EXAMINATIONS COUNCIL OF ESWATINI
Eswatini General Certificate of Secondary Education

FOOD AND NUTRITION **6905/01**

Paper 1 **October/November 2019**

Confidential

MARK SCHEME

{6905/01}

MARKS: 100

This document consists of **14** printed pages.

 [Turn over

1. (a) Three elements found in a carbohydrate molecule.

1. Carbon
2. Hydrogen
3. Oxygen [3]

(b) (i) plant food with HBV- soya bean [1]
animal food with LBV -gelatine [1]

(ii) Indispensable Proteins

The body cannot make amino acids that are in these protein – must be supplied by the diet. [2]

2. (a) Functions of fluoride

- strengthens the teeth
- prevents tooth decay [2]

(b) Ways to ensure stability of riboflavin (Vitamin B_2) in Food preparation.

- avoid soaking in water and using too much water when cooking as Vitamin B is soluble in water thus lost in soaking or in cooking water.
- avoid the use of alkaline as riboflavin is destroyed in the presence of alkali when heated
- avoid exposing food with riboflavin to light as it is destroyed by exposure to light, e.g. milk when kept in transparent containers

(Any two) [2]

(c) Importance of calcium for:

(i) Nursing mother - needed for replacing calcium drained from the bones during pregnancy [1]

(ii) Elderly - hardens and strengthen bones in order to prevent osteoporosis [1]

(d) Difference between macro and micro nutrients

Macronutrients – are needed by the body in large amounts such as protein, CHO, fat
Micronutrients – are needed by the body in small amounts e.g. Vitamins, essential fatty acids and trace elements such as zinc, iron, iodine etc. [2]

(e) Factors affecting absorption of iron

- Vitamin C increases iron absorption as it changes iron from ferric to ferrous.
- Iron from plants foods e.g. grains, leafy vegetables and soya may be made more difficult to absorb by the presence of phytic acid
- Iron from egg yolk is poorly absorbed by humans unless taken with foods containing vitamin C
- Method of food preparation such as long fermentation time breaks phytic acid down so that it no longer bind iron.
- Phosphorus compound in eggs, milk and dietary fibre in plants food hinder absorption of iron. **(Any two)** [2]

(f) Effects of heat on fats

- Solid fat melt to liquid
- As heating continues oil becomes thin and bubbles
- Fat molecules begin to decompose into glycerol and fatty acids
- Blue smoky haze is produced
- Fat catches fire [4]

3. (a) Preventive risk factors for the following:

(i) Coronary heart disease

- avoid smoking cigarettes
- eat healthy food
- reduce weight/ avoid being overweight
- regular exercise
- avoid stress **(Any two points)** [2]

(ii) Tooth decay

- avoid adding too much sugar to food
- encourage drinking of water between meals
- brushing teeth after every meal **(Any two points)** [2]

(b) Causes of constipation

(i) Hard stools

- refined foods
- insufficient dietary fibre
- insufficient water
- prolonged stay of faecal matter **(Any three)** [3]

(ii) A lot of effort required to expel faecal matter

- Prolonged stay of faecal matter causes liquid to be reabsorbed.
- Solid/ harder stools [2]

4. (a) Physical breakdown of food in the mouth

- teeth tear grind food into small pieces
- tongue pushes food around the mouth- down the throat.
- saliva moistens food for easy swallowing [4]

(b) Purpose of digestive juices

(i) Bile

- neutralizes hydrochloric acid
- stops the action of pepsin
- emulsifies fats to form small droplets [3]

(ii) Hydrochloric acid

- activates pepsin
- stops action of salivary amylase/neutralizes alkaline from mouth
- kills bacteria in food [3]

[Total: 40 Marks]

SECTION B

5. (a) Water soluble vitamins in eggs

- vitamin B1
- vitamin B 2
- vitamin B12 **(Any two)** [2]

(b) (i) Changes when boiling an egg

- the protein ovalbumin starts to coagulate - at 60 degrees - until the whole egg is solid and opaque
- the protein of the egg yolk starts to coagulate at 70 degrees- until the egg yolk is dry and hard
- if overcooked - the protein becomes tough and difficult to digest

