G12 ECZ FOOD AND NUTRITION P1 2016 GCE SOLUTIONS

Food and Nutrition Paper 1 Theory, 2016 GCE (6065/1)

Section A (Q1 compulsory, 40 marks) + Section B (Q2-7, answer any 4, 60 marks)

Candidate Name:_____

Centre Number	Candidate Number

EXAMINATIONS COUNCIL OF ZAMBIA

Examination for General Certificate of Education Ordinary Level

Food and Nutrition 6065/1

Paper 1

Thursday **21 JULY 2016**

Additional materials:
Answer Booklet

Time: 2 hours

Instructions to candidates

Write your name, centre number and candidate number in the spaces at the top of this page and on all separate Answer Booklets used.

There are **seven** questions in this paper.

Section A

Answer **all** parts of question 1.

Write your answers in the spaces provided on the question paper.

Section B

Answer **any four** questions.

Write your answers on the separate Answer Booklet provided.

At the end of the examination:

1 fasten any separate Answer Booklet used securely to the question paper, tie with a string in the left corner of the booklets.

2 enter the numbers of the Section B questions you have answered on the left side on the grid below, under the column "For Candidate's Use".

Information for candidates

The intended number of marks is given in brackets [ ] at the end of each question or part question.

You are advised to spend no longer than 45 minutes on Section A.

Cell phones are not allowed in the examination room.

For Candidate's Use	For Examiner's Use
Section A	
Section B	
Total	

This question paper consists of 6 printed papers.

For Examiner's use

Section A (40 Marks)

Answer all parts of question 1.

Write your answers in the spaces provided on the question paper.

1 **(a)** Potassium is a mineral element required in relatively large amounts. State:

(i) The mineral element that potassium has a complementary action with.

..... [1]

(ii) **Four** rich sources of potassium.

.....

.....

.....

..... [2]

(iii) **Two** functions of potassium in the body.

.....

..... [2]

(iv) The deficiency disease which occurs if too little potassium is absorbed.

..... [1]

(b) **(i)** State **two** functions of iron in the body.

.....

..... [2]

(ii) Suggest **two** groups of people who may be advised to increase the intake of iron.

.....

..... [1]

(iii) What is the relationship between ascorbic acid (Vitamin C) and iron?

.....

..... [1]

(c) What problems are associated with the statements below?

(i) A low sodium intake

..... [1]

(ii) Too much or high sodium intake.

..... [1]

For Examiner's use

(d) **(i)** State **four** functions of water in the body.

.....

.....

.....

..... [4]

(ii) Define dehydration.

.....

..... [1]

(iii) Explain **two** circumstances which can bring about body dehydration.

.....

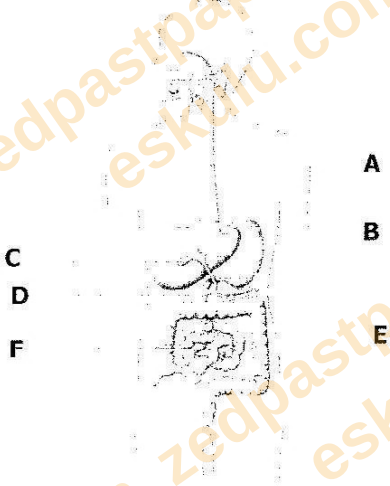
..... [2]

(iv) What is the recommended daily intake of water?

.....

..... [1]

(e) The figure below shows some parts of the human digestive system.



(i) Label the parts above (**A, B, C, D, E, F**).

A .....

B .....

C .....

D .....

E .....

F ..... [3]

For Examiner's use

(ii) Explain briefly the roles played by the following structures in the process of digestion:

C: .....

.....

..... [2]

E: .....

.....

..... [2]

(iii) Name the nutrient digested in structure **B** and state any condition under which the nutrient would be digested.

Nutrient: ..... [1]

Condition: .....

..... [1]

(iv) Explain the functions of the following enzymes during digestion and absorption of food.

Lactase: .....

.....

Rennin: .....

.....

Ptylin: .....

..... [6]

(f) Give **three** general rules to follow when feeding invalids.

.....

.....

..... [3]

(g) Write down any **two** uses of eggs in cookery.

.....

..... [2]

[Total 40 marks]

Section B (60 Marks)

There are six questions in this Section. Answer any four.

