29 (19.3%) scored from 1 to 6.5 marks. Figure 8 is a summary of this performance.

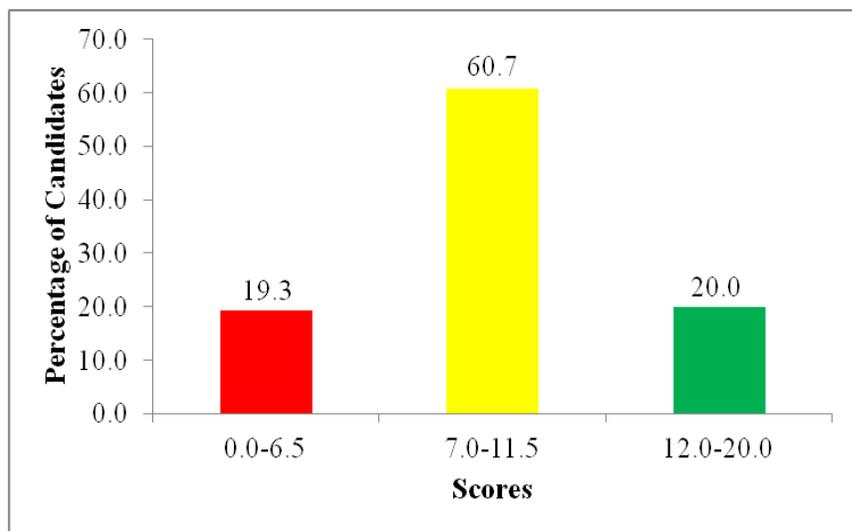


Figure 8: The candidates' performance for question 8

Figure 8 indicates that the candidates' performance in this question was good because 80.7 percent of the candidates scored average marks or above. The candidates with average and good performances had adequate knowledge of the concept on planning balanced meals for special groups of people. In part (a), these candidates managed to describe the factors which affect the nutrient intake of elders. They described how *loss of appetite, malabsorption, financial problem, decreased taste and smell, health problems, difficulty in chewing and swallowing, inability to move, and loneliness* affect the nutrient intake of elders. However, some of the candidates failed to obtain all the 9 marks allocated to this part because some could not provide clear descriptions of the mentioned factors that affect the nutrient intake of elders while others provided less than six

correct factors. In part (b), the candidates managed to suggest features of the diet of elders to meet their nutritional requirements. However, some of them treated one feature as two different features, hence failed to score all the 9 marks allocated to this part. For example, one candidate wrote, include *light foods in the meals* and *the foods should be easy to digest* as two separate points. This candidate failed to understand that light foods are easy to digest, so these should be treated as one point.

Further analysis indicates that, the candidates who scored low marks (19.3%) failed to provide any point correctly or provided just a few points. In part (a), some of the candidates mentioned the factors affecting basal metabolism such as, *occupation, sex, health status, age, exercises, body composition* and *climatic conditions* instead of the factors affecting the nutrient intake of elders. Other candidates provided the factors which affect food crop production such as, *laziness, stubborn attitude, lack of capital, drought, ignorance* and *lack of knowledge*. In part (b), some candidates failed to mention the nutrients which are mostly required by elders or the reasons behind the requirements of the mentioned nutrients. Others provided the factors affecting meal planning in a family. Extract 8 shows a sample of incorrect responses given by one of the candidates.

8a	The following are the factors which affect the nutrient intake of elders and this are:	
	Dislike of the food: This is the one of the factors which affect the nutrient intake of elders where most of them they dislike to eat the certain kind of the food because of the texture, flavour or colour.	
	Health status: This is another factor which affect the nutrient intake of elders.	
	Religious beliefs: Is the one of the factor which affect the nutrient intake of elders because in some religion there are food which are not allowed to be eaten like in muslim they are not allow to eat pig.	
	Traditional beliefs: In some cases it affect the nutrient intake of elders because of their traditional that the pregnancy woman should not eat egg something that is not true at all.	

	<p>Food taboos : Some of the food like liver, good part of the meat should be consumed by man while the remain the female should take so their increase intake of food to elders because of they lack some of the nutrients.</p> <p>Vegeterians : Most of the elders are the people who are vegeterians some they lacto and other their Vegan so they can not consume other food because of their vegeterians and they lack some of nutrients which make them to have high intake of food.</p>	
8b.	<p>Nutritional need : You must look on nutritional need of the elder before provide a diet to him/her look of the nutrient that has taste and how can you fix that.</p> <p>Food which are in season : You have to provide to them the food which are available to that time.</p> <p>Time available : Consider the time when prepare the meal of the elder so as reach their nutritional needs</p> <p>Amount of funds : You must look the amount of money so as to know if you can be able to buy the food which you want to prepare to them.</p> <p>Size of family : You have to consider other people in your family so as both of they should get a well balance diet.</p> <p>Vitamin A : Most of the elders they have to consume vitamin A of which will help them to see to the distance objects.</p>	

Extract 8: A sample of incorrect responses for question 8

In Extract 8, the candidate provided only one correct feature of the diet of elders. Other points in both parts of the question are the factors which affect meal planning in a family.

2.2.3 Question 9: Food processing and preservation

This question required the candidates to describe nine (9) chemical preservatives which can be used in the food and beverage processing industry to prevent microbial growth in the final products.

The data analysis indicates that, the question was opted by 46 (25.4%) candidates of whom, 3 (6.5%) scored from 12.5 to 15 marks, 30 (65.2%) scored from 7.5 to 11.5 marks and 13 (28.3%) scored from 0 to 5 marks. Figure 9 is a summary this performance.

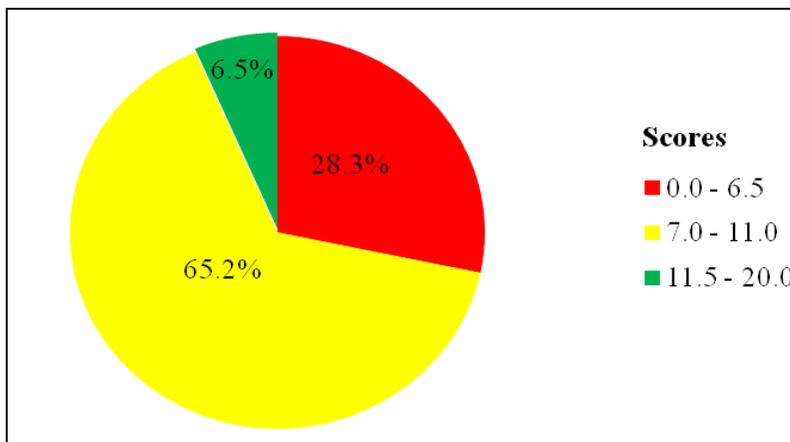


Figure 9: *The candidates' performance for question 9*

Figure 9 shows that the candidates' performance in this question was good because 71.7 percent of the candidates scored average marks or above. On the one hand, the candidates who had good and average performances were aware that sodium chloride, sugar, citric acid, benzoic acid, sulphur dioxide, nitrates and nitrites, ascorbic acid, acetic acid, propionates, hydrogen peroxide and carbon dioxide are some of the chemicals which are used in food processing industries to prevent growth of microorganisms in the final products. However, these candidates failed to score more than 15 marks because they provided insufficient explanations to some of the mentioned methods, particularly on their nature and type of food(s) they preserve.

On the other hand, some of the candidates who scored low marks (28.3%) failed to understand the demands of the question. Some of them provided the steps involved in different methods of preserving food. For example, one candidate wrote, *cleaning, preparing, feeling, exhausting, processing and sealing*. This candidate failed to understand that these are the steps of preserving food by canning or bottling and not chemical methods of preserving food. Other candidates provided the methods of removing moisture from food. Those who had insufficient knowledge on food

preservation provided irrelevant responses. However, the candidates in this category scored from 1 to 5 marks because they managed to mention one to three correct chemical methods, but their explanations were unclear and insufficient. Extract 9 is a sample of responses from a script of one of the candidates with poor performance.