(Any three well stated points) [3]

(ii) Causes the formation of a green/black ring around the egg yolk

- sulfur in the egg white reacts with iron in the egg yolk
- forms iron sulfide. [2]

(c) Storage of potatoes at home

- cool dry place/refrigerator if available
- examine from time to time for signs of sprouting
- can be placed between layers of sand/soil
- put on a vegetable rack with plenty of air circulating **(Any three)** [3]

(d) Reduction of rate of oxidation on fruits

- do not prepare until absolutely necessary
- blanch the fruit to denature enzymes
- steep/soak fruit in cold water after peeling or cutting
- put fruit in a concentrated sugar solution which has an effect on acid
- store in a cold temperature to slow enzyme activity
- addition of acid such as lemon/orange juice to the cut surface **(Any three)** [3]

(e) Effect of moist heat on potatoes

- soften the fibres – so that they are easy to digest
- increase in bulk – as they absorb water
- improves the colour – making it more appetizing
- loss of vitamin C – as it leaches into the cooking water

(Any two well explained points) [4]

(f) Advantages of owning a freezer

- can save money by storing home grown produce
- cheaper to buy food in bulk e.g. meat
- meals can be prepared in advance
- can enjoy food out of season
- special occasions can be catered for in advance
- emergency foods can be stored for unexpected guests
- left over foods can be frozen to avoid wastage (**Any three)** [3]

[Total: 20 marks]

6. (a) Three advantages of coating fish before frying:

- fish becomes crisp/ texture Improves
- flavour is improved
- it becomes appetizing/ attractive
- prevents overcooking
- seals juices, keeps fish moist
- prevents the fish breaking up. **(Any three points)** [3]

(b) Difference between white fish and oily fish

White fish	Oily fish
- Have less than 5% fat in their flesh/ minute amount of fat/ most fat in the liver. - White in colour - Mainly obtained from the sea water by sea bed	- Have more than 5% of fat in their flesh. - Darker - Mostly from fresh water but some can be from sea water

(Any two points) [4]

(c) Ripening process of bananas

- unripe banana contains starch which is gradually converted to sugars - by enzyme until the bananas become very sweet.
- Skin colour changes from green to yellow and eventually to dark brown – further keeping will make bananas soft and watery [3]

(d) Properties of plastic bowls

- generally strong especially nylon
- resistant to most chemicals
- waterproof and grease proof
- some plastic can withstand scratch
- good electrical insulators
- do not corrode
- some good heat insulators/ may not be spoilt by boiling water
- relatively cheap **(Any three points***)* [3]

(e) Use and care kitchen scales

- never drop food into them
- never store spring balance scale with a weight in the pan as this will strain the spring
- clean carefully after use
- do not immerse in water **(Any three points)** [3]

(f) Rules for positioning the kitchen when designing a house.

- easily accessible-next to dining room
- enough light to be cheerful- to work in or can be supplemented
- closed from the rest of the house- to avoid odour
- view of garden must be at the front- to be able to see outside

(Any two well explained) [4]

[Total: 20 Marks]

7. (a) Definition of a sauce

- is a thickened flavoured liquid which can be added to a food or a dish. [1]

(b) Foods for thickening sauces

(i) **protein food** – egg [1]

(ii) **starchy foods** – plain flour, corn flour, arrowroot, sago, custard powder [1]

(c) Uses of the following ingredients in bread making:

(i) strong flour
- high gluten content produces a strong elastic dough
- to produce a good volume with a good texture for bread.

