



BOTSWANA
EXAMINATIONS
COUNCIL

**Botswana General Certificate of Secondary Education
October / November 20XX**

Specimen Mark Scheme

0611/01 FOOD AND NUTRITION

Maximum Mark: 100

SECTION A

- 1 (a) (i) **State four major chemical elements which make up proteins.**

Carbon, hydrogen, oxygen, nitrogen.

2 elements for 1 mark

[2]

- (ii) **Name a protein found in each of the following foods.**

Maize – zein

Beans – legumin

1 protein at 1 mark each

[2]

- (iii) **Explain the term High Biological Value (HBV) protein**

- Proteins that contain all the indispensable essential amino acids in sufficient quantity
- Sometimes called complete proteins
- Found mainly in animal foods, with the exception of soya beans.
- Named example of a food containing HBV protein e.g. named meat (beef, mutton, chicken) fish, eggs or milk

1 mark explanation 1 mark for any correct information

[2]

- (b) **There are several risk factors that may lead to Coronary Heart Disease (CHD). Some risk factors can be prevented or reduced by changing habits or life style, but some cannot.**

- (i) **State two risk factors that can be prevented**

High blood cholesterol level

High blood pressure

Smoking cigarettes

Obesity (being overweight)

Continual stress or tension

Lack of regular exercise

Choice of food

2 risk factors at 1 mark each

[2]

- (ii) **State two risk factors that cannot be prevented**

Low social factors

Low birth weight

Being male

Hereditary (family history of heart disease)

Diseases such as diabetes

Increasing age

2 risk factors at 1 mark each

[2]

(c) (i) Give two properties of sucrose.

Soluble in water
 Sweet in taste
 It melts and decomposes at 186 °c to form caramel.
 In high concentration it raises boiling point of a solution

2 properties at 1 mark each [2]

(ii) State two carbohydrates which can be obtained from animal sources

Lactose/galactose, glycogen

2 sources at 1 mark each

(d) Suggest three ways of improving a traditional kitchen.

- Provide walls to shield against wind/rain and harsh weather conditions
- Provide roofing to shade and shield against rain, heat/sunshine.
- Provide well-levelled floors for storage cupboards
- Provide raised work surface/a table to prevent bending while working
- Provide ventilation to let out smoke and to allow in fresh air.
- Provide raised fire places to avoid bending.

3 points at 1 mark each [3]

(e) State two points to consider when choosing the following kitchen equipment.

(i) kitchen scales

- Easy to read (dial in metric)
- Scale pan big enough to take joints of meat and large quantities of other ingredients
- Scale pan which is easy to clean and remove
- Compact shape that is easy to store
- Hard-wearing and sturdy case
- Accurate measuring that can be adjusted if necessary

Two points at 1 mark each [2]

(ii) knives

- Choose stainless steel as is easy to clean and keep clean and does not rust
- They should be sharp with cutting edges made of carbon steel
- Choose different one for different purposes

2 points at 1 mark each [2]

(f) Give two safety precautions to observe when using knives.

- Keep knives in a magnetic or slotted rack
- Store separately from other equipment
- Sharpen frequently to keep in good working condition to avoid cuts
- Cut away from self
- Use cutting board to avoid cutting on hands

2 precautions at 1 mark each [2]

- (g) Vitamin A is found as retinol in animal foods and as beta carotene in plant foods. Complete the table below by giving two good sources of vitamin A.

animal sources	plant sources
Milk, cheese, eggs, butter, oily fish, liver, kidney	Carrots, spinach, apricots, parsley, cabbage, tomatoes, prunes pawpaw

2 animal sources and 2 plant sources at 1 mark each

[4]

- (h) Complete the table below by giving one example of indigenous food in each food group.

food group	examples of foods
fruits and vegetables	thepe, rothwe, bean leaves, delele, morula, motlopi, moretologa, moretlwa
bread, cereals and potatoes	samp, potatoes, sweet potatoes, maize, sorghum, millet
milk and dairy foods	fresh milk, madila/maere, lebebe, mokaro

3 indigenous sources under each class at 1 mark each.

[3]

- (i) Outline three advantages of budgeting.

- Prevent overspending and impulse buying.
- Areas of overspending will become clear.
- Essential bills can be catered for.
- Encourages saving.
- Sets a good example for other family members.
- Reduces financial worries and give a feeling of security and independence.

3 advantages at 1 mark each

[3]

- (j) List three ways of advertising goods and services.

- Billboards
- Television
- Radio
- Newspapers
- Fliers
- Brochures
- Internet
- Word of mouth

3 ways at 1 mark each

[3]

(k) Explain each of the following small retailers and give one example of each.

