THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

033/2C **BIOLOGY 2C**

(ACTUAL PRACTICAL C)

(For Both School and Private Candidates)

Time: 2:30 Hours **ANSWERS** **Year: 2013**

Instructions

1. This paper consists of two questions.

2. Answer all questions.

1(a) Use the chemicals and reagents provided to identify the food substances present in solution A. Tabulate your work as shown in the following Table:

Food tested: Starch
Procedure: Add a few drops of iodine solution to solution A
Observations: A blue-black coloration appears
Inference: Starch is present

Food tested: Reducing sugars
Procedure: Add Benedict's solution to solution A and heat in a water bath
Observations: A brick-red precipitate forms
Inference: Reducing sugars are present

Food tested: Proteins
Procedure: Add Biuret solution to solution A and shake gently
Observations: A purple or violet coloration appears
Inference: Proteins are present

Food tested: Lipids
Procedure: Mix solution A with ethanol, shake, then add water
Observations: A milky white emulsion forms
Inference: Lipids are present

1(b) State the function of each food substance identified in 1(a).
Starch: Provides long-term energy through breakdown into glucose.
Reducing sugars: Provide quick energy due to rapid absorption.
Proteins: Used for body growth, repair of tissues, and production of enzymes.
Lipids: Store energy, provide insulation, and form structural components of cells.

1(c) To each food substance identified in 1(a), name at least two sources in which it has been extracted.
Starch: Maize and rice
Reducing sugars: Honey and ripe bananas
Proteins: Eggs and beans
Lipids: Groundnuts and milk

1(d)(i) One of the food substances identified in 1(a) is very important for child development. Mention one disease which can develop when the diet provided to a child lacks that food substance.
Protein is very important for child development. A deficiency can lead to Kwashiorkor.

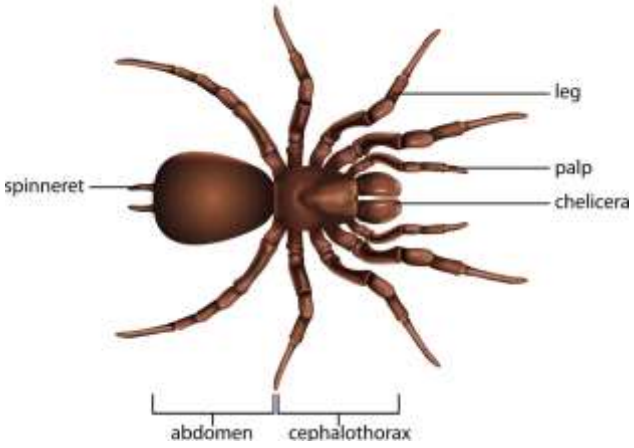
1(d)(ii) State the symptoms of a disease mentioned in (d)(i).
Kwashiorkor symptoms include swollen belly, stunted growth, thinning hair, skin lesions, and muscle wasting.

2(a) Using a hand lens, study the specimens carefully and:
(i) Identify each specimen by its common name.
B_1: Tapeworm
B_2: Earthworm
B_3: Spider

(ii) Name the Kingdom and Phylum/Division in which each specimen B_1, B_2 and B_3 belongs.
B_1: Kingdom Animalia, Phylum Platyhelminthes
B_2: Kingdom Animalia, Phylum Annelida
B_3: Kingdom Animalia, Phylum Arthropoda

(iii) State four advantages of specimen B_3.
- Controls pests by feeding on insects
- Serves as food for other organisms in food chains
- Helps in ecological balance as predator
- Produces silk useful in scientific studies and applications

(iv) Draw a well labeled diagram of specimen B_3.



2(b) Study carefully specimen B_1 and B_2 then:

(i) State four observable differences between B_1 and B_2.
- B_1 has a flat body while B_2 has a cylindrical body
- B_1 lacks segmentation while B_2 is segmented
- B_1 has suckers while B_2 lacks suckers
- B_1 is a parasite while B_2 is a free-living organism

(ii) State the habitats of specimen B_1, B_2 and B_3.
B_1 lives in the intestines of humans or animals (parasitic).
B_2 lives in moist soil or under decaying matter (terrestrial).
B_3 lives in dark corners, under stones or tree bark (terrestrial).