(Any one) [1]

(ii) salt
- added to influence rate of fermentation, strengthens gluten
- improves the flavour of bread
- avoid a sticky dough **(Any one)** [1]

(iii) Fat
- to improve keeping quality
- adds colour
- adds flavour
- improves volume
- improves texture **(Any one)** [1]

(d) Influence of cultural factors on eating habits in Eswatini

- **surnames**: which lead to people not eating certain foods, e.g. no mutton for Dlamini people, it can cause them to be mentally disturbed.
- **food taboos**: certain foods prohibited due to certain cultural beliefs e.g. children not allowed to eat liver, as it can cause them to disrespect elders.
- **inter-cultural marriages**: marrying people of different cultures influence eating habits as they come with the knowledge of their foods, hence influence others once married **(Any two)** [4]

(e) Difference between icing and decorating cakes

icing - covering the cake with a mixture of icing sugar which may either be mixed with water, butter or juice, egg white (royal icing)
cake decoration - make cakes more attractive by using ribbons, fresh fruits, adding colour to icing or silver. [2]

(f) Pigments in vegetables

(i) **chlorophyll**-cabbage, lettuce, spinach, brussel sprouts, watercress [1]

(ii) **carotenoids**-carrots, butternut, pumpkins, yellow pepper, sweetcorn [1]

(g) Points to consider when buying canned food

- **rusty cans**-rust can weaken the metal and may create a small hole where bacteria can enter and contaminate the food
- **blown cans-** indicate that bacteria is present as they produce gas which distends the can.
- **dented tins-** may have tiny punctures in the metal or damaged seams which allow the entrance of bacteria.
- **expiry date**- food is safe for consumption before the expiry date.

(Any three well explained) [6]

[Total: 20 marks]

SECTION C

8. (a) How a microwave oven works and how to use it successfully. Benefits and challenges of using a microwave in food preparation.

How a microwave oven works

- microwave ovens cook food by generating electromagnetic waves.
- electricity is converted to microwaves by the magnetron.
- the waves are channeled into the oven space by the wave guide.
- a mode stirrer/turnable ensures even distribution of heat
- the microwaves are absorbed by the food and vibrate causing friction which produces heat.
- microwave ovens do not heat up, heat produced is generated within the food

How to use successfully

- follow the manufactures instructions carefully
- use the oven to cook, reheat and defrost food
- do not use it for storage
- use microwave cookware, oven proof glass and china. Metals repel the microwaves and should be avoided
- if required cover foods using cling film, kitchen paper, roasting bags or oven proof glass.
- set the timer according to instructions
- when not in use keep a vessel of water inside the oven. If an empty oven is turned on, the microwave energy can damage the magnetron.
- check the manufacturer's instruction for maintenance. Periodically check the door seal.

Benefits

- it saves time and energy.
- it can save washing up if foods are cooked and served in the same vessel.
- it is easy to clean.
- there are no problems of cooking smells or condensation.
- flavour retention/colour of food is superior to conventional methods.
- it can be used to defrost.
- it is mobile and can be used in other rooms besides the kitchen.
- there is less destruction of nutrients as cooking time is short.
- there is less danger of food poisoning provided food is thoroughly cooked/reheated.
- the serving dish/cooking utensils is not heated by microwaves and can be handled easier.

Challenges

- it takes up work surface space.
- it is not suitable for cooking all foods e.g. pastry, biscuits.
- metal pans must be avoided, therefore not all conventional cookware is suitable.
- timing is critical if overcooking is to be prevented.
- it needs to be maintained carefully e.g. door seal needs to be checked.
- money required for initial outlay.
- irregular shaped foods may affect the cooking time and finished results of foods cooked on the same plate.
- in conventional microwave oven, food will not be crisp, and may not develop characteristic flavours, colours or textures.

Band	Descriptors	Past Mark	Total
High	**Candidate is able to:** - explain how a microwave oven works - give detailed uses of a microwave oven - explain most benefits/advantages of a microwave oven - have a clear understanding of the challenges when using a microwave oven - give information that is precise and related to a microwave oven - have a clear understanding of a microwave oven	**14 – 20**	20
Middle	**Candidates may:** - give some uses of a microwave oven - explain some mechanical functioning of a microwave oven - explain some benefits/advantages of a microwave oven - have limited understanding of the challenges when using a microwave oven - gives some information related to a microwave oven - have some understanding of the topic on a microwave oven	**9 - 13**	
Low	**Candidates may:** - give a few uses of a microwave oven - explain a few mechanical functioning of a microwave oven - explain a few benefits/advantages of a microwave oven - have little or no understanding of the challenges one faces when using a microwave oven - give little/limited information related to a microwave oven - have little understanding of a microwave oven	**0 – 8**	

8. (b) Weaning a baby from 6 months old and feeding a toddler 2-3 years old.

