



EXAMINATIONS COUNCIL OF ESWATINI
Eswatini General Certificate of Secondary Education

FOOD AND NUTRITION (SPECIMEN)

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Confidential

MARK SCHEME

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MARKS: 100

This document consists of **12** printed pages.

SECTION A

1. (a) Chemical elements that combine to form carbohydrates

Carbon, hydrogen and oxygen [3]

(b) (i) Monosaccharides

- $C_6H_{12}O_6$
- simple sugars, soluble in water, fructose, glucose, galactose
- cannot be further broken down
- end products of digestion of carbohydrates
- Sweet in taste
- easily absorbed by blood stream [2]

(ii) Disaccharides

- $C_{12}H_{22}O_{11}$
- Double sugars
- Made of two monosaccharides
- e.g sucrose, lactose, maltose [2]

(c) Group of people that require extra glucose

- people involved in sports

Reason: because it provides a fast source of energy, since it's easily absorbed

[2]

(d) Effect of moist heat when cooking rice.

- starch soften
- absorb water
- grains swell
- causes rupture
- starch dissolves
- forms a paste and thickens

(Any four points)

[4]

2. (a) Explain the following terms:**(i) Body Mass Index (BMI)**

- A weight - to- height ratio
- Used as an indicator of obesity and underweight
- Calculated by dividing one's weight in kilograms by the square of one's height

(Three well explained points) [3]

(ii) Coagulation

- heating of proteins
- proteins harden/set
- become less soluble
- if protein is overheated it becomes less digestible
- tightening of protein chains

(Any three well explained points) [3]

(iii) Basal Metabolism

- refers to the basic or least, amount of energy the body needs to survive.
- comprises everything that goes on inside the body
- to maintain and build tissues, produce energy and ensures body stays healthy.
- needed to keep the body alive - e.g. the beating of the heart, breathing, maintenance of body temperature.

(Any three well explained points) [3]

(b) Two good sources of dietary fibre

- whole grain cereals
- whole grain bread
- whole meal pasta
- brown rice
- vegetables especially leafy vegetables

- pulse vegetables
- fruits especially skins of apple, plums etc.

(Any two)

[2]

(c) Explanations with reasons for including dietary fibre in the diet

- holds water and keeps the faeces soft and bulky - for efficient removal of waste products from the body.
- help to reduce blood levels of cholesterol-hence reducing the risk of diabetes.
- can help people to control their body weight - because high fibre foods are filling.
- helps prevent various bowel disorders which may arise when faeces are not removed regularly-hence leading to constipation, bowel cancer, diverticular disease and haemorrhoids
(Any one example of a disorder).
- removes waste products which are potentially harmful to the body- hence stabilises glucose levels
- helps the peristalsis process-which allows the regular muscle contractions of the intestinal wall with minimum effort as the faeces will be soft and bulky with a high fibre intake.

(Any four well explained points)

[4]

3. (a) Functions of potassium in the body

- potassium-maintains the correct concentration of body fluids
- facilitates the removal of excess sodium in the body
- helps to prevent High BP
- necessary for muscle contractions and nerve signals

(Any three points)

[3]

(b) informative paragraph about each of the following:

(i) cholesterol

- a type of fat, essential for life
- a substance made in the liver, can be obtained in the diet and carried in the blood stream
- can build up and be deposited with other material on the walls of the arteries

- raised level can lead to coronary heart diseases

(Any three points)

[3]

(ii) gastric juice

- digestive juice
- found in the stomach
- has an acidic pH
- contains digestive enzymes

(Any three points)

[3]

(iii) obesity

- Means having too much body fat
- Complex disease involving excess amount of fat in the body (body fat)
- May be caused by overeating, physical inactivity, psychological factors
- Obese people are more prone to heart diseases, chest infections, varicose veins, high blood pressure
- Extra body fat can cause complications during operations

(Any three points)

[3]

[Total : 40 marks]

SECTION B

4. (a) Ingredients used to produce carbon dioxide gas in flour mixtures.

- yeast
- baking powder
- bicarbonate of soda + lemon juice/sour milk/cream of tartar

(Any two)

[2]

(b) Ingredients used to add steam in flour mixtures to make them rise.