(i) mobile shop;

This is where traders take their goods to the customer either in vans, caravans, trucks or on bicycles. Examples of mobile shops include the milk man, the baker, the greengrocer and ice-cream man. Their main advantage is that they can reach isolated areas where there are no shops. In addition; their door-to-door service is particularly useful to people who are too busy to find time to go out shopping. Their operation costs are low so they tend to be cheaper.

1 mark for explanation and 1 mark for example.

[2]

(ii) roadside traders.

These are traders who sit along the road with their goods for sale. They are in the informal trade and often have no trading licences. It provides convenience to the community. They do not offer guarantees. Their business is more likely to come to a halt because of weather conditions e.g. rain and windstorms.

1 mark for explanation and 1 mark for example.

[2]

SECTION B**2** Modifying a recipe.

Basic cake mixture

100 g Self raising flour

75 g Margarine

75 g Caster sugar

3 eggs

4 table spoon milk

(a) Modify the recipe above to suite a low calorie diet.

- Use 100g whole meal flour instead of self-raising flour as it has non-starch polysaccharides thus low energy value.
- Use low fat margarine as it has low calories.
- Use sugar substitutes such as equal or canderella
- Use 6 egg whites instead of 3 whole eggs to reduce fat content.
- Use fat free milk.

4 points at 1 mark each**[4]****(b) Give three reasons for modifying a recipe.**

- To improve nutritive value
- To come up with a new dish
- To reduce salt, sugar and fat content of the dish
- To increase NSP so as to reduce energy value
- To substitute ingredients that may not be available

3 reasons at 1 mark each**[3]****(c) Which three methods of cake making can be used to prepare the recipe above?**

- Creaming
- Rubbing in
- All in one method
- Whisking as in genoese cakes

[3]**[Total 10]**

3 (a) Explain two principles to bear in mind when planning meals for HIV/AIDS patients.

- Work in clean hygienic environment to prevent infections from the food.
- Consider the patient's current health status as to choose appropriate foods / dishes e.g. thrush – liquid diet, diarrhoea – extra fluids, vomiting – extra fluids.
- Increase intake of fruits and vegetables for adequate supply of vitamins and minerals to boost immune system.
- Ensure adequate supply of protein for production of antibodies / repair of worn-out tissues.
- Where normal feeding is not possible, food supplements may be used to boost immune system / provide adequate nutrients.

**2 points at 1 mark each
1 reason for each point**

**[2]
[2]**

(b) Suggest what should be served to provide a nutritious iron-rich one course meal for a teenage girl.

Nutritious, iron rich protein component	1 mark
Nutritious, iron rich carbohydrate component	1 mark
Nutritious, iron rich vegetable component	1 mark
A drink / beverage	1 mark

[4]

(c) Name one plant source of High Biological Value (HBV) protein and one animal source of Low Biological Value (LBV) protein.

- (i)** Plant source of high biological value protein is soya bean.
(ii) Animal source of low biological value protein is gelatine.

1 plant source and 1 animal source at 1 mark each

[2]

[Total 10]

4 (a) State four reasons for cooking food.

- To make food soft / tenderise.
- To improve texture.
- To destroy bacteria and enzymes / to make food safe to eat.
- To reduce bulk in fibre.
- To provide hot foods in cold climates.
- To aid digestion.
- To make it easier to eat / improve palatability.
- To preserve food.
- To destroy natural toxins (poisonous substances in food).
- To make the food more appetising and attractive.
- To enhance flavour of food.
- To give variety in the diet as different methods of cooking and preparation are used.

4 reasons at 1 mark each

[4]

(b) Describe how heat is transferred during cooking by the following methods:

(i) radiation

- Heat energy reaches an object through a vacuum / empty space / air
- Heat rays / infra-red rays travel directly to the food, which then absorbs the heat.

2 points at 1 mark each

[2]

(ii) conduction

- Heat is transferred from one molecule to another in a solid.
- Transfer of heat energy from a fast moving molecule to a molecule vibrating at lower speed in the same substance.

2 points at 1 mark each (accept suitable labelled diagram)

[2]

(c) An experiment was carried out to show the effects of moist heat on starch. Outline the expected results of this experiment.

Starch grains first soften, then absorb water and swell, causing some to rupture. The starch then forms a paste.

2 pieces of information at 1 mark each

[2]

[Total 10]

5 (a) Name and explain any two P's of the marketing mix.

Product.

To develop a product that satisfies consumer needs and preference, which people are willing to buy. Consider the size, packaging, labelling, features, name of product and facilities offered

Price

Value attached to a product (how much does it cost), the price should match the quality of the product. Discount and credit facilities.

Place

Area or point where the product is to be sold. Availability of product, is it convenient. Distribution of product and by who (direct selling, whole selling).

