THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

033/2A **BIOLOGY 2A**

(ACTUAL PRACTICAL A)

(For Both School and Private Candidates)

Time: 2:30 Hours **ANSWERS** **Year: 2014**

Instructions

1. This paper consists of two questions.

2. Answer all questions.

1. You have been provided with solution A_4.

(a) Perform an experiment using the reagents provided to identify the type of substance(s) present in the solution. Tabulate your results as shown in Table 1.

Table 1

Food tested: Starch
Procedure: Add iodine solution to A_4
Observations: Turns blue-black
Inference: Starch is present

Food tested: Reducing sugar
Procedure: Add Benedict's solution and heat
Observations: Changes to brick-red
Inference: Reducing sugar is present

Food tested: Protein
Procedure: Add sodium hydroxide and then copper(II) sulfate (Biuret test)
Observations: Turns purple
Inference: Protein is present

(b) State one function of the food substance(s) identified in 1(a).
- Starch: Provides long-term energy
- Reducing sugar: Supplies quick energy
- Protein: Helps in growth and repair of tissues

(c) For the food substance(s) identified in 1(a), name one source in which each substance can be obtained.
- Starch: Maize
- Reducing sugar: Honey
- Protein: Eggs

(d) One of the food substances contained in A_4 is important for a child's development.

(i) Identify the food substance.
Protein

(ii) State the parts of the alimentary canal where digestion of this food substance takes place.
- Stomach
- Small intestine

(iii) In each part, name the enzymes involved in the digestion.
- Stomach: Pepsin

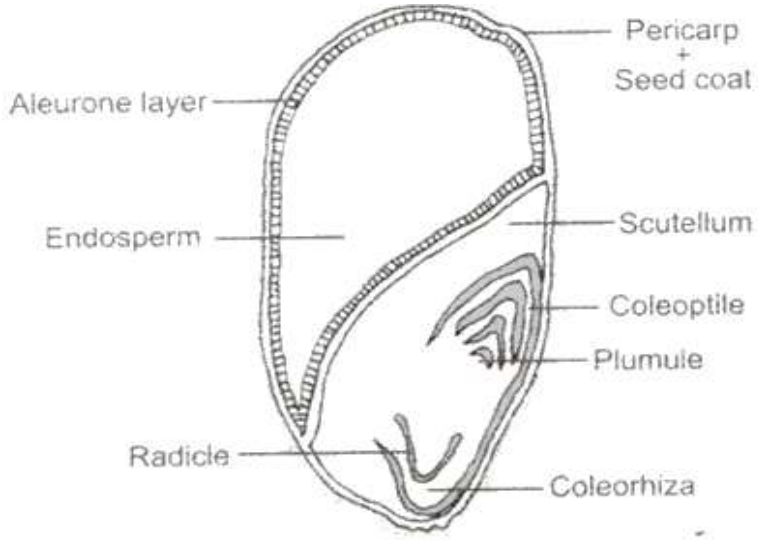
- Small intestine: Trypsin and peptidase

2. You have been provided with specimens P, Q and R.

(a) Study specimens P and Q carefully, then:

(i) Identify specimens P and Q using their common names.
- P: Bean seed
- Q: Maize seed

(ii) Draw a well labelled diagram of specimen Q showing external structures.



(iii) Name the Kingdom and Class in which each specimen P and Q belongs.
- Kingdom: Plantae
- Class P: Dicotyledonae
- Class Q: Monocotyledonae

(iv) Give four examples of plants for each Class you named in 2(a)(iii).
- Dicotyledonae: Bean, groundnut, sunflower, tomato
- Monocotyledonae: Maize, rice, wheat, sugarcane

(v) State four distinctive features of the Classes in which specimens P and Q belong.

Dicotyledonae (P):
- Two cotyledons
- Net-like venation
- Tap root system
- Floral parts in multiples of four or five

Monocotyledonae (Q):
- One cotyledon
- Parallel venation
- Fibrous root system
- Floral parts in multiples of three

(b) State the importance of each specimen P and Q.
- P: Source of protein for humans and animals
- Q: Staple food, used in flour and animal feed

(c) Observe the structure of specimen R.

(i) Give the name of specimen R.
Root

(ii) Name the Class of an organism from which specimen R was obtained.
Dicotyledonae

(iii) Explain the advantages of specimen R to the organism.
- Anchors the plant firmly in soil
- Absorbs water and mineral salts
- Stores food in some cases like carrot or beetroot