9.	<p>Food preservation this is the process done so as to store food to increase its shelf life so that it can be used in the future</p>	
	<p>The following are the chemical preservation methods used for effective prevention of microbial growth</p>	
	<p>Canning this is the chemical process of preserving food which involve use of cans to keep or store foods the cans are filled with air under a certain temperature so as to reduce the growth rate of microorganisms</p>	
	<p>Pickling this is another way of preserving food in a chemical way it involves putting of food in special containers and some acids and chemicals are added so as to prevent action of microbes the food included in pickling are mangoes</p>	
	<p>Addition of food additives to the food this method involves addition of the food additives to the food this additives are also added to the food so as to increase its shelf life</p>	
	<p>Refrigerating this process involves keeping food at a very low temperature with which this also suppress the growth of microorganisms</p>	
	<p>Salting this method involves addition of salt to the food this was done so as to drain water present in the food and due to its acidity it prevents the growth of microorganisms to the salted food the foods which are suitable in this method are meat and fish.</p>	

	Chemical method of preservation is more	
	effective than physical because it is long lasting	
	and there is a low chance for the survival	
	of microorganism	

Extract 9.1: A sample of incorrect responses for question 9

In extract 9.1, the candidate mentioned only one correct chemical method of food preservation, but provided incorrect description. Other mentioned methods of preserving food are non-chemical.

3.0 ANALYSIS OF THE CANDIDATES' PERFORMANCE IN EACH QUESTION IN PAPER 2

3.1 Section A: Short Answer Questions

This section consisted of six (6) compulsory questions from the following topics: *Malnutrition, Nutrition program planning and intervention, Catering and institutional feeding* and *Food microbiology*. Each question carried 10 marks. The analysis of each question is provided under the following sub-sections:

3.1.1 Question 1: Malnutrition

In this question, the candidates were required to explain why dietary surveys may provide inaccurate information used for the assessment of nutritional status of a community by giving five (5) points.

The question was attempted by all the (100%) candidates. The analysis shows that 151 (91.2%) candidates scored from 0 to 3 marks, of whom 67 (37.0%) scored 0. The candidates who scored from 3.5 to 5.5 marks were 27 (7.1%), while 3 (1.7%) scored 6 marks. Figure 10 gives a summary of this performance.

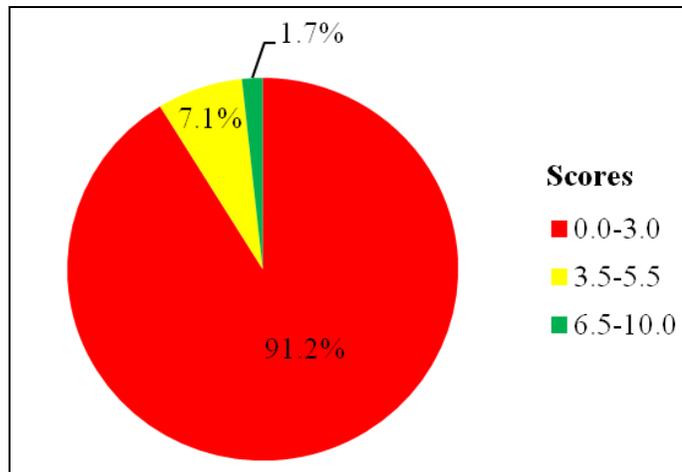


Figure 10: *The candidates' performance for question 1*

Figure 10 shows that the candidates' performance in this question was poor because 91.2 percent of the candidates failed the question. The candidates who scored low marks provided partial responses or failed completely to provide correct responses. Some of them provided the anthropometric indices used to assess the health and nutritional status of an individual and community. Others, provided the survey methods of getting information used for the assessment of the nutritional status of a community instead of the reasons as to why dietary survey may provide inaccurate information. For example, one candidate wrote: *using educated individuals such as school children to fill in questionnaire, to weigh and measure all the foods prepared, cooked, eaten and discarded in a family, to ask the wife or other person in the house questions about the diet and ask a person to recall what was eaten during the previous 24 hours period.* However, some of the candidates managed to provide one to three reasons with incorrect or without any explanation. Extract 10 shows a sample of incorrect responses from one of the candidates.

1.	<p>Dietary survey may provide inaccurate information, used for the assessment of nutritional status of a community due to different method of nutritional assessment that used to determine nutritional status of community as follows:</p>	
	<p>(i) Anthropometric method In this method if they assess the weight and height weight and age so that to know if children or/also growth through their height, weight, age and if we physical appearance of an individual so through this will helps to know the nutritional status of an individual.</p>	
	<p>(ii) Biochemical method : This is done through in the laboratory by check blood and urine through this will help to know the nutritional problem which may be facing that and individual ^{faces} with. Are more applicable in a developed countries because it need high skill.</p>	
	<p>(iii) Clinical method This is done through checking their clinical at hospital to care their development of growth from day of birth so that to know if an individual growth and develop or not so through this will help to know their development.</p>	
	<p>(iv) Social Dietary method This is done through check their history nutritional deficiency from statistic analysis, is that to know kind of nutritional problem which a likely facing an an individual.</p>	
	<p>(v) Vital Statistical This method done through checking statistics data from hospital so that to know kind of nutritional problem that facing of certain community this will helps to analyze kind of nutritional problem in a given community.</p>	

Extract 10: A sample of incorrect responses for question 1

In Extract 10, the candidate provided the direct methods of assessing the nutritional status of an individual.

The analysis shows further that the candidates who has good and average performances (8.8%) were able to explain why the dietary survey may provide inaccurate information used for the assessment of nutritional status of a community. Some of the reasons provided by these candidates were: *there is a problems in the use of available food composition tables, it is difficult to remember all the foods eaten in terms of quality and quantity, inaccuracy in weighing of food stuffs, seasonal variations in foods availability and the subject may provide wrong information to the surveyor.* However, these candidates failed to score all the 10 marks allocated to this question because they provided three to four correct reasons instead of five. Some of the candidates also failed to provide sufficient explanations, while others provided incorrect explanations for the mentioned reasons.

3.1.2 Question 2: Nutrition program planning and intervention

The candidates were required to identify four (4) objectives of nutrition education programs in part (a). In part (b), they were required to identify three (3) components of nutrition programs and to give two (2) types of information to be provided in each component.

The question was attempted by 177 (97.8%) candidates. The data analysis indicates that, 129 (72.9%) candidates scored from 0 to 3 marks, of whom 59 (33.3%) scored 0. The candidates who scored from 3.5 to 5.5 marks were 27 (15.2%), while 21 (11.9%) scored from 6 to 7 marks. Figure 11 summarizes this performance.

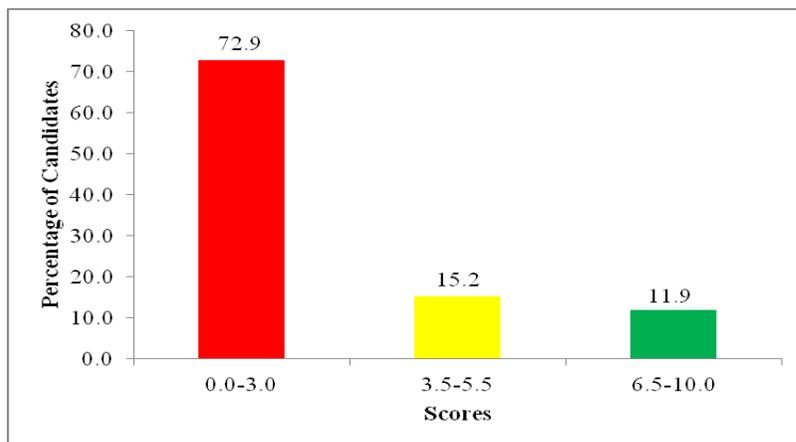


Figure 11: The candidates' performance for question 2

Figure 11 shows that the candidates performance in this question was poor because only 27.1 percent of the candidates scored 3.5 marks or above. It was observed that, 33.3 percent of the candidates scored zero because they provided incorrect responses in all parts of the question. Majority of these candidates misinterpreted the demands of the question, while others demonstrated insufficient knowledge on community nutrition education. In part (a), some of the candidates provided the objectives of Food and Nutrition Policy which include: *to provide guidelines to fight against food and nutrition problems, to involve all food and nutrition related sectors to support the methods of improving the nutrition situation, to prepare a workable system for coordinating, balancing, and guiding food and nutrition activities which are being undertaken by various sectors, to formulate proper strategies to ensure the availability and utilization of food in accordance with the nutritional requirements and to use nutrition as one of the indicators in assessing social development achievements of economic and health improvement projects.* Other candidates identified the importance of nutrition intervention program instead of the objectives of nutrition education program.