Write your answers on the separate Answer Booklet provided.

2 Manufactured foods often contain certain food additives.

(a) List **five** reasons why food should contain additives. [5]

(b) Give **three** examples of synthetic additives. [3]

(c) Mention **five** important requirements of food additives. [5]

(d) Why are nutrients added to food during manufacturing? [2]

[15]

3 Preservation prolongs 'shelf life' of foods.

(a) Define preservation. [1]

(b) Name **four** main methods used in the preservation of food. [4]

(c) Name **four** common faults and causes likely to be found in a home-made jam. [8]

(d) Suggest **four** chemical preservatives which can be added to flour. [2]

[15]

4 **(a)** Name three methods of heat transference, giving an example in each case. [3]

(b) **(i)** Name **two** methods of steaming. [2]

(ii) List down **four** points to consider when steaming. [4]

(c) **(i)** Give **four** differences between boiling and stewing. [4]

(ii) Give **two** suitable foods which can be cooked by each method mentioned in part **(c) (i).** [2]

[15]

5 Cereals are one of the most important foods in nearly every country.

(a) Name any **six** types of cereals. [3]

(b) Draw the wheat grain and label the following parts.

(i) Endosperm

(ii) Aleurone layer

(iii) Germ [5]

(c) Define the term 'extraction rate' of flour. [1]

(d) Show the difference between whole-meal and white flour. [3]

(e) Explain why spring wheat is best suited for bread making. [3]
[15]

6 **(a)** Explain each of the following terms or processes.

(i) Collagen

(ii) Basting

(iii) Garnishing

(iv) Dextrin

(v) Gelatinization

(vi) Blending [12]

(b) State any **three** health problems associated with obesity. [3]
[15]

7 **(a)** Define a sauce. [1]

(b) State **four** different ways of thickening sauces. [4]

(c) Write down **four** functions of sauces in food preparation. [4]

(d) Give the basic recipe for making Roux sauce. [6]
[15]

DOWNLOAD ECZ PAST PAPERS FROM YOUR PHONE OR PC

---

www.zedpastpapers.com

zedpastpapers.com eskulu.com

Question Q1 (Section A, compulsory, 40 marks). Minerals, water and digestion.

Answer: (a)(i) Potassium has a complementary action with sodium.

Answer: (ii) Four rich sources of potassium: bananas, oranges/citrus fruits, potatoes, green leafy vegetables (also: avocado, beans, tomatoes).

Answer: (iii) Two functions of potassium in the body: helps regulate fluid balance inside cells; supports normal nerve impulse transmission and muscle contraction (including the heartbeat).

Answer: (iv) Deficiency disease from too little potassium: hypokalaemia (causing muscle weakness and irregular heartbeat).

Answer: (b)(i) Two functions of iron in the body: forms haemoglobin in red blood cells, which carries oxygen around the body; forms part of enzymes/myoglobin used in energy release in muscles.

Answer: (ii) Two groups advised to increase iron intake: pregnant women; menstruating women/adolescent girls (also: growing children, anaemic patients).

Answer: (iii) Relationship between ascorbic acid (Vitamin C) and iron: Vitamin C enhances/improves the absorption of iron from food in the intestine.

Answer: (c)(i) Problem from a low sodium intake: muscle cramps, weakness, and low blood pressure (hyponatraemia).

Answer: (ii) Problem from too much/high sodium intake: high blood pressure (hypertension), which increases risk of heart disease and stroke.

Answer: (d)(i) Four functions of water in the body: transports nutrients and waste products around the body; regulates body temperature (through sweating); acts as a solvent for chemical reactions; lubricates joints and body tissues (also: aids digestion, forms part of blood/cell fluid).

Answer: (ii) Dehydration: an excessive loss of water from the body, greater than the amount taken in.

Answer: (iii) Two circumstances causing dehydration: prolonged vomiting or diarrhoea; excessive sweating (e.g. from fever, heat, or strenuous exercise) without enough fluid replacement.

Answer: (iv) Recommended daily intake of water: about 6-8 glasses (approximately 1.5-2 litres) per day.

Answer: (e)(i) Labelling the digestive system diagram: A = oesophagus (gullet); B = stomach; C = liver; D = gall bladder; E = small intestine; F = pancreas.