Promotion

Activities done to increase sales. Making consumers aware of available product. It is done through advertising, free gifts, competition, free samples / coupons, price reduction, after sales, special offers, brochures, catalogues

1 mark for naming x2

1 mark each explanation x2

[4]

(b) State two advantages and two disadvantages of a partnership form of business organisation.

Advantages

- Has capacity to grow and develop into a large business
- Easy to form compared to a company
- Easy to set-up does not involve long costly and time consuming procedures.
- More capital can be raised
- Division of labour is possible as there are many people involved. It is possible to find that each partner has a different skill
- Expenses and management of the business are shared
- There is greater continuity, if for some reason one partner goes away a new partnership can be easily formed.
- Decision making is consultative
- There is privacy of the business as the partnership is not required to publish its accounts – annually.

2 advantages at 1 mark each

[2]

Disadvantages

- Delayed decision making
- Unlimited liability for debts
- Limited capital for expansion as sources are limited to partners.
- Decisions may be delayed by disagreements among partners.
- Partners have unlimited liability and are therefore personally liable for debts of the business
- If one partner leaves, a new partnership agreement is required.
- It is not usually easy to find a suitable partner
- One partner decision can be binding on all other partners even if it's a wrong decision

2 disadvantages at 1 mark each

[2]

(c) State and describe one other form of business organization or ownership other than the one in (b) above.

Sole proprietor

A business owned by one person. That person provides the finance and in return retains full control of the business. One enjoys profits and suffers losses alone. The person also makes decision alone and it's fast.

Company

A business owned by a group of people / shareholders. They share profits, losses and costs. The director is appointed by shareholders. The business can be a private limited company or a public company.

Cooperatives

People agree and register an association to work together. Members help in the running of the business. Decision making and profits are shared equally. Control is by democratic principle.

Franchise

This is where one has a right to use another firms name and products.
The franchisee pays the franchiser a fee for the right to open a retail outlet.
The franchisee has to raise capital to build and equip the facility.

1 mark for name and 1 mark for explanation

[2]

[Total 10]

SECTION C

6 Discuss three factors to consider when planning a kitchen.**Ventilation**

Ventilation is the intentional introduction of outside air into a space-Ventilation is mainly used to control **indoor air quality** by diluting and displacing indoor pollutants; it can also be used for purposes of **thermal comfort** or dehumidification when the introduction of outside air will help to achieve desired indoor conditions.

- Necessary to extract air / steam / odour / kitchen waste / grease would spoil decoration and travel to another parts of the house
- Open windows / door – allows for loss of heat / free circulation of air
- Cooker hood above hob drains out grease / smoke / heat
- Hot air makes kitchen uncomfortable
- Possible dangerous to work in too high temperature
- Some cooker hoods extract and re circulate air from charcoal or other filter
- Fans / extractor fans – electric or wind operated / to drain out heat, grease and smoke
- Lamar indoors / loure windows can be opened without causing draughts

Ergonomics

Ergonomics is the science of designing the job, equipment, and workplace to fit the worker. Proper ergonomic design is necessary to prevent repetitive strain injuries, which can develop over time and can lead to long-term disability.

- People and their environment i.e. it examines the effect that people and environment have on one another
- Means of devising methods of doing housework with less effort and greater efficiency
- The study of work surface and its environment in order to achieve maximum efficiency
- Need to be safe
- Work surface on each side of cooking stove and sink could be triangle, with easy access to sink, stove and work surface / limited movement
- Should have equipment positioned logically to suit sequence of stages to work
- Keeping walking to a minimum
- Should not waste time and energy of the cook
- Comfortable working height to avoid too much bending and stretching

Definition of each factor at 1 mark each

[2]

4 points at 1 mark each for each factor

[8]

[Total 10]

7 Discuss the following factors which influence people's choice of food.**(a) religion****(b) food technology****(a) RELIGION AND MORAL BELIEFS / CUSTOMS / TRADITION**

- Some religions have specific rules about what to eat and what cannot be eaten e.g. Jews do not eat pork and some sea foods such as crabs
- Food can be used as a symbol for people in different religions and cultures
- Social status, some foods are considered "special" because they are expensive / rare
- Occasions, spiritual experience of fasting and feasting and ceremonies e.g. funeral, marriages, religious festivals, harvests
- Food taboos and totems may also limit the choice

(b) FOOD TECHNOLOGY

- Production of cheaper version will make more food available at a cheaper price e.g. margarine instead of butter
- Improved packaging enables more foods to be eaten away from home e.g. canned and bottled foods
- Increased shelf life of foods / preservation avoids food wastage and makes food available at other seasons
- Facilities available e.g. refrigeration to keep food longer
- Production of new types of food from unusual sources e.g. quorn from micro-protein

5 points each factor x 2**[10]****[Total 10]**