- adding liquid (milk, water)
- eggs
- margarine, syrup, sugar

(Any two)

[2]

(c) How steam can be used as a raising agent.

- upon heating the liquid reaches boiling point and steam is produced- which pushes up or stretches the gluten in the flour and makes mixture to rise. [2]

(d) Describe the method of making the batter.

- sift dry ingredients
- make a well at the centre
- drop in the egg
- mix with a wooden spoon drawing the flour from the side, adding the liquid gradually till half of the liquid has been added
- add the remaining liquid at once and beat the mixture

(Accept any five steps including the use of correct equipment which will result in a recognisable batter) [5]

(e) Effect of using the following ingredients when making bread**(i) Liquid with temperature above 40° C**

- temperature will destroy /kill the yeast plant and fermentation will not take place [1]

(ii) Too little yeast

- the yeast mixture will not rise/ fermentation will be delayed [1]

(iii) Too much fat

- Bread will not rise well/ yeast will be dormant
- Too much fat inhibits the gluten development [1]

(f) Three kitchen areas that make up the work triangle in the kitchen

- Stove- cooking area
- Fridge-storage area
- Sink-washing area [3]

(g) Care of baking sheets (tin ware)

- dry well before storing to prevent rust
- wash in hot soapy water

- do not use an abrasive [3]

[Total: 20 marks]

5. (a) Classify fish

- white, shell, oily fish [3]

(b) points to consider when choosing fresh fish

- pleasant smell, bright eyes not sunken, firm and moist skin, plenty scales.

(Any two) [2]

(c) Storage of eggs and reasons

- store in a refrigerator/cool area – to slow the growth of bacteria
- store away from strong smelling foods - to avoid absorption of smells
- store pointed end down –to keep yolk in the centre
- store away from raw meat and fish - to avoid cross contamination
- store in a box or packaging
- store in rooms with high humidity and low temperatures - to prevent moisture loss
- they should not be washed - as this destroys the protective cuticle

(Any two well explained: one mark for point and one for reason) [4]

(d) Write an informative paragraph on each of the following:

(i) Convection method of heat transference

- heat transferred through gases and liquids by convection
- liquid expands and rises when heated
- cooler liquid moves to take its place
- when the cooler liquid is heated, it also rises and
- convection currents get set up until a constant temperature is reached

(Any four correct points) [4]

(ii) Hygienic use of kitchen bin to prevent food contamination

- kept close to prevent attracting pests
- empty every day and wash
- disinfect regularly
- Use bin liner

(Any three points)**[3]****(e) Guidelines on the use of kitchen scales**

- never keep anything on scale as this strains the scale
- check that the scale is at zero when pan is empty before weighing
- never drop food into the scale, especially the spring balance scale
- make sure to use when firmly balanced and placed on a flat surface
- clean carefully after use
- do not immerse in water

(Any four points)**[4]****[Total: 20 marks]****SECTION C**

6. Deep fat frying- is done by completely immersing food in hot fat or oil in a deep fat fryer or saucepan, for example when cooking chips.

Choice of fat or oil for deep fat frying:

The fat must be suitable for heating up to 200⁰ C without burning, e.g. vegetable oils and lard. However, reduced fat spreads have a high water content and are not suitable for frying. The water causes fat to spit when heated and so is dangerous.

Suitable Equipment:

Use a strong, deep pan, with a frying basket, electric fryers, with built- thermostats can be purchased for domestic use; they are safer as there is less risk of causing a fire.

Preparing food for deep fat frying:

Food suitable for deep fried: e.g. fish, meat, fruit, should first be coated to prevent overcooking and the loss of juices from the food, and to prevent the food breaking up and absorbing too much fat.

Suitable coatings include:

Beaten egg

Beaten egg and breadcrumbs

Beaten egg and seasoned flour

Beaten egg and oatmeal

Egg, flour and oatmeal

Reasons for coating food: with batter, egg and breadcrumbs

When the food is placed in the hot fat, the egg in the coating coagulates rapidly and thus forms a protective layer around the food, which becomes crisp and golden brown. The food inside continues to cook by conduction and retains its flavour and texture.

