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

NOVEMBER 2016

033/2A

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

24 HOURS ADVANCE INSTRUCTIONS

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 APPARATI INDICATED IN THESE ADVANCE INSTRUCTIONS 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 solutions

- (a) Dissolve 20g of glucose in 1 litre of distilled water.
- (b) Add 500cm³ of distilled water to 1 litre of fresh milk.
- (c) Mix the glucosesolution and milk solution. Provide each candidate with 30cm³.

2.2 Labelling of the specimens and solutions

- | | |
|---|----------|
| (a) Mixture of milk and glucose solution----- | Z |
| (b) Moss plant----- | R |
| (c) Grasshopper----- | S |
| (d) Fern plant----- | T |
| (e) Spider----- | U |

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2.3 Chemicals

Prepare fresh solutions of the following and label them as such:

- (a) Benedict's solution
- (b) Iodine solution
- (c) Dilute hydrochloric acid
- (d) Dilute sodium hydroxide
- (e) Sudan III
- (f) 1% copper sulphate solution.

3.0 APPARATI

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