The candidates who had inadequate knowledge of community nutrition education provided incorrect responses such as: *to stimulate people to acquire the appropriate diet, to provide the health life style to all people, to enhance nutritious dietary intake, to create awareness among the people that food is very important to health and production, to educate people about food, encourage mothers to breast feed, encourage people to prepare balanced meal and encourage society in food production.*

In part (b), some of the candidates provided the elements of Primary Health Care instead of the components of nutrition programs. A few candidates wrote the services which are provided in Reproductive and Child Health clinics which include: *growth monitoring, safe delivery service, family planning, immunization/vaccination, nutrition education and food supplementation.*

The analysis indicates that some of the candidates who scored from 1 to 3 marks in this question managed to provide one to three correct objectives of nutrition education programs in part (a). In part (b), these candidates managed to provide one to two correct components of nutrition programs

though they failed to give the types of information to be provided in each component. Extract 11 is a sample of incorrect responses from a script of one of the candidates.

2) To reduce hunger and eliminate starvation.	
Nutrition education is given to people so as to make those people found in that area have proper use and utilizing of the available nutrient	
ii) Making people to understand food as the best medicine. A person who eat enough food and well cooked and balanced food will be able protect him or herself from diseases.	
iii) Help people to understand how to utilize and use properly the local foods available which will enable them to provide their bodies with enough nutrient	
iv) Aims at fighting against malnutrition problem. The nutrition education is provided to people so as to fight against the problem of malnutrition facing different people in our country.	
(b) Components of nutrition education in our country.	
i) Involvement of the key people. This are the political and religious leaders this people are to be involved in making nutrition participation that they should also encourage people about the nutrition status.	
ii) Community participation. When planning nutrition education you should involve the community participation of all people	
iii) Targeted group. This are special groups of people in the society so when planning nutrition education this groups should be considered such groups are young children, was elders and the expectant mothers.	

Extract 11: A sample of incorrect responses for question 2

Further analysis indicates that, the candidates with average and good scores (27.1%) were able to identify the objectives of nutrition education programs in part (a) such as: *to participate and coordinate in community nutrition programs with the cooperation of people working in other disciplines, improve the nutritional levels of the community by the available means, develop nutrition advisory services and education nutrition programs for the public and help in developing supplementary nutrition program wherever necessary.* However, some of these candidates failed to score all the 4 marks allocated to this part because they provided three instead of the required four correct objectives.

In part (b), the majority of the candidates in this category managed to identify the components of nutrition education programs. However, they failed to score all the 6 marks allocated to this part because either they provided only two correct components or gave incorrect types of information to be provided in each mentioned component.

3.1.3 Question 3: Catering and institutional feeding

The question required the candidates to give two (2) criteria for establishing a catering service in part (a) and to state eight (8) problems facing catering industry in our country in part (b).

The question was attempted by all the (100%) candidates. Among them, 29 (16.0%) scored from 6 to 8 marks, 115 (63.6%) scored from 3.5 to 5.5 marks and 37 (20.4%) scored from 1 to 3 marks. Figure 12 is a summary of this performance.

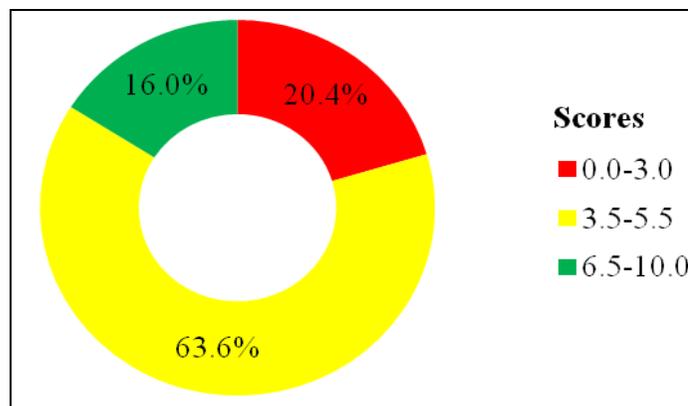


Figure 12: *The candidates' performance for question 3*

Figure 12 shows that, the candidates' performance in this question was good because 79.6 percent of the candidates scored 3.5 marks or above. The analysis of the candidates' responses shows that, some of the candidates with average and good performances gave one instead of two correct criteria for establishing a catering service in part (a). Other candidates included incorrect responses such as: *the type of services offered, availability of food stuffs, source of capital, capacity of the industry, type and number of staff required, presence of attractive features, type of equipment required, local foods available and cooking and serving equipments*. In part (b), some of the candidates failed to score all the 8 marks because they provided five to seven instead of the required eight problems facing catering industry in Tanzania.

Furthermore, the analysis indicates that, some of the candidates who performed poorly in this question had inadequate knowledge on catering management, while others misinterpreted either of the parts of the question. In part (a), some of the candidates gave irrelevant responses on the criteria for establishing catering service such as: *area for establishment should be demanding for the people, commercial type of catering, to be near highways, catering services should not be nearby the people, easy to reach and to be associated with other businesses*.

In part (b), the candidates managed to state one to three correct problems that face catering industry. Some of these candidates treated one point as two or more separate points, hence failed to score more than 3 marks. For example, one candidate mentioned, *lack of infrastructure, lack of transport and communication and poor rough roads* as three different points instead of explaining them under the point of poor infrastructure. Extract 12 is a sample of responses from a script of one of the candidates with poor performance.

3 (a)	Criteria for establishing a catering service:
(i)	Type of catering service to be established; before establishment of any catering service a caterer should know what kind of service that he/she would need to provide either. For example an industry catering, commercial or welfare catering.
(ii)	Type of customers; On establishing catering service a caterer should know what kind of people that he/she going to provide a service based on their customs, religious or their purchasing power.
3 (b)	Problem Facing catering in Tanzania: Our country
(i)	Poor electricity supply; Among of an important aspect in catering is electricity our country being poor Many areas lack this services and hinder catering establishment
(ii)	Poverty; For catering services to be provided effectively Money is an important aspect Many people are poor for establishing or buying the service this cause catering industry to decline.
(iii)	Poor technology; Most of tools used in our country in provision of services are poor and late to decline and poor provision of catering services.
(iv)	Security Problem; For a catering establishment in interior part like in national parks and villages face the problem of being attacked by dangerous animals or bad people and this.
(v)	Water problem; Most areas in our country face the problem and of water supply, shortage of water late to decline in catering services.
(vi)	Poor catering education; this lead to poor provision of services and bad or poor control and organization of the industry

Extract 12: A sample of incorrect responses for question 3

3.1.4 Question 4: Food microbiology

The candidates were required to give the importance of practicing good personal hygiene in the kitchen when handling food in part (a). In part (b), they were required to state seven (7) personal hygiene practices that the food handlers should observe in order to provide safe foods to the customers.

This question was attempted by all the (100%) candidates. The analysis indicates that, 69.1%) candidates scored from 6 to 9.5 marks, 37 (20.4%) scored from 3.5 to 5.5 marks and 19 (10.5%) scored from 1 to 3 marks. Figure 13 summarizes the performance of the candidates in this question.

