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: 2:30 Hours **ANSWERS** **Year: 2018**

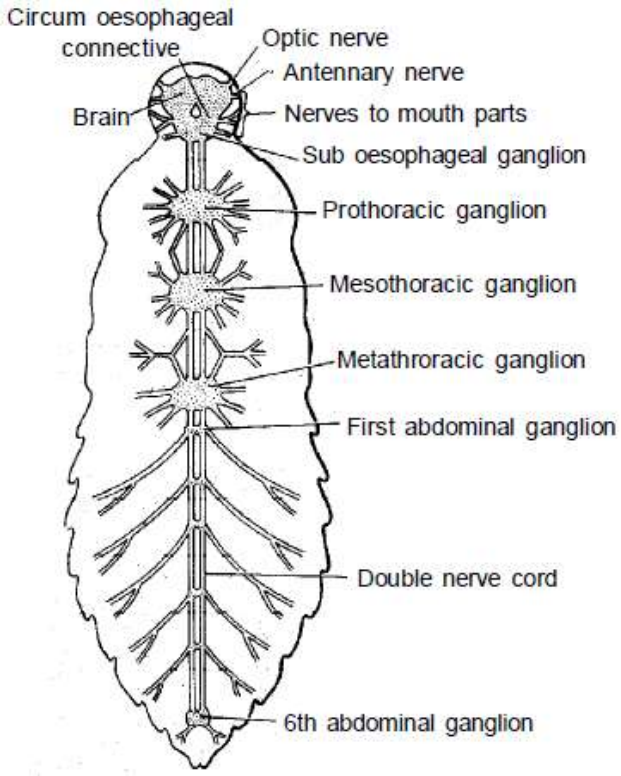
Instructions

1. This paper consists of three questions.

2. Answer all questions.

1. You have been provided with specimen Q. Dissect the specimen Q (cockroach) in a usual way to fully display the nervous system.

(a) Draw a large, neat and well labeled diagram of your dissection.
Leave your dissection properly displayed for assessment.



(b) Propose the sex of the specimen Q and give one external feature you have considered in proposing the sex.
Sex: Male
External feature: Presence of anal styles (short paired structures near the anus found only in males)

(c) Enumerate five features which help specimen Q (cockroach) to adapt to its life.
- Strong chitinous exoskeleton for protection and support
- Long antennae for detecting chemical and physical stimuli in the environment
- Compound eyes for wide-angle vision and movement detection
- Wings and jointed legs for quick escape and mobility
- Spiracles and tracheal system for efficient gaseous exchange in terrestrial environments

2. You have been provided with solutions A and B which contain various food substances.

(a) Use only the chemicals and reagents provided to identify the food substances present in solutions A and B. Tabulate your work as shown in the following table:

Food Tested	Procedure	Observation	Inference
Solution A	Add iodine solution	Blue-black color forms	Starch present
Solution B	Add Biuret solution	Purple/violet color forms	Protein present

(b) For any two types of food identified, name the type of bond which holds up its constituent units.

Starch – Glycosidic bond
Protein – Peptide bond

(c) Identify enzymes responsible for digestion of any two food substances identified.

Starch – Amylase
Protein – Pepsin or Trypsin

3. You have been provided with specimens C and D.

(a) (i) Identify the Kingdoms and Phylum to which each of the specimens C and D belong.

Specimen C:
Kingdom – Animalia
Phylum – Arthropoda

Specimen D:
Kingdom – Animalia
Phylum – Mollusca

(ii) Give three features that can convince other scientists worldwide to agree that specimens C and D belong to the Kingdom(s) you identified in 3(a)(i).

- Both are multicellular with specialized tissues and organs
- Both are heterotrophic and exhibit movement
- Both undergo sexual reproduction and have bilateral symmetry

(b)(i) What role does the specimen C play in the ecosystem?

It may act as a decomposer, prey, or pollinator, and helps in nutrient recycling or pest control depending on its identity.

(ii) Draw a large, neat and well labeled diagram of specimen D.
The diagram should include external features such as shell, foot, tentacles, eye spots, siphon, and mantle.