(i) Weaning

Definition-a gradual introduction of solid foods into the baby's diet to supplement the milk.

Points to consider

- a spoon should be used rather than a bottle to offer food.
- foods should be introduced a little at a time.
- foods should be sieved/ pureed so that the baby can swallow with ease.
- never force the baby to eat.
- introduce one food at a time.

Suggested foods for introduction

- low sugar rusks, unsweetened rice in milk, pureed cooked vegetable, pureed cooked meal and fish, pureed fruits, sieved cooked egg yolk, oat meal, porridge
- mealie meal and porridge with milk.
- it is not advisable to add sugar or salt into these foods because, it would encourage a taste for salty and sweet foods.
- water can also be given to the baby to drink using a trainer beaker.
- food to encourage chewing and help teething can be given e.g. low sugar rusks, toasted bread, bread sticks, pieces of fruits i.e. apple.

(ii) Feeding young children (Toddlers) 2 – 3 years old

Toddler: A period of rapid growth and development - so children require a lot of energy from their food.
They need a balanced diet that contains a high proportion of carbohydrates for energy.

Meals: Important to provide meals at regular times for this group.
Children are not to be made to wait for a long time before meals are served

Toddlers Foods: Points to consider when preparing food for toddlers

- easy to hold and in small portions
- available in suitable sizes with interesting shapes, colours, textures and flavours
- easy to eat and digest
- attractively served to tempt the appetite
- new foods introduced gradually
- easy to swallow, hygienically prepared and safe to eat
- easy to prepare without additives
- low in sugar but high in:

Proteins - to build body tissues
Minerals - For structural framework and iron for good blood supply
Vitamins - for protection against various diseases

food sources: Good foods include: milk, eggs, cheese, meat, fish,
fruits and vegetables: fresh fruits and vegetables, fruit juices and stewed fruits
Bread and cereals

Foods to avoid for this group

- highly spiced foods
- fatty and fried foods
- highly sweetened foods
- rich Pastry and cream
- tea or coffee

Band	Descriptors	Past Mark	Total
High	**Candidate is able to:** **Weaning** Define weaning precisely Gives most points to consider when weaning. Identify most foods suitable for weaning to encourage teething. Use specific terminology where appropriate. Show clear understanding on weaning. Give comments that are precise and related to weaning a baby **Feeding a toddler** Give a precise definition of a toddler Gives most points to consider when feeding a toddler Identify most foods suitable for toddlers Identify most foods to avoid when feeding toddlers State rules to follow in serving meals for toddlers Use specific terminology where appropriate. Show clear understanding on the topic Give comments that are precise and related to feeding a toddler	**14 – 20**	20
Middle	**Candidates may:** **Weaning** Some definition of weaning given. Give some points to consider when weaning a baby. Identify some foods suitable for weaning and encourage teething. Use some specific terminology where appropriate.	**9 – 13**	

	Feeding a toddler Give some definition of a toddler Gives some points to consider when feeding a toddler Identify some foods suitable for toddlers Identify some foods to avoid when feeding toddlers State some rules to follow in serving meals for toddlers Use some specific terminology where necessary Show some understanding on the topic Give some comments that are precise and related to feeding a toddler		
Low	**Candidates may:** **Weaning** Give a few or no points to consider when weaning a baby. Identify a few or no foods suitable for weaning and encourage teething. Use little or no specific terminology where appropriate. Show little or no understanding on weaning Give a few or no comments that are precise and related to weaning. **Feeding a toddler** Give some definition of a toddler Identify limited foods suitable for toddlers Identify few foods to avoid when feeding toddlers State few rules to follow in serving meals for toddlers Use nonspecific terminology where necessary Show limited understanding of the topic Give very few comments that are precise and related to feeding a toddler	**0 – 8**	