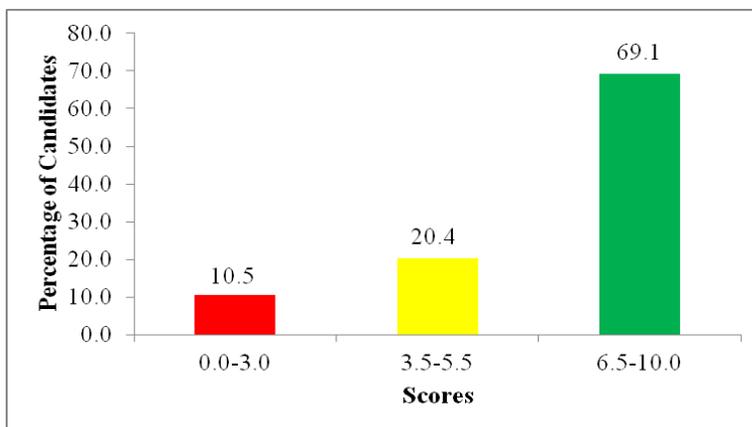


Figure 13: *The candidates' performance for question 4*

Figure 13 indicates that, the candidates' performance in this question was good because the majority (89.5%) of the candidates scored 3.5 marks or above. On the one hand, the candidates with average and high scores in part (a) were aware that, practicing good personal hygiene ensures a safe working environment and prevents the spread of food-borne illnesses (or food poisoning) due to food contamination. In part (b), most of the candidates provided correct personal hygiene practises that the food handlers should observe in order to provide safe foods to the customers. However, the candidates either provided unclear explanation on the importance of good personal hygiene or repeated some of the points, hence failed to score all the 10 marks. Extract 13.1 shows a sample of good responses from one of the candidates.

4.a)	Importance of practising food hygiene in the kitchen is to ensure that the food is free from any microorganisms and free from contamination so as to ensure it does not cause any harm when eaten, such as food borne disease.
b)	Personal hygiene practices.
i)	Washing of hands before and after visiting the toilet with soap and running water.
ii)	The hand nails should not be polished or long to hold on bacteria which can cause food poisoning during preparation.
iii)	Ensure to take body bath for cleaning the body which will ensure more safety during food preparation since a dirty body carries a lot of microorganisms.
iv)	When preparing the food, the head should be well covered with a clean cloth to ensure safety of the food been prepared, from being affected with hair.
v)	When preparing food one thing like ^{finger} rings, watches should be removed since they can cause food contamination.
vi)	One should avoid touching other parts of the body such as eyes, face and nose when preparing the food, to avoid cross contamination.
vii)	Proper handling of the food, if a person is suffering from flu or cough and cold, should not handle the food.

Extract 13.1: A sample of correct responses for question 4

On the other hand, the majority of the candidates who scored low marks (10.5%) misinterpreted the demands of all parts of this question. In part (a), some of the candidates provided the importance of practicing good kitchen hygiene instead of the importance of personal hygiene. Other

candidates mentioned personal hygiene practices. The analysis indicates further that a few candidates had insufficient knowledge on personal hygiene, so they provided irrelevant responses. For example, one candidate wrote; *it is good as personal hygiene helps in formations of strong body immunity and therefore prevention of malnutrition disorders.* Another one wrote; *it prevents rapid growth and well developed body parts.*

In part (b), some of the candidates mentioned the importance of keeping the kitchen/environment clean. For example, one candidate wrote; *help to reduce accidents in the kitchen, prevents physical accidents to customers like fire, help to control pests and make working environment comfortable.* Other candidates provided irrelevant responses such as: *the foods should be well balanced to make sure that the nutrients are available, cook at high temperature to kill bacteria, store all foods in a refrigerator, have enough cooking utensils, other are not allowed to enter the kitchen and all persons must be smart to attract customers.* These candidates were not aware that most people carry harmful bacteria on their bodies and can unknowingly transfer them to food in the kitchen while handling food. Thus, personal hygiene practices help to minimise this risk. Extract 13.2 is a sample of incorrect responses from one of the candidates.

4	(a) The following are the importance of practising good personal hygiene in the kitchen when handling food.	
	- (1) It helps to get rid of the chances that could allow the growth of harmful micro-organisms that may lead into infections and diseases.	
	- (2) Helps to reduce the risk of occurrence of kitchen accidents that may lead into severe injuries and other damages that may affect during food preparations.	

4.(b)	The following are seven personal hygiene practices that the food handlers should observe in order to provide safe food.
	① All foods that are prepared should be kept well covered to get rid of agents that cause contamination.
	② Utensils that are used to handle foods should be kept well cleaned, properly dried and well arranged.
	③ The food handlers should wash hands before any food handling using clean water.
	④ All ingredients used and other food items used should be thoroughly clean using clean water before any preparation.
	⑤ All prepared foods should be cooked at their required appropriate temperature and time to ensure proper cooked foods.
	⑥ The perishable foods should be separated from the non-perishable foods during their storage to ensure appropriate hygiene for food storage.
	⑦ The left over foods in the kitchen should be well treated in terms of their storage so as to avoid the contamination chances to those foods.

Extract 13.2: A sample of incorrect responses for question 4

In Extract 13.2, the candidate managed to provide only one correct personal hygiene practice. Other points mentioned in part (b) are food hygiene practices.

3.1.5 Question 5: Nutrition program planning and intervention

In this question, the candidates were required to: (a) differentiate active immunization from passive immunization, (b) explain two (2) advantages of passive immunization and (c) identify four (4) benefits of vaccines.

The analysis shows that the question was attempted by 178 (98.3%) candidates. Among them, 20 (11.2%) scored from 6 to 9 marks, 97 (54.5%) scored from 3.5 to 5.5 marks and 61 (34.3%) scored from 0.5 to 3 marks. Figure 14 is a summary of this performance.

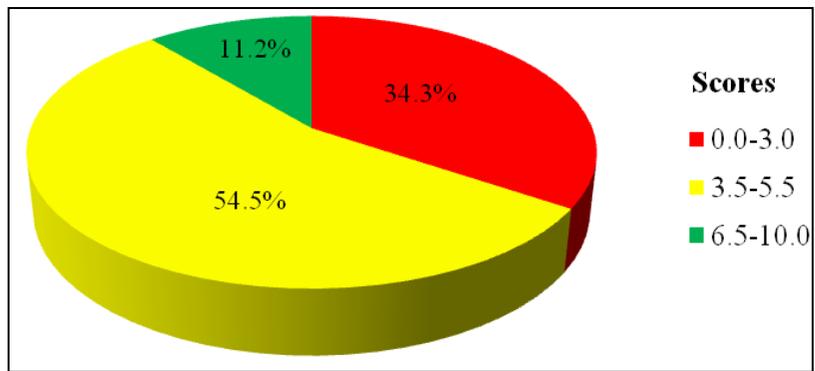


Figure 14: *The candidates' performance for question 5*

Figure 14 indicates that, the candidates' performance in this question was good because 65.7 percent of the candidates scored average marks or above. The majority of the candidates with average and good performances managed to differentiate active immunisation from passive immunisation in part (a). They understood that active immunization happens when a person gets an infection and develops immunity to it or given a vaccine, while passive immunization happens when readymade antibodies are introduced into the body. A few candidates failed to score all the 2 marks allocated to this part because they used the term 'antigens' in the place of 'antibodies' and vice versa while differentiating the given processes. Similarly, some of these candidates encountered difficulties in responding to part (b) of this question as they mentioned the properties instead of the disadvantages of passive immunization. For example, they wrote, *it is fast to come and fast to go*. The candidates failed to understand that, fast to come is an advantage, but fast to go is a disadvantage of passive immunity.

In part (c), most candidates managed to identify two to four correct benefits of vaccines. They were aware that vaccines are safe and effective means of protection, improve the body immunity system of the child, save life of children, help to reduce cost of disease treatment, avoid the complications that come from surviving the natural infections, protects future generation and protects other people such as in the family, schools and friends.

