



EXAMINATIONS COUNCIL OF SWAZILAND  
Swaziland General Certificate of Secondary Education

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FOOD AND NUTRITION

6905/01

Paper 1

October/November 2018

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***Confidential***

***MARK SCHEME***

***{6905/01}***

***MARKS: 100***

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This document consists of 13 printed pages.

**SECTION A**Answer **all** questions**1. (a) Smallest unit which forms a protein molecule**

- Amino acid [1]

**(b) Foods providing proteins:****(i) Collagen** – Meat, fish**(ii) Ovalbumin** – Egg white **(Any one)** [2]**(c) Digestion of proteins:****(i) Stomach: Enzyme** - Pepsin [2]**End product** - Peptides**(ii) Duodenum: Enzyme** - Trypsin**End product** - Peptones [2]**2. (a) Definition of terms:****(i) Menu** is a list of dishes served in a meal [1]**(ii) Diet** is the food that a person normally eats per day [1]**(b) Three (3) reasons why older women are prone to osteoporosis.**

- Gradual loss of calcium from the skeleton at the age of 30
- Longer process of bone replacement which takes 7 -10 years for adults
- Lack of exercise in women as they grow older yet exercise stimulates new bone production
- Menopause **(Any three points)** [3]

**(c) Importance for following nutrients during pregnancy**

**(i) Vitamin K** - to enable the blood to clot after delivery [1]

**(ii) Folic Acid**

- correct development of the brain and nervous system in the foetus
- To avoid miscarriage/slow growth/premature/malformation
- For the production of RNA and DNA
- For the formation of red blood cells for the mother and foetus

**(Any one)** [1]

**(iii) Iron**

- for storage in foetus for up to 6 months after delivery
- for the production of haemoglobin to transport oxygen around the mother's body to the baby

**(Any one)** [1]

**(d) How to improve protein content for a vegan**

- eat a mixture of plant protein food - to make up for the deficiencies of essential amino acids in each (complementary proteins).
- use soya beans and soya products, e.g. TVP, soya flour, tofu, soya milk - as these contain HBV protein
- eat LBV plant proteins, e.g. pulses, nuts and cereals - to make up for the deficiencies of essential amino acids in each (complementary proteins).
- eat a large bulk of plant foods that include beans - in order to provide enough proteins
- eat a good variety of all plant foods - to obtain amino acids from all possible sources

[4]

**(e) Importance of substances:**

**Thyroxine hormone** – controls the rate of metabolism in the body [1]

**Haemoglobin** – transports oxygen around the body to cell, for the production of energy and the maintenance of all cell function [1]

**Bile** – Breaks down fat into smaller droplets in the intestines during the digestion of food so that they become soluble

[1]

**(f) Three (3) ways of minimising loss of Vitamin C during cooking.**

- Avoid use of a copper pan - they speed up the rate of oxidation
- Use minimum amount of water – Vit C is water soluble; the greater the amount of water the more Vitamin C is lost.
- Place food in boiling water- food spends less time soaking in water
- Cook quickly for a minimum time – the amount of oxidation is increased by prolonged cooking
- Never add bicarbonate of soda – rate of oxidation is increased by alkaline
- Avoid acids in green vegetables – as they destroy some nutrients [6]

**(Any three well explained points)****3. (a) Two preventive measures for the following diet related disorders.****(i) Sugar diabetes**

- Less salty foods
- Less high fat/ fried foods
- Eat plenty starchy foods rich in fibre
- Cut down on sugary foods
- Limit excess weight gain
- Exercise regularly

**(Any two points)****[2]****(ii) Haemorrhoids (piles)**

- Eat a high fibre diet
- Drink plenty of water
- Avoid refined foods
- Exercise regularly

**(Any two points)****[2]****(b) Three (3) instances when extra water is required in the body.**

- **In very hot weather** - increased sweating
- **Illness raised temperatures** - cause loss of water through sweating
- **Vomiting or diarrhoea** - causes rapid dehydration
- **Lactation** - for milk production
- **Intense physical activity** - results in sweating **(Any three points)** [3]

**4. (a) Items to extinguish fire in the kitchen**

Fire extinguisher, fire blanket, lid

**(Any two points)**

[2]