- Hold shape of food/prevent breaking
- Prevent absorption of fat
- Protect food from heat/prevent burning
- Prevent loss of juices from food/ food cooks evenly

Advantages of frying: quick, adds caloric value without bulk, adds flavour, browns, crisp texture.

Disadvantages of frying: More difficult to digest - Needs constant attention- more dangerous

Important rules for deep frying:

- Do not fill the pan more than half - way with oil or fat, as the oil or fat will rise will rise rapidly when food is placed in it, and could boil over.
- Lower the food gently into the hot fat. Do not drop it in as it will splash and cause burns

- Do not overfill the pan with food, may overflow and be difficult to turn, or considerably lower the temperatures of the fat and affect the finished result.
- Do not overheat, fat may ignite
- Use a dry pan- to prevent 'spitting' – as splashing oil causes burns.
- Turn the handles of the cooking pan in – so will not be knocked when passing.
- Do not overheat the fat- the outside of the food will cook quickly and the inside will not cook sufficiently.
- Turn the food carefully to ensure even cooking
- Use absorbent kitchen paper to drain the food when cooked and a perforated spoon to lift the food out or cooking tongs. A frying basket can also be used.
- When food is cooked, turn off the heat and allow fat to cool before straining it through a piece of muslin to remove impurities.
- Store fat in a cool, dry, dark place to prevent rancidity.

Safety rules for deep frying

- Never leave frying pan unattended
- Do not heat the fat beyond the required temperature
- Keep the pan handle turned towards the side of the cooker to prevent it being knocked over
- If the fat start to smoke, turn the heat off immediately as this is near to its flash point

Fat temperature too hot:

- Outside cooks quickly- inside raw- danger of food poisoning if food not thoroughly cooked- must reach 70⁰ C - bitter flavour when overcooked fat temperature too low
- Outside surface not sealed - protein coagulate - in egg - starch in flour - not gelatinised
- as soon as food enters oil - oil absorbed by food - unappetising - difficult to digest.

Effect of heat/ when overheated:

Thin, bluish haze of smoke is given off- gives food unpleasant flavour- reaches 'smoke point'. Wherein fat molecules split up, reduces keeping quality of fat- ignites and burns fiercely, i.e **flash point**.

Health problems which may be associated with frying:

- Animal fat, e.g. lard- contains cholesterol - sticks to inner walls of arteries – narrow - blocks
- Linked to coronary heart diseases/ heart attack/stroke - excess fat stored as body fat

- Obesity -hypertension-loss of self-esteem- breathlessness - complications during surgery
- Lethargy,
- Inhaling of fumes from fried fat
- Burns caused by hot fat etc.

[Maximum marks to be awarded for many facts on deep fat frying, well explained with several examples]

Band	Descriptors	Past Mark	Total
High	<p>Candidate is able to:</p> <ul style="list-style-type: none"> - give detailed understanding of deep fat frying (definition) - give more examples of deep fried food - explain the most reasons for coating deep fried food - explain most benefits/advantages of deep fat frying food - give more points to consider when deep fat frying - have clear understanding of safety rules to follow when deep fat frying - have clear understanding of points to consider when deep fat frying - have a clear understanding of the health problems associated with deep fat frying 	14 – 20	20
Middle	<p>Candidates may:</p> <ul style="list-style-type: none"> - show some understanding of deep fat frying (definition) - give some examples of deep fried food - explain some mechanical functioning of a microwave oven - explain some reasons for coating deep fried food - explain some benefits/advantages of deep fat frying food - give some points to consider when deep fat frying - have some understanding of safety rules to follow when deep fat frying - have some understanding of points to consider when deep fat frying - have some understanding of the health problems associated with deep fat frying 	9 - 13	
Low	<p>Candidates may:</p> <ul style="list-style-type: none"> - show little understanding of deep fat frying (definition) - give few examples of deep fried food - explain few reasons for coating deep fried food - explain few benefits/advantages of deep fat frying food - give few points to consider when deep fat frying - have little understanding of safety rules to follow when deep fat frying - have little understanding of points to consider when deep fat frying - have little understanding of the health problems associated with deep fat frying 	0 – 8	