Further analysis shows that, the candidates who scored low marks (34.3%) had inadequate knowledge on the concept of immunization. In

part (a), some of them mixed up the active immunization with passive immunization, while others provided partial difference. For example, one candidate wrote; *active immunization occurs when a person get a certain disease and get the immunity against it while passive immunization occurs when the immunity is transferred from the mother to the baby during pregnancy.* Another candidate wrote; *active immunization is provided through vaccination of antigens while passive immunization is provided through vaccination of antibodies.*

In part (b), the candidates failed to provide the disadvantages of passive immunization. Some of the incorrect disadvantages provided by these candidates include: *it may require some costs, can interfere body systems, is time consuming to the mother, is specific to some diseases only, cause danger associated with pain to children and children may receive less immune.* These candidates failed to understand that passive immunization is expensive and difficult method in producing antibodies, it lasts for a short time and it may cause severe body reaction and rapid destruction of antibodies if some types of antibodies are repeated to a person. Other candidates skipped the question altogether.

In part (c), the candidates managed to provide one or three correct benefits of vaccines though some failed to give clear explanations. Extract 14 is a sample of poor responses from one of the candidates.

5a)	Active immunization; is the process of providing im vaccine or immunity to the people in order to prop ect them in various disease for their health and active life in this active immunity there is passive are two categories which is Artificial active imm unity and natural immunity.
	While
	Passive immunity; is the process of providing vacci ne or immunity to the people automatically in the community or society so they are both important in the society because they need pro to provide se rvices both naturally and Artificially in order to protect an individual from diseases in the communit y or society.

5b)	It is time consuming process ; Because the services that are provided is of high and good quality.
①	It require or need higher knowledge;
c)	
②	Vaccine help to protect disease in the body ; By providing the immunity in the body.
③	Vaccine help to improve the nutrient nutrient that are lost in the body especially for the children in the community or society. example Vitamin C.
④	Vaccine help to increase the health status of the children and other people in the society.
	iv) Help the body to fight against harmful diseases in the body because it contain a lot of nutrient so it may protect the body from harmful diseases.

Extract 14: A sample of poor responses for question 5

In Extract 14, the candidate managed to provide only one correct benefit of vaccines.

3.1.6 Question 6: Food microbiology

This question required the candidates to explain five (5) conditions which support growth and multiplication of bacteria.

The question was attempted by all the (100%) candidates. The analysis shows that 131 (72.4%) candidates scored from 6 to 10 marks, 20 (11.0%) scored from 3.5 to 5.5 marks and 30 (16.6%) scored from 0 to 3 marks. Figure 15 summarizes the performance.

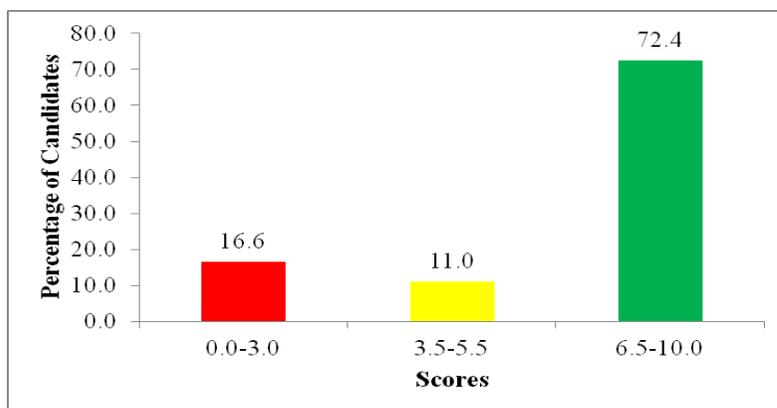


Figure 15: The candidates' performance for question 6

Figure 15 shows that the candidates' performance in this question was good because 83.4 percent of the candidates scored 3.5 marks or above. The candidates who performed well in this question managed to explain the conditions which support growth and multiplication of bacteria. They understood that, bacteria require: suitable food (nutrients), suitable temperature, suitable pH condition of the food, enough moisture (at liquid state), suitable air/gas and time for growth. However, majority of the candidates failed to score all the 10 marks because they explained two to four correct conditions or provided insufficient explanations to the mentioned conditions. Some of them included the factors which affect growth and survival of microorganisms in foods, such as: *redox potentials*, *relative humidity* and *antimicrobial barriers/constituents*. Extract 15.1 shows a sample of correct responses from one of the candidates.

6. Five conditions which support growth and multiplication of bacteria are:	
i) Temperature.	
This is one of the condition that favour the growth and multiplication of bacteria because, bacteria grows at optimum temperature ranging from 20°C to 45°C whereas the very low temperature inactivate them and very high temperature destroy them, hence optimum temperature	

	sub the multiplication of bacteria.	
	ii) pH of the food. Bacteria grows in a neutral acid-base pH. If the foods are acids that is they have low pH bacteria cannot grow well and if the food is too basic bacteria also cannot grow well hence they require a neutral pH or slightly alkaline pH for their growth.	
	iii) Moisture content: This also is one of the conditions that suit well the bacterial growth since in the presence of moisture, bacteria are able to utilize nutrients and grows well. There are bacteria that grows in high moisture content and others in low moisture content.	
	iv) Nutrient content. This is the most important condition for the growth of bacteria since temperature, pH and moisture are not be enough to grow them. Bacteria needs nutrients for their growth where they utilize different food sources like carbon from carbohydrates and nitrogen from proteins for their growth.	
	v) Presence of gases in the atmosphere/surrounding. There are bacteria of different kinds, called anaerobes, aerobes and facultative bacteria, in which they all grow at different concentrations of gases especially oxygen gas; where they need oxygen gas for respiration and utilization of food materials for their growth.	

Extract 15.1: A sample of correct responses for question 6

The analysis shows that the candidates who had poor performance (16.6%) failed to understand the demands of the question. Some of them provided the source of microorganisms spread. Others provided the methods of controlling growth and multiplication of microorganisms. For example, one candidate wrote; *use proper heat treatment to destroy bacteria, refrigeration and freezing food, drying the food to reduce water*

content, make food acidic and salting. Extract 15.2 shows a sample of poor responses from one of the candidates.

6. i) Improper cooking of foods.	
Through the improper cooking of the foods this favour the growth of and multiplication of bacteria due to some microorganisms such as bacteria prefer to live in raw and low temperature contents.	
ii) Improper or inadequate of food reheating.	
also this is another condition which favours the growth of bacteria through inadequate of foods reheating because some bacteria are favoured in cold conditions such as thermophiles.	
iii) Improper foods handlers.	
also this is the main condition of bacteria growth and multiplication which occurs due to improper handling foods such as do not cover the foods which allows contamination of different microorganisms and foods hence bacteria multiplication and growth.	
iv) Contact between raw foods and cooked foods.	
also this influences the growth and multiplication of the microorganisms bacteria due to the contamination of cooker raw foods which consist of bacteria to the cooked foods which have no bacteria hence this influences the growth and multiplication of bacteria.	

	<p> \ Improper foods refrigeration. Also through improper foods refrigeration such as meats leads to growth and multiplicati on of bacteria due to some or bacteria favoured in low temperature hence if the meat gets low temperature content will influences the growth of bacteria </p>	
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Extract 15.2: A sample of incorrect responses for question 6

In Extract 15.2, the candidate provided food and kitchen hygiene practices which may cause food contamination in the kitchen.

3.2 Section B. Essay Questions

This section consisted of three essay questions from three (3) topics, namely *Malnutrition, Catering and institutional feeding* and *Nutrition program planning and intervention*. Each question carried 20 marks and the candidates were required to answer two questions only. The analysis of each question is provided in the following sub-sections:

3.2.1 Question 7: Malnutrition

The candidates were required to explain seven (7) causes of undernutrition to expectant women and to suggest two (2) strategies to overcome micronutrient deficiencies to expectant women in the society.

The question was opted by 175 (96.7%) candidates. The analysis shows that 76 (43.4%) candidates scored from 12 to 18 marks, 91 (52.0%) scored from 7 to 11.5 marks and 8 (4.6%) scored from 3 to 6.5 marks. Figure 16 summarizes this performance.