**(b) Three guidelines to prevent scalds in the kitchen.**

- Try to avoid carrying hot liquids across the kitchen
- Take care when pouring hot liquids
- Keep all hot liquids and all types of kettle out of reach of children
- Handles of pans must be turned in
- Avoid trailing table cloth which could be pulled by small children
- Stand back when removing the lid of the steamer
- Never open the lid or remove the pressure gauge of a pressure cooker before it has fallen to normal

**(Any three points)**

[3]

**[Total for Section A: 40]**

## SECTION B

### 5. (a) Two (2) ways in which milk could be contaminated.

- Not following hygiene rules when handling/milking
- Dirty utensils used for storage
- Milk not covered to protect from dust and flies
- Dirty farm and milking surroundings
- Cows infected with diseases

**(Any two points)**

[2]

### (b) (i) Three (3) uses of cheese in food preparation.

- Main dish e.g. cheese soufflé, pudding, flan, pizza
- Snack e.g. omelette and sandwich
- to flavour a sauce e. g. macaroni cheese
- add colour or garnish e. g. soups, cauliflower and cheese salads
- As a savoury after a meal e. g. cheese and biscuits, pastry e. g. cheese scones, straws
- To enrich
- As a filling

**(Any three points)**

[3]

### (ii) Ways of improving the digestibility of cheese.

- **Chop, grate or use small chunks** - to increase surface area
- **Serve with carbohydrate** - to absorb fat
- **Minimum cooking** - to avoid toughening protein
- **Add strong flavoured ingredients such as mustard** - stimulates digestive juices
- **Application of heat** - melts the fat and exposes the protein to the digestive juices

**(Any two points)**

[4]

### (c) Description of processes:

- (i) Coagulation** - Heat on protein - begins at 60 degrees Celsius - cannot be reversed – hardens /sets – chemical structure changes – overheating causes protein to shrink.

**(Any two well explained points)**

[2]

**(ii) Pasteurisation** - Milk heated over 72 degrees Celsius for 15 seconds, then rapidly cooled to below 10 degrees Celsius (flash method).

**(Any two well explained points)** [2]

**OR**

- Milk heated to 63 degrees for 30 minutes and then cooled rapidly to below 10 degrees
- After cooling milk is put in insulated stainless steel tank and bottled as soon as possible

**(Any two well explained points)** [2]

**(d) (i) Definition of a sauce**

A sauce is a thickened/flavoured liquid which can be added to a food or dish [1]

**(ii) Three (3) types of sauces and description of consistencies.**

**Pouring** - at boiling point it should glaze the back of the wooden spoon and flow freely when poured

**Coating** - at boiling point should coat the back of a wooden spoon

**Binding** – should be thick enough to bind ingredients together [6]

**[20 marks]**

**6. (a) Two (2) vitamins found in large amounts in oily fish.**

- Vitamin A
- Vitamin D [2]

**(b) Points to consider when buying fresh fish**

- Bright eyes
- Eyes not sunken
- Plump firm flesh
- Plenty of scales firmly attached to the skin
- Moist skin
- Fresh smell
- Bright red gills, not sunken **(Any four points)** [4]

**(c) Differences in fish:**

**(i) Prawns** – are covered by a hard protective shell, obvious legs and head with eyes.

**(ii) Mussels** – whole of soft body enclosed inside a hard shell [2]

**(d) Three (3) ways of preventing browning in vegetables during preparations.**

- do not prepare until needed
- add acids e.g. lemon juice to cut surfaces
- put vegetable/fruit in concentrated sugar solution
- blanch the vegetable
- store at low temperature or refrigerator **(Any three points)** [3]

**(e) Reasons for use of the following surfaces in the kitchen:****(i) Ceramic tiles on the floor:**

- resistant to domestic chemicals and heat
- Waterproof
- Easy to clean **(Any two)** [2]

**(ii) Glossy paint on the wall**

- easy to clean
- not affected by smells
- grease resistant
- water resistant
- hard wearing
- not too costly **(Any two)** [2]

**(iii) Stainless steel on work surfaces**

- easy to clean
- hard wearing
- heat resistant
- water proof
- resistant to chemicals **(Any two)** [2]

