

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

133/3B

**BIOLOGY 3B**  
**(ACTUAL PRACTICAL B)**  
(For Both School and Private Candidates)

Time: 3:20 Hours

Monday, 25<sup>th</sup> February 2013 a.m.

**Instructions**

1. This paper consists of **three (3)** questions.
2. Answer **all** questions.
3. Question **one (1)** carries 20 marks and the other **two (2)**, 15 marks each.
4. Cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

1. (a) Dissect specimen  $S_1$  provided and display the Urinogenital system. Draw a large, neat, well labelled diagram of your dissection.  
**Leave your dissection well displayed for assessment.**
- (b) Comment on the shape of the kidneys in specimen  $S_1$  as compared to that of other animals such as amphibians.
- (c) Observe the left kidney of the specimen. Without disturbing it in any way, draw a large labelled diagram to show the side view of the kidney.
- (d) Comment on the positions of the testis/ovaries in  $S_1$  as compared with other animals like amphibians.

2. Solution **R** is a mixture of different food substances. Design and carry out an experiment to identify the type of food substances present in solution **R** using the reagents provided.

- (a) Record your work in the usual tabular form.
- (b) Which food substance identified in solution **R** is stored in the plant body.
- (c) Name the end products of the food substance mentioned in 2 (b) after its digestion.
- (d) What are the roles of the food substances identified in 2 (a) in the human body?

3. (a) Using the key provided below identify specimen  $S_2$  by gradually writing the numbers corresponding to the positive statements until you come to the appropriate group name.

- |    |     |   |               |
|----|-----|---|---------------|
| 1. | (a) | Flower zygomorphic -----  | (ii)          |
|    | (b) | Flower actinomorphic -----  | (iv)          |
| 2. | (a) | Sepal form a tube -----   | (iii)         |
|    | (b) | Sepal five, two larger than the rest -----  | Polygalaceae  |
| 3. | (a) | Ovary of five carpels, one seeded -----   | Geraniaceae   |
|    | (b) | Ovary of five carpels, many seeded -----  | Balsaminaceae |
| 4. | (a) | Staminal filaments tubular -----  | (v)           |
|    | (b) | Staminal filaments free -----   | (viii)        |
| 5. | (a) | Staminal filaments joined at the base only or at several bundles -----                          | (vii)         |
|    | (b) | Staminal filaments joined completely except for a very short branch attaching the anthers ----- | (vi)          |
| 6. | (a) | Style one -----   | (vii)         |
|    | (b) | Style more than one -----   | (viii)        |
| 7. | (a) | Flower with a tube for stamens and sepals attachment -----                                      | Lythraceae    |
|    | (b) | Flower without a tube for stamens and sepals attachment -----                                   | (viii)        |

8. (a) Stamens numerous ----- Malvaceae  
(b) Stamens 5- 15 ----- Sterculiaceae

- (b) Write the floral formula of specimen  $S_2$ .
- (c) Use the hand lens to observe specimens  $S_2$  and  $S_3$  carefully, then answer the questions that follow:
- (i) How is specimen  $S_3$  adapted to pollinate specimen  $S_2$ ?
  - (ii) State one observable adaptive feature which makes each pollen grain suitable for the method of pollination in specimen  $S_2$ .
- (d) State how specimen  $S_2$  is adapted to its function.