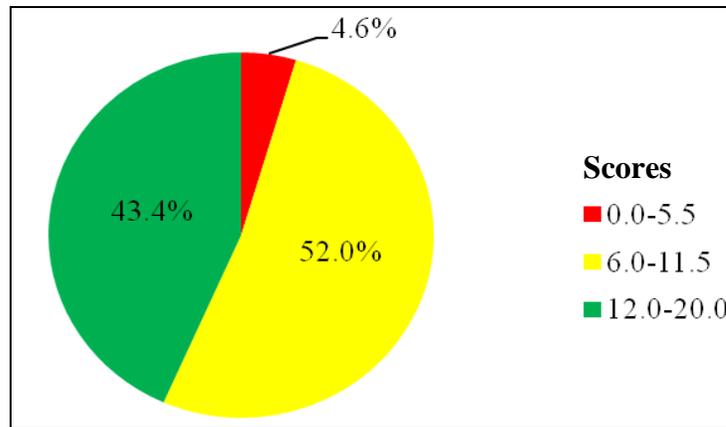


Figure 16: *The candidates' performance for question 7*

Figure 16 shows that the candidates' performance in this question was good because the majority (95.4%) of the candidates scored 6 marks or above. The analysis of candidates' responses shows that, most of the candidates who scored average marks or above were able to explain the causes of undernutrition to expectant women. They understood that, undernutrition to expectant women is caused by uneven distribution of the available food at all levels, heavy women workload, insufficient food intake, illiteracy and ignorance of expectant mothers, medication, and illness and infectious diseases. The candidates also managed to suggest two strategies to overcome micronutrient deficiencies to the expectant women. However, the candidates either gave three to six correct causes of undernutrition to expectant women or they treated one point as two or more separate points, hence failed to score all the 20 marks allocated to this question. For example, some of the candidates mentioned, *low food intake, low income, poverty* and *low food production* as three separate points. These candidates did not understand that low income/poverty and low food production cause insufficient/low food intake. Likewise, *uneven food distribution, poor food habits* and *poor believes and superstitions* were treated as three separate points instead of one because the first point is caused by the two factors.

The analysis indicates that the majority of the candidates who performed poorly in this question (4.6%) misinterpreted its requirements. Some of the candidates provided the causes of low food production and the methods of preventing low food production instead of the causes of undernutrition to expectant women and the strategies to overcome

m micronutrient deficiencies. Other candidates mentioned the disorders of undernutrition and their control measures. For example, one candidate wrote, *iodine deficiency disorder, vitamin A deficiency disorder, scurvy, protein energy malnutrition, beriberi and nutritional anaemia*. This candidate also mentioned the general control measures of undernutrition disorders. Extract 16 is a sample of poor responses from one of the candidates.

7.	<p>Maternal under-nutrition it means that is the process of lack the enough nutrition in the body by poor preparation of the food and the intake of low food which are not be balanced. The maternal under-nutrition it occur during the pregnancy and breast if can not make a good diet it can cause the malnutrition for the mother and baby.</p>	
	<p>The following are the causes of undernutrition to expectant women:-</p>	
	<p>Poor health of the mother and child during the time of birth. The woman who have the problem of undernutrition it have bearing high probability of joint the problem during the birth time. Because have poor diet intake it can make to be have undernutrition in the body.</p>	
	<p>It can cause the death of mother or child during the birth time. Because they have no good nutrition intake during the time of pregnancy because during the time of pregnancy it should be have the good health and it should be eat the good meal which are being balanced.</p>	
	<p>It can cause mental ^{brain} problems. If can not used the good meal which are balance and being contained all nutrient which are should be eat during the time of pregnancy it can make to birth the child have problem of mental brain.</p>	
	<p>It can make the birth the children under weight. Also if can not feed the good meal it can affect the baby to be born with low weight this it can make the baby to be have the poor health and growth during the time of our growth.</p>	

7.	<p>It can cause the malnutrition problem. It</p>
	<p>because of under-nutrition intake so it can</p>
	<p>cause the problem of malnutrition for children</p>
	<p>under 5 year because many with that age</p>
	<p>they have been affected with the malnutrition.</p>
	<p>Lack of education about good nutritional</p>
	<p>intake during the time of pregnancy. That</p>
	<p>it can make the maternal woman to used</p>
	<p>any food which are being available in</p>
	<p>our society and they not have any education</p>
	<p>about which food it should be eat in more</p>
	<p>and which food should be eat at the time of</p>
	<p>the pregnancy.</p>
	<p>Food taboo and superstition. That it can</p>
	<p>make the choose of the food which can not be</p>
	<p>eaten with the pregnancy woman. Because in some</p>
	<p>tradition they not allow the woman to eaten the</p>
	<p>types of the food example meat, egg, liver and</p>
	<p>other food because they believed if the pregnancy</p>
	<p>woman can eaten those food it can brittle the</p>
	<p>children have no hair. So because of that it</p>
	<p>can make them to lose some of the nutrition which</p>
	<p>are found in the animal product.</p>
	<p>The following are the strategies to overcome</p>
	<p>micronutrient deficiencies to expectant women in</p>
	<p>our country</p>
	<p>It should be to provided an education</p>
	<p>about the intake of good nutrients when</p>
	<p>they have pregnancy and during the breast. If</p>
	<p>the woman and men can be educated it</p>
	<p>can help to solve the problem of the malnutrition</p>
	<p>for the children because it can make</p>

the family to know the different types of food should be eaten with the expectant women.
It should be educating the woman and men to go at clinic for check the health of mother and child before and after birth. Also if each member can know the importance of go at clinic to check the health then it can help to get some of education and advice of the way of preparing and balanced the good meal for mother.
Therefore, the maternal under nutrition it caused by multiple factors by the different causes like lack of education, poor participation of the member of the family also there is the strategies to overcome of micronutrient deficiencies to expectant women like provision of education, to go at the clinic and others way which can help to overcome the problem of under nutrition.

Extract 16: A sample of poor responses for question 7

In Extract 16, the candidate provided only one correct cause of undernutrition to expectant women. Other mentioned points are the effects of undernutrition to pregnant women and the child, and the methods of controlling them.

3.2.2 Question 8: Catering and institutional feeding

The question required the candidates to describe six (6) techniques of promotion used in catering establishments.

The question was opted by 100 (55.2%) candidates. Among them, 37 (37.0%) scored from 12 to 17 marks, 35 (35.0%) scored from 7 to 11 marks and 28 (28.0%) scored from 0 to 6 marks. Figure 17 summarizes this performance.

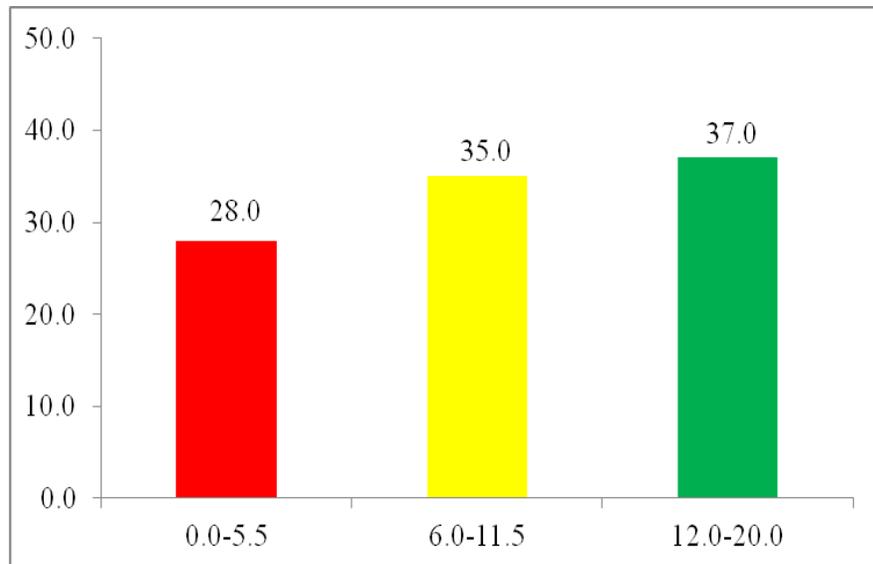


Figure 17: *The candidates' performance for question 8*

Figure 17 shows that the candidates' performance in this question was good because 72.0 percent of the candidates scored 7 marks or above. The analysis of the candidates' responses shows that, some of the candidates who scored high or average marks described correctly two to five techniques of promotion used in catering establishments. The incorrect techniques provided by most of the candidates include: *price promotion, geographical promotion, equipment promotion, environmental promotion, customer care promotion, economical promotion* and *business competition promotion*. Other candidates managed to mention all five correct techniques but provided insufficient or incorrect explanations to some of the techniques. Extract 17.1 shows a sample of a candidate's good responses.