**(f) The care and cleaning of a plastic bin**

- Wrap food waste
- Disinfect regularly, especially in summer
- Line the bin with plastic
- Empty daily
- Wash with warm soapy water
- No hot ash **(Any three points)** [3]

**[20 marks]****7. (a) Three mechanical methods of introducing a gas into flour mixtures.**

- Sifting flour
- Beating mixtures e.g. batters
- Creaming sugar and fat
- Rubbing in fat into flour



- Whisking eggs and sugar
  - Rolling and folding pastry
  - Adding stiffly beaten egg
- (Any three points)** [3]

**(b) (i) Ingredients which could be added to flavour the scones**

- cheese
  - sugar
  - fruits
  - coconut
  - zest
  - cocoa
- (Any two points)** [2]

**(ii) Method of making and baking the scones.**

- Preheat oven to 200 -230 degrees Celsius - grease baking sheet and dust with flour
  - Sift dry ingredients
  - Rub fat into dry ingredients with finger tips
  - Add liquid and mix to form a fairly soft dough
  - Knead lightly - roll out to a 2 cm thickness and cut
  - Glaze with egg/milk- bake on top shelf for 10 -15 minutes
- [6]

**(c) Three reasons for a heavy textured cake**

- Too much liquid in mixture
  - Too little raising agent used, or incorporated during creaming
  - Mixture has curdled and does not contain sufficient air
  - Oven temperature is too low,
  - Cake not cooked for long enough
  - Overbeating when adding flour, causing loss of air
  - Overbeating after adding liquid
- (Any three points)** [3]

**(d) Differentiate between the following kitchen equipment:**

**(i) A palette knife:** mixing, folding, scraping, turning pancakes and spreading icing [2]

**(ii) Blender:** make purees, batters, drinks, breadcrumbs and grind nuts. [2]

**(iii) A colander:** draining excess water from vegetables and pasta/rice, washing and rinsing fruits, and vegetables, as a steamer over a pan of boiling water [2]

**(Any two uses of each equipment)**

## SECTION C

### 8 (a) Deep fat frying

**Definition** - The cooking of food in a bath of hot fat so that the food is covered by the fat whilst cooking. A deep fat frying pan is used with frying basket.

#### Choice of fat

Oils and animal/ solid fats, e.g. lard – vegetable/liquid fats, e. g. vegetable oil are suitable for heating to high temperature without burning.

#### Fat preparation

Clean, fresh fat should be used. It must be free from water and impurities because water causes fat to spatter and impurities affect the keeping quality, e.g. crumbs from previous frying will decompose at high temperatures causing off flavours and odours. Fat should not be overheated as it will decompose.

#### Food preparation for deep frying

- Food must be coated e.g. meat, fish, etc. to prevent overcooking, loss of juices, prevent breakage and absorption of fat by the food.
- Different coating agents can be used, e.g. egg and breadcrumbs, batter, egg and flour/oatmeal. The coating presents a protective layer around the food to retain flavour and texture of the food.

#### Rules for deep fat frying

- Do not fill the pan more than halfway with the fat.
- Lower the food gently into the hot fat.
- Do not overfill pan with food
- Heat fat to the required temperature before frying food
- Drain/absorb excess fat with absorbent paper
- Store fat in a cool dark place

#### Effect on Nutrients

There is absorption of fat into the food that increases the energy value and heat sensitive Vitamins B and C are destroyed.

#### Safety rules

- Never leave fat unattended.
- Keep pan handle turned in to prevent it being knocked over, causing spillages and fires.
- If it starts to smoke, turn heat off.
- Fried foods should not have traces of water as it causes fat to splatter.
- Do not move the pan until the fat is cold.

