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**THE UNITED REPUBLIC OF TANZANIA  
NATIONAL EXAMINATIONS COUNCIL  
CERTIFICATE OF SECONDARY EDUCATION EXAMINATION**

**NOVEMBER 2013**

**033/2A**

**BIOLOGY 2A  
(ACTUAL PRACTICAL A)**

**24 HOURS ADVANCE INSTRUCTIONS**

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**1.0 IMPORTANT**

- 1.1 GREAT CARE MUST BE TAKEN NOT TO DIVULGE THESE INSTRUCTIONS TO BOTH CANDIDATES AND UNAUTHORIZED PERSONS EITHER DIRECTLY OR INDIRECTLY.
- 1.2 MAKE SURE THAT THE CANDIDATES ARE PROVIDED WITH SPECIMENS, CHEMICALS AND APPARATUS INDICATED IN THIS ADVANCED INSTRUCTION ONLY AND NOT OTHERWISE.
- 1.3 PLEASE DO NOT OPEN THE ENVELOPE CONTAINING THE QUESTION PAPERS 24 HOURS BEFORE THE TIME OF COMMENCEMENT OF THE EXAMINATION.

**2.0 PREPARATION AND LABELLING OF SPECIMENS**

**2.1 Preparation of solution**

- (a) Starch solution.  
Prepare 2% starch solution by mixing 20g of starch powder with 1 litre of distilled/ rain water. Boil the contents and allow it to cool.
- (b) Glucose solution.  
Prepare 2% glucose solution by mixing 20g of glucose powder with 1 litre of distilled/ rain water.
- (c) Mix glucose solution with starch solution, and then provide each candidate with 30 cm<sup>3</sup>.

**2.2 Labeling of the specimens and reagents**

- (a) Mixture of starch and glucose solution ----- B
- (b) Butterfly ----- S<sub>1</sub>

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- |     |                  |                |
|-----|------------------|----------------|
| (c) | Spider -----     | S <sub>2</sub> |
| (d) | Earthworm -----  | S <sub>3</sub> |
| (e) | Moss plant ----- | S <sub>4</sub> |

### 3.0 CHEMICALS

Prepare fresh solutions of the following:

- (a) Benedict's solution
- (b) Iodine solution
- (c) Dilute hydrochloric acid
- (d) Dilute sodium hydroxide
- (e) Sudan III
- (f) 1% CuSO<sub>4</sub> solution.

### 4.0 APPARATI

Provide each candidate with all apparati listed in the Advance Instructions sent to you earlier.

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