08	<p>Promotion is the process of letting customer knows what, where and how much the catering services is available at what cost. "promotion utilizes different techniques to remind, inform and persuade customer that the products and services offered by a given catering establishment are of good quality". The followings are the points - support the statement above, by describing six techniques of promotion used in catering establishment as follows;</p>	
	<p>Advertisement; This type of technique involves the mass medias such as radios television and new paper where, by they help in letting people knows where the catering establishment is available, what is offered and at what cost this is the best method of promotion as it can reach to many people at a short period of time</p>	
	<p>Personal selling; This type of promotion involves direct selling to the customer done by the caterer his/her self also it includes explaining the advantages and the quality of the services which the caterer has to offer to his/her customers.</p>	
	<p>Sales promotion; This includes selling the services or catering product in disaccount also it includes offering the services at free after one has been purchasing one example in hotel, sales promotion can be done where as "Buy one pizza, and get one CocaCola for free. This would promote the product and Increase sales in catering establishment".</p>	

08:	<p>Mechandizing: This technique includes fully display of the product so that the customer can see it it get impressed to buy. Mechandizing is mainly done in big hotels and supermarket example at the counter, a well garnished chicken can be kept there so that customers can see it, get attracted and finally order it to purchase.</p> <p>Agent: This is another technique of promoting catering services where by a caterer employs people who are known as Agent and whose job is spread the services to the different people who are away from catering establishment this technique helps in getting many customers who are away from establishment of catering services.</p> <p>On-line selling: This involves selling of catering services using different social networks such as facebook, twitter and Instagram and whatsapp, this helps in promoting the service more wider to most people who can not come near catering services and where agent of catering can not reach the area.</p> <p>To sum up the points, the above were the techniques which are used in promotion of catering establishment, for a caterer to be able to offer his/her services to many people he/she should use those techniques so that to generate enough profit and increase his national income and national income at large.</p>
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Extract 17.1: A sample of correct responses for question 8

In Extract 17.1, the candidate included one incorrect point in his/her responses, hence failed to score all the 20 marks allocated to the question.

Furthermore, the analysis indicates that the candidates who performed poorly in this question (28.0%) failed to describe the techniques of promotion used in catering establishments. Some of the candidates

provided irrelevant responses due inadequate knowledge of business planning in catering, particularly of market and promotion. The incorrect responses provided include: *improve living standards, promotion of adequate supply of food and other services, promotion of economic sector, promotion of political sector, job morale, job supervision, work security, by portion control, budget and purchasing of food, use modern packing material, final food products with added value, use modern machine in food processing and observing the regulations for promoting catering establishment.*

It was observed that, other candidates in this category misinterpreted the demands of the question. Some of them described the media used in advertising products, such as *television, radio, direct mail, newspapers and posters*. Others mentioned the importance of promotion. For example, one candidate wrote, *It increases sales, create good relationship with customers and other people, convince the customers to buy, create awareness to customers, maintain interest of customers and help the establishment be known to the public*. The candidates who scored from 1 to 6 marks (26.0%) mentioned one to three correct promotion techniques, but they either provided unsatisfactory or incorrect explanations. Extract 17.2 is a sample of incorrect responses from a script of one of the candidates.

8	Promotion means shifting from a lower position to a higher position with greater pay and responsibilities.	
	Promotion can be done within an establishment. The	
	following are techniques of promotion used in a catering establishment;	
	i) Motivation;	
	This is the process of inducing people to perform a particular	
	task willingly, through motivation people i.e. employees are	
	promoted to a another job position with more and higher	
	responsibilities as well as more high pay status.	

	ii). Training is process of improving the knowledge and skills of employees in performing a particular job. Trained people or skilled employees are the ones promoted to higher levels to perform perform particular activities in an establishment.	
	iii) Salaries and benefits. Promotion from one job position to another i.e. higher position involves increase of salaries since more responsibilities also are added hence promoted employees have an increased salary as well as benefits.	
	iv) Social welfare needs Promotion also involves improvement of social welfare needs. For a promoted employee with a higher job position, he/she may be given offers or welfare needs such as car which he/she could use to perform various job activities in the position that he/she is promoted.	
	v). Progressive promotion; This is also another method of promotion technique in which one can be promoted progressively from one job position to another maybe due to higher education level or due to talents and abilities to perform various activities in the institution.	
	vi). Inductive training; is the training done before starting to perform a particular task in a job position. Promotion involves inductive training to improve the skills and knowledge of an employee in performing a task in a position that he/she is promoted.	

Extract 17.2: A sample of incorrect responses for question 8

In Extract 17.2, the candidate described the techniques of staff motivation instead of the techniques of promotion in the catering establishments.

3.2.3 Question 9: Nutrition program planning and intervention

In this question, the candidates were required to explain nine (9) nutrition education approaches used to deliver nutrition education to the people in developing countries.

This question was opted by 86 (47.5%) candidates. This means, 95 (52.5%) candidates did not opt for this question. The analysis shows that, 84 (97.7%) candidates scored from 0 to 6.5 marks and 2 (2.3%) scored from 7 to 8 out of 20 marks. Figure 18 illustrates this performance.

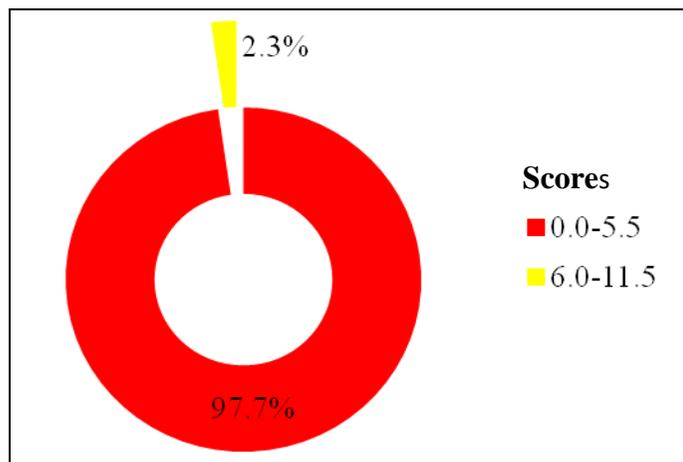


Figure 18: *The candidates' performance for question 9*

Figure 18 shows that the candidates' performance in this question was poor because the majority, (97.7%) failed. The analysis of candidates' responses shows that, the candidates scored low marks due to either misconceptions of the demands of the question or limited knowledge on the concept of nutrition education. Some of them provided the health practices to be addressed when providing nutrition education to mothers with undernourished children, such as; *encourage pregnant women to attend clinic, promotion of breast feeding, promotion of personal and environmental hygiene and encourage more frequent feeding of children with existing foods*. Other candidates explained the objectives of nutrition education instead of the nutrition education approaches which are used to deliver nutrition education to the people, which include: *reduce prevalence of Protein Energy Malnutrition, reduce prevalence of micronutrient deficiency particularly vitamin A, iron and iodine among vulnerable groups, stimulate and sustain production and consumption of*

more nutritious foods, promote proper food habits and healthy lifestyles and reduce overconsumption of fat, fatty acids and alcohol.

The candidates who demonstrated limited knowledge of nutrition education provided a variety of irrelevant responses, such as: *fortification by nutrients, food production approaches, promotion of good nutrition, use nutritional policy, targeting groups, nutrient rehabilitation, food habits, customer's evaluation approach and centrally key people.* However, some of the candidates managed to provide one to three correct responses, hence scored from 1.5 to 6.5 marks. Extract 18 shows a sample of one of the candidates' poor responses.