Band	Descriptors	Mark	Total
High	<p><b>Candidate is able to:</b>            Discuss most points on choice of fat, fat preparation, food preparation before frying, and effect of deep frying on nutritive value of food, rules for deep fat frying and safety rules.            Give relevant comments to most points.            Have a clear understanding of topic.</p>	14-20	20
Middle	<p><b>Candidates may:</b>            Discuss some points on choice of fat, fat preparation, food preparation before frying, effect of deep frying on nutritive value of food, rules for deep fat frying and safety rules.            Give some comments that are relevant to the topic            Show some understanding of topic</p>	9 -13	
Low	<p><b>Candidate may:</b>            State few points.            Very few comments are relevant to the topic            Show limited understanding of topic</p>	0 – 8	

**8 (b) Ingredients used in yeast rolls, changes involved during rising and baking of the rolls.**

**A. Ingredients used:**

- **Flour:** a strong plain four – because it has a high gluten content it produces a strong, elastic dough.
- **Wholemeal flour** – it produces rolls with low volume, a coarse texture but it is high in NSP and B -Vitamins.
- **Yeast:** Yeast should be fresh so that it can be able to raise the dough. Other types of yeast include: dried yeast and easy blend or instant yeast. Yeast produces CO<sub>2</sub> which is the raising agent.

- **Salt:** It is flavours the dough, it slows down the action of yeast, strengthens gluten.
- **Liquid:** It should be warm in order to activate the yeast – it develops the gluten – It dissolves the salt and sugar and helps disperse the yeast cells throughout the dough – it transports food to yeast cells – it forms steam which contributes to the expansion of the rolls. Water can be used, milk increases the food value of the rolls.
- **Sugar:** It activates the yeast, food for the yeast, contributes to the colour and flavour of the rolls.
- **Fat:** it improves the keeping quality of the dough – Adds colour and flavour. It can be butter, margarine or cooking oil.
- **Eggs:** It gives a richer flavour and improves colour.

### **B. Changes during preparation.**

- Flour is sifted with the dry ingredients to combine well and incorporate air.
- The rubbed-in fat is coated by the flour.
- Yeast and liquid are added to make a soft dough.
- Dough is kneaded to develop gluten.
- Dough becomes elastic to allow the rising process.

### **C. Changes during rising process.**

- The dough is allowed to rise in a container covered with a cling film/ damp cloth under warm conditions.
- Fermentation takes place at this time, where flavour, texture and volume is developed.
- The starch in the flour is broken down by enzyme amylase/ diastase to maltose.
- Maltose is broken down by enzyme in the yeast, maltase which produces glucose.
- Glucose is further broken down by a group of enzymes in yeast zymase group to produce carbon dioxide and alcohol. This gases cause the dough to rise.

### **D. Changes during baking of the rolls.**

- Basic rolls are baked at 230°C - 250°C until they are brown.
- The dough rises quickly as the CO<sub>2</sub> expands in the heat – ‘Oven spring’.
- Yeast activity increases at first, but gradually decreases as the dough temperature rises.
- At 54°C - 55°C the yeast is killed and fermentation stops.
- The water is absorbed by the starch granules in the flour. They swell and gelatinize, and support the structure of the rolls.
- The gluten starts to coagulate at 70°C and continues to do so until baking is complete.
- Water, carbon dioxide and alcohol escape from the dough during baking.
- Dextrin forms on the outside with the heat.
- The sugars are converted to caramel which gives a brown colour to the crust.

Band	Descriptors	Past Mark	Total
High	<p><b>Candidate is able to:</b>            Justify the use of most ingredients in yeast rolls.            Explain most changes during the preparation process.            Explain most of the changes during rising process.            Explain most changes during baking of the rolls.            Use specific terminology related to bread making appropriately.            Give comments that are precise and related to bread making.            Have a clear understanding on bread making.</p>	14 – 20	20
Middle	<p><b>Candidates may:</b>            Justify use of some ingredients used in bread making.            Explain some changes that take place during the preparation process.            Explain some changes during the rising process.            Explain some changes during the baking of the bread.            Use some specific terminology appropriately.            Give some comments that are precise and related to bread making.            Have some clear understanding on bread making.</p>	9 - 13	
Low	<p><b>Candidates may:</b>            Justify use of a few ingredients used in bread making.            Explain a few changes that take place during the preparation process.            Explain a few changes during the rising process.            Explain a few changes during baking of bread.            Use a little or no specific terminology appropriately.            Give a few/ no comments that are precise and related to bread making.            Have little or no understanding about bread making.</p>	0 – 8	