Answer: (ii) Roles of structures in digestion: C (liver) -- produces bile, which emulsifies fats into smaller droplets to aid fat digestion, and also stores glycogen and processes nutrients absorbed from the intestine. E (small intestine) -- the main site of digestion and absorption of nutrients into the bloodstream, using enzymes from the pancreas and intestinal walls.

Answer: (iii) Nutrient digested in structure B (stomach): protein, digested under the condition of an acidic environment (hydrochloric acid) by the enzyme pepsin.

Answer: (iv) Functions of enzymes in digestion: Lactase -- breaks down lactose (milk sugar) into glucose and galactose in the small intestine. Rennin -- curdles/clots soluble milk protein (caseinogen) into insoluble casein in the stomach, so it stays longer for digestion (mainly active

in infants). Ptylin (salivary amylase) -- breaks down cooked starch into maltose in the mouth.

Answer: (f) Three general rules for feeding invalids: serve small, frequent, attractively-presented meals since appetite is often poor; ensure food is easy to digest and suited to the illness/diet prescribed; maintain high standards of hygiene in preparation and serving; serve food at the correct temperature.

Answer: (g) Two uses of eggs in cookery: as a raising/aerating agent (e.g. whisked egg whites in cakes and souffles); as a binding agent (e.g. holding minced-meat mixtures or fishcakes together); also acceptable: as a coating agent (e.g. egg-and-breadcrumb), a glazing agent, an emulsifying agent (e.g. mayonnaise), or a garnish.

Question Q2 (Section B: Food additives, 15 marks). Manufactured foods and additives.

Answer: (a) Five reasons food should contain additives: to preserve food and extend shelf life; to improve/restore flavour lost in processing; to improve or maintain colour; to improve texture (e.g. emulsifiers, stabilisers); to add nutritive value (fortification); to improve appearance/palatability so consumers accept the product.

Answer: (b) Three examples of synthetic additives: artificial colourings (e.g. tartrazine), artificial sweeteners (e.g. saccharin/aspartame), and synthetic preservatives (e.g. sodium benzoate).

Answer: (c) Five important requirements of food additives: must be safe/non-toxic for human consumption; must be used in permitted/approved quantities; must not disguise inferior or spoiled food; must not reduce the nutritive value of the food significantly; must be clearly listed/labelled on the packaging; must serve a genuine technological purpose.

Answer: (d) Why nutrients are added to food during manufacturing: to replace nutrients lost during processing (restoration); to fortify foods with nutrients commonly lacking in the population's diet, improving public health.

Question Q3 (Section B: Preservation, 15 marks). Preservation prolongs the shelf life of food.

Answer: (a) Preservation: the process of treating food to prevent or delay spoilage caused by micro-organisms, enzymes, or other agents, so it can be stored and used later.

Answer: (b) Four main methods of preserving food: drying/dehydration, canning/bottling, freezing, and use of chemical preservatives/salting-smoking (also: pickling, jam-making/sugar preservation).

Answer: (c) Four common faults and causes in home-made jam: mould growth -- caused by inadequate sugar concentration or poor sealing/storage; crystallisation -- caused by too much sugar or insufficient boiling/stirring; fermentation -- caused by insufficient sugar or under-ripe fruit with too little natural sugar/pectin; runny/failed set -- caused by insufficient pectin, acid, or under-boiling.

Answer: (d) Four chemical preservatives that can be added to flour: sodium metabisulphite, propionic acid/calcium propionate (mould inhibitor), benzoic acid/sodium benzoate, and ascorbic acid (used as an improver as well as preservative).

Question Q4 (Section B: Cooking methods, 15 marks). Methods of heat transference and cookery methods.

Answer: (a) Three methods of heat transference with examples: Conduction -- heat passes directly through the pan into food, e.g. frying an egg in a pan; Convection -- heat circulates through a liquid or air, e.g. boiling water or baking in an oven; Radiation -- heat travels as waves directly onto food, e.g. grilling meat under direct heat.

Answer: (b)(i) Two methods of steaming: direct steaming (food placed straight in a steamer basket over boiling water) and indirect steaming (food placed in a covered basin standing in a pan of boiling water).

Answer: (ii) Four points to consider when steaming: ensure there is enough water in the pan and top it up as needed; keep the lid tightly closed to retain steam; do not let the pan boil dry; ensure food is evenly spaced/not overcrowded so steam can circulate.

