

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

**033**

**BIOLOGY ACTUAL PRACTICALS  
A CHEKLIST OF SPECIMENS, CHEMICALS AND APPARATI**

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**1.0. IMPORTANT**

The National Examinations Council has prepared a checklist of specimens, chemicals and apparati for Biology Actual Practicals. As the head of school, make sure that all specimens, chemicals and apparati indicated in this checklist are available in the school laboratory. Some of these will be used for the Certificate of Secondary Education Examination (CSEE) 2024 Biology Practicals. The 03 Hours Advance Instructions will be provided for Laboratory preparations.

**2.0. SPECIMENS, CHEMICALS AND APPARATI**

In addition to the normal fittings of biology Laboratory, the school must prepare the following specimens, chemicals and apparati to the candidates as will be prescribed in the 03 Hours Advance Instructions.

**2.1. Specimens**

The candidates will require the following specimens:

- (a) 1 lizard per candidate
- (b) 1 bee per candidate
- (c) 1 Irish potato (medium) per candidate
- (d) 1 beetle per candidate
- (e) 1 pine branch with cone for 4 candidates
- (f) 1 hibiscus branch with leaf and flower per can
- (g) 1 piece of bread with moulds per candidate
- (h) 1 cockroach per candidate
- (i) 1 bean seedling/plant per candidate
- (j) 1 maize seedling/plant per candidate
- (k) 1 millipede per candidate
- (l) 1 centipede per candidate
- (m) 1 spider per candidate
- (n) 3 g of peanut butter per candidate
- (o) 2 maize grains per candidate

- (p) 2 bean seeds per candidate
- (q) 1 housefly per candidate
- (r) 1 mushroom per candidate
- (s) 1 onion bulb per candidate
- (t) 1 butterfly per candidate
- (u) 1 tilapia for 4 candidates
- (v) 1 preserved rat/mice for 4 candidates
- (w) 1 mature moss plant per candidate
- (x) 1 matured fern plant for 4 candidates
- (y) 1 chick/small bird for 4 candidate
- (z) 1 earth worm per candidate
- (aa) 1 tick for 4 candidates.
- (bb) 1 slide showing the internal structure of the leaf for 8 candidates
- (cc) 1 simple green leaf exposed to direct sunlight (at least 6 hour while attached to its mother plant) per candidate.

## 2.2. Chemicals

Each candidate will require:

- (a) 5 ml of iodine solution
- (b) 10 ml of Benedict's solution
- (c) 5 ml of Sudan III solution
- (d) 5 ml of 1% copper sulphate solution
- (e) 5 ml of sodium hydroxide solution
- (f) 5 ml of hydrochloric acid Source of water (tap/ra 200 ml distilled water)
- (g) 5 g of glucose powder
- (h) 5 g of sucrose granules
- (k) 5 g of starch powder
- (l) 5 g of egg albumen
- (m) 1g of yeast granules
- (n) 15 ml of ethylated spirit
- (o) 500 ml of water.

## 2.3. Apparati

Each candidate require.

- (a) Dropper with measurements/measuring cylinder (10 ml)

- (b) 2 beaker 20-100 ml)
- (c) 1 pippete
- (d) 4 wa classes
- (e) 1 knife/sesipel
- (f) 4 test tubes
- (g) 1 est tube rack
- (h) 1 test tube brush
- (i) 1 motor and pestle
- (j) 1 hand lens
- (k) 1 sieve
- (l) 1 stirrer
- (m) 1 tripod stand
- (n) 1 white tile
- (o) 1 cooking pot (can be shared by 4 candidates)
- (p) 1 dissecting kit (can be shared by 6 candidates)
- (q) Bunsen burner/source of heat (can be shared by 4 candidates)
- (r) 1 dissecting tray (can be shared by 4 candidates)
- (s) 1 ruler
- (t) 1 hand lens per candidate
- (u) 1 forceps per candidate
- (v) 4 petri dishes per candidate
- (w) 1 razor blade
- (x) 1 wire gauze
- (y) 1 white tile.

### **3.0 OTHER REQUIREMENT PER CANDIDATE**

- (a) 1 piece of cotton wool
- (b) 1 pair of gloves
- (c) 6 stickers
- (d) 10 cm of masking tap
- (e) 1 filter papet
- (f) 1 pair of gloves.

### **4.0 LABELS**

Prepare the following standby labels per candidate

**A, B, C, D, E, J, K, L, M, N, P, Q, R, S, T, U, V, X, Y**