09.	<p>Nutritional education is the basic knowledge on what food is all about maintaining the specific metabolic function so as to prevent malnutrition. There are different Nutritional education approaches, This include</p> <p>Growth monitoring: This is among of the nutritional education approaches where by, the growth of mother and child must be well monitored. This will enable the mother to know their health and the foetus health may be known. hence this may reduce malnutrition problem.</p> <p>Treatment of rehabilitation children: Also the Nutrition education approaches must be focused on to treat the severely malnourished children into well being by provision of nutritional education and therapeutic diet.</p> <p>Micronutrient supplementation, Supplementati on of different micronutrient such as Vitamin A Capsule, folic acid also should be included in nutri tion approaches, with this will decrease the incidence of different malnutrition disorder such as Anemia and Vitamin A deficiency</p>	
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Food security, at all levels i.e. at family, community, and national wise. This will ensure proper distribution of food at all time, hence the malnutrition problem will be eradicated as the balanced meal and enough food is become supplied.

Nutritional education: also different nutritional based education such as knowledge in preparing a well balanced meal and other must be implemented in Nutritional education approaches.

Immunization: Also among of nutritional education approaches is through provision of immunization for mother, and their child as to keep them away from different infections and diseases that may lead to malnutrition.

Family planning education: Also the nutritional education aimed at provision of family planning education so as to reduce amount of population in the country in order to meet the nutritional needs.

Treatment of Infectious diseases: also among of the nutritional education approaches is to treat different infectious diseases that seem to cause improper utilization of nutrients in the body.

In top of that, above are the nutritional education approaches that should be taken into consideration in order to prevent malnutrition problem in community.

Extract 18: A sample of incorrect responses for question 9

In Extract 18, the candidate explained some of the services which are provided in the Reproductive and Child Health clinics.

The analysis shows further that the candidates who had average scores (2.3%) mixed correct and incorrect nutrition education approaches. They mentioned incorrect points, such as; *customs of the people, food*

distribution, availability of skilled nutrition officers, breast feeding practices, food as basic drugs, means of communication, language of communication, customs of the people, the educational level of the people and the availability of materials for providing education. Others managed to provide three or four out of the required nine nutrition education approaches which are used to deliver nutrition education to the people, which include: *radio and television, doing different nutrition activities for example vegetable gardening, exhibitions, inviting guest speaker, advising on nutritional behaviour change and demonstrations nutrition practicals.*

4.0 ANALYSIS OF CANDIDATES' PERFORMANCE PER TOPIC

Food and Human Nutrition Papers 1 and 2 comprised of 18 questions set from 11 topics. The analysis of the candidates' performance indicates that, five (5) topics had good performance, three (3) topics had average performance and three (3) topics had poor performance. The topics with good performance were: *Food storage* (92.0%), *Food production* (87.8%), *Food microbiology* (86.5%), *Catering and institutional feeding* (75.8%) and *Food processing and preservation* (71.7%). The good performance on these topics was attributed to the adequate knowledge of the candidates on the assessed concepts and candidates' understanding of the demands of the questions.

The topics with average performance were: *Malnutrition* (52.1%), *Food composition* (51.7%) and *Nutrient requirement* (42.1%). It was observed that failure to provide the required number of points and lack of clarity in explanations for the points given contributed to this performance.

The analysis indicates that the topics of *Nutrition program planning and intervention*, *Food quality and safety* and *Technology of specific products* had poor performance of 31.7, 31.0 and 8.8 percent, respectively. The poor performance observed in these topics has been associated with insufficient knowledge on the assessed concepts and failure to understand the demands of the questions. Appendix A summarizes the analysis of the candidates' performance for each topic.

The comparison of the candidates' performance topic wise between 2019 and 2020 shows that, the performance has improved from average to good in the topics of *Food production* and *Food microbiology*. The performance has

decreased from good to average in the topic of *Nutrient requirement*, from good to poor in the topic of *Nutrition program planning and intervention* and from average to poor in the topics of *Technology of specific products* and *Food quality and safety*. However, good performance has been maintained in the topics of *Catering and institutional feeding*, *Food processing and preservation* and *Food storage*. Similarly, a constant average performance between 2019 and 2020 has been observed in the topics of *Malnutrition* and *Food composition*. This comparison is summarized in Appendix B.

5.0 CONCLUSION

The general performance of candidates in Food and Human Nutrition subject, in the ACSEE 2020 was good for the reasons that 98.34 percent of the candidates who sat for this examination passed. However, the performance has decreased by 0.2 percent when compared to the 2019 performance. The comparison of the candidates' performance between 2019 and 2020 is summarized in Appendix C.

The analysis of the candidates' responses shows that, most of the candidates performed well because they had adequate knowledge on the assessed concepts and were able to understand the demands of the questions. The candidates encountered problems in answering questions 1, 2 and 6 in Paper 1 constructed from the topics of *Technology of specific products*, *Nutrient requirement* and *Food quality and safety*, respectively. In paper 2, the challenges in answering questions were observed in question 1 constructed from the topic of *Malnutrition*, and questions 2 and 9 from the topic of *Nutrition program planning and intervention*. It has been noted that the poor performance in these questions was a result of candidates' poor knowledge on Food and Human Nutrition concepts as well as failure to understand questions' requirements. As a result, the candidates provided irrelevant and unsatisfactory responses.

6.0 RECOMMENDATIONS

Based on the analysis of the candidates' performance in each question, and the analysis of the performance per topic in this subject, it is recommended that:

- (a) Teachers should arrange for study trips and invite guest speakers for the students to learn the concepts under the topics of *Technology of specific products*, *Food quality and safety* and *Nutrition program planning and intervention* in which they demonstrated insufficient knowledge.
- (b) Teachers should ensure thorough coverage and clear understanding of all necessary aspects in the topic of *Nutrition program planning and intervention*. This is because only a few candidates opted for the questions set for that topic which suggests that many students had inadequate knowledge in that area.
- (c) Teachers should guide and encourage students to perform calculations on food formulation by using Pearson's square method or other equations regularly while teaching and learning on formulation of foods for various social groups of people. This is due to the facts that, candidates demonstrated poor knowledge in balancing ingredients and nutrients by using proper methods or equations.
- (d) Heads of schools, subject teachers and students should be advised to read the Candidates' Item Response Analysis reports so as to take appropriate measures for improving teaching and learning in this subject. This in turn, will improve the candidates' performance in this subject in the future examinations.

Summary of Candidates' Performance per Topic for ACSEE 2020

S/N	Topic	Number of questions	The percentage of candidates who scored 35% or above.	Remarks
1.	Food storage	2	92.0	Good
2.	Food production	1	87.8	Good
3.	Food microbiology	2	86.5	Good
4.	Catering and institutional feeding	2	75.8	Good
5.	Food processing and preservation	1	71.7	Good
6.	Malnutrition	2	52.1	Average
7.	Food composition	1	51.7	Average
8.	Nutrient requirement	2	42.1	Average
9.	Nutrition program planning and intervention	3	31.7	Poor
10.	Food quality and safety	1	31.0	Poor
11.	Technology of specific products	1	8.8	Poor

Comparison of Candidates' Performance per Topic Between 2019 and 2020

S/N	Topic	2019			2020		
		Number of questions	The percentage of candidates who scored 35% or above.	Remarks	Number of questions	The percentage of candidates who scored 35% or above.	Remarks
1.	Catering and institutional feeding	2	95.2	Good	2	75.8	Good
2.	Food processing and preservation	2	92.0	Good	1	71.7	Good
3.	Nutrient requirement	2	81.5	Good	2	42.1	Average
4.	Food storage	2	69.0	Good	2	92.0	Good
5.	Nutrition program planning and intervention	3	66.5	Good	3	31.7	Poor
6.	Malnutrition	2	53.3	Average	2	52.1	Average
7.	Food production	1	51.3	Average	1	87.8	Good
8.	Technology of specific products	1	43.7	Average	1	8.8	Poor
9.	Food composition	2	42.0	Average	1	51.7	Average
10.	Food quality and safety	1	39.0	Average	1	31.0	Poor
11.	Food microbiology	2	38.8	Average	2	86.5	Good

Comparison of Candidates' Performance Between 2019 and 2020