Answer: (c)(i) Four differences between boiling and stewing: boiling uses a large amount of liquid, stewing uses a small amount; boiling uses high/rolling heat, stewing uses low/gentle simmering heat; boiling is a faster cooking method, stewing is slow and long; boiling is done in an open or lightly covered pan, stewing is done in a tightly covered pot/casserole.

Answer: (ii) Two suitable foods for each method: Boiling -- rice, potatoes, eggs. Stewing -- tough cuts of meat, dried beans/pulses.

Question Q5 (Section B: Cereals, 15 marks). Cereals as an important food.

Answer: (a) Six types of cereals: maize, wheat, rice, millet, sorghum, and oats (also acceptable: barley, rye).

(b) [SKETCH REQUIRED -- cannot be reproduced in text] A labelled diagram of a wheat grain in cross-section, showing: (i) the endosperm -- the large starchy inner part used to make white flour; (ii) the aleurone layer -- the protein-rich layer between the endosperm and the bran; (iii) the germ -- the small embryo at the base of the grain, rich in oil, protein and vitamin E, often removed in refined flour milling.

Answer: (c) 'Extraction rate' of flour: the percentage of the whole wheat grain that remains in the flour after milling (e.g. wholemeal flour has a 100% extraction rate; white flour has a lower extraction rate, around 70-72%).

Answer: (d) Difference between whole-meal and white flour: whole-meal flour is made from the entire wheat grain (bran, germ and endosperm), so it is higher in fibre, vitamins and minerals and darker in colour; white flour has the bran and germ removed during milling, so it is lower in fibre and nutrients, finer in texture, and lighter in colour.

Answer: (e) Why spring wheat is best suited for bread making: it is a 'hard' wheat with a high gluten/protein content, which gives dough good elasticity and strength to rise well and hold its shape, producing a well-risen loaf with good texture.

Question Q6 (Section B: Cookery terms, 15 marks). Culinary terms and obesity.

Answer: (a)(i) Collagen: the connective tissue protein found in meat that converts to gelatine on long, moist cooking, tenderising tougher cuts.

Answer: (ii) Basting: spooning liquid fat or juices over food (e.g. roasting meat) during cooking to keep it moist and add flavour/colour.

Answer: (iii) Garnishing: adding an edible decoration to a savoury dish to improve its appearance (e.g. parsley, lemon wedges).

Answer: (iv) Dextrin: the substance formed on the surface of starchy foods (e.g. bread, flour) when dry heat is applied, giving a golden-brown colour and change in flavour.

Answer: (v) Gelatinization: the process by which starch granules absorb water and swell when heated in liquid, thickening the mixture (e.g. in a roux sauce).

Answer: (vi) Blending: mixing a dry ingredient (e.g. flour or cornflour) smoothly with a small amount of cold liquid to form a paste before adding to a hot mixture, to prevent lumps.

Answer: (b) Three health problems associated with obesity: high blood pressure/hypertension; type 2 diabetes; heart disease (also: joint problems/arthritis, stroke).

Question Q7 (Section B: Sauces, 15 marks). Sauces in food preparation.

Answer: (a) A sauce: a liquid or semi-liquid accompaniment, usually thickened, served with a dish to add flavour, moisture and improve appearance.

Answer: (b) Four different ways of thickening sauces: using a roux (fat and flour cooked together); blending (mixing flour/cornflour with cold liquid then adding to hot liquid); using egg yolks (liaison); reduction (boiling to evaporate liquid and concentrate it).

Answer: (c) Four functions of sauces in food preparation: add moisture to dry foods; add flavour and improve palatability; improve appearance/presentation of a dish; add nutritive value (e.g. milk-based white sauce adds protein and calcium).

Answer: (d) Basic recipe for Roux sauce: melt equal quantities of fat and flour together in a pan (e.g. 25g fat to 25g flour) and cook gently for a minute without browning; gradually add liquid (e.g. 250ml milk), stirring continuously; bring to the boil, stirring, until the sauce thickens and becomes smooth; season to taste.

Disclaimer

Created by eskulu Past Papers Tutor

These solutions were created using artificial intelligence and checked against ECZ marking guidelines. If you find an error, report it at eskulu.com/feedback.

eskulu.com | zedpastpapers.com