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

133/3A

BIOLOGY 3A
ALTERNATIVE A PRACTICAL
(For Both School and Private Candidates)

Time: 3 Hours Thursday 09 May 2002 a.m.

Instructions

1. This paper consists of THREE (3) questions.
2. Answer ALL questions.
3. Read each question carefully before you start answering it.
4. The mark allocation is indicated at the end of each question.
5. Cellular phones are not allowed in the examination room.
6. Write your Examination Number on each page of your answer booklet.

This paper consists of 3 printed pages.
1. You have been provided with specimen $B_1$. Dissect the specimen to display the digestive system on the right hand side of the animal.

Draw a large diagram of the dissection and label the following structures:

(a) oesophagus
(b) crop
(c) gizzard
(d) digestive/mesenteric caeca
(e) midgut
(f) ileum
(g) colon
(h) rectum
(i) digestive – excretory structure. (20 marks)

2. (a) Specimen $B_2$ is a mixture of different food substances. Design and carry out experiments to identify these foods using the reagents provided. Record your working as shown in the table below:

<table>
<thead>
<tr>
<th>Food substance tested</th>
<th>Procedure</th>
<th>Observation</th>
<th>Inference</th>
</tr>
</thead>
</table>

(b) What role is played by each food substance you have identified in $B_2$, in children?

(c) Excess of one of the food substances identified in $B_2$ is usually stored in the body.

(i) Name the hormone which influences the conversion of the food substance in a form that can be stored in the body.

(ii) Write a word equation for the process in 2. (c)(i) above.

(iii) In which body organ does the process 2. (c)(i) above occur? (15 marks)
3. You have been provided with specimens B₃, B₄, B₅, B₆, B₇, B₈, B₉ and B₁₀.

(a) Identify the common and class names of specimens B₃, B₄, B₅ and B₆.

(b) State the observable differences between the external and internal features of specimens B₃ and B₆.

(c) Name the classification ranks common to specimens B₃, B₄, B₅ and B₆.

(d) Use the key provided to place each of the specimens B₇, B₈, B₉ and B₁₀ in its correct order. (15 marks)

Key to some Insect Orders

1a Body flattened dorsoventrally ~ Dictyoptera
1b Body not flattened dorsoventrally ~ 2

2a Body covered with hair ~ Hymenoptera
2b Body not covered with hair ~ 3

3a Number of obvious wings 2 ~ Diptera
3b Number of obvious wings 4 ~ 4

4a Outer wings hardened, inner ones soft and membranous ~ Coleoptera
4b Both pairs of wings soft and membranous ~ 5

5a Hind limbs larger than the rest ~ Orthoptera
5b Limbs all of the same size ~ Lepidoptera.