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

133/1

BIOLOGY 1

(For Both School and Private Candidates)

Time: 3 Hours **Year: 2023**

Instructions

1. This paper consists of sections A and B with a total of **ten (10)** questions.
2. Answer **all** questions in section A and **two (2)** questions from section B.
3. Section A carries **seventy (70)** marks and section B carries **thirty (30)** marks.
4. All writing must be in **blue** or **black** ink, **except** for diagrams which must be in pencil.
5. Cellular phones and any unauthorised materials are **not** allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s).

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SECTION A (70 Marks)

Answer **all** questions in this section. Each question carries **ten (10)** marks.

1. (a) A Form Five student studied the features of various organelles within an animal cell. After the study the student said, 'A mitochondrion can be regarded as a cell within the cell.' Justify this statement by giving four points.

   (b) Draw the diagram of a mitochondrion and label six parts.

2. (a) What will happen if a pleural membrane is severely damaged? Give three points.

   (b) The mammalian lungs are made up of sac like structures called alveoli which are very efficient in gaseous exchange. Why are the alveoli very efficient? Briefly explain by giving seven points.

3. (a) A young scientist wrote the scientific name of human being as homo sapiens. Identify two mistakes which were made by the scientist.

   (b) Figure 1 consists of organisms labeled **A**, **B**, **C**, **D**, **E**, **F**, **G** and **H**. Use the provided key to identify the organisms by writing down the number of the true statement for the organism until you arrive at the correct name.

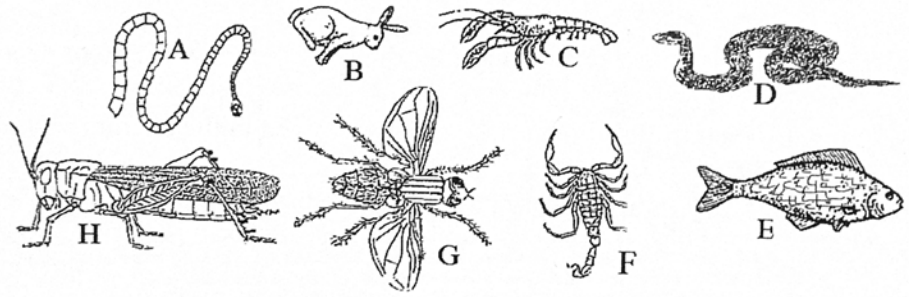

Figure 1

Key

1a. Antennae present..... 2
1b. Antennae absent..... 4
2a. Wings absent..... Anostraca
2b. Wings present..... 3
3a. Wings stretched/open..... Diptera
3b. Wings not stretched/closed..... Orthoptera
4a. Body with legs 5
4b. Body without legs 6
5a. Legs two pair.....7
5b. Legs four pair..... Scorpiones
6a. Body with segments..... Cestoda

6b. Body without segmented.....8
7a. Tail present..... Primate
7b. Tail absent.....9
8a. Dorsal fin present..... Teleostei
8b. Dorsal fin absent..... Squamata
9a. Body elongated.....10
9b. Body not elongated.....11

4. (a) Calculate the magnification of the specimen if its linear dimension is 2 cm and the linear dimension of its drawing is 6 cm.

(b) A Form Two student drew a diagram of a fish as seen in Figure 2. Observe the diagram carefully and identify four principles of biological drawing which were violated by the student.

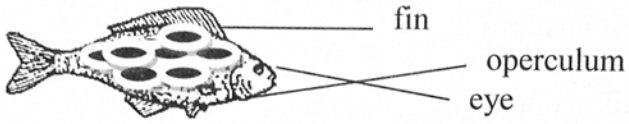

Figure 2

(c) State two purposes of recording by biological drawing.

5. Figure 3 is a section through a mammalian ovary. Study it carefully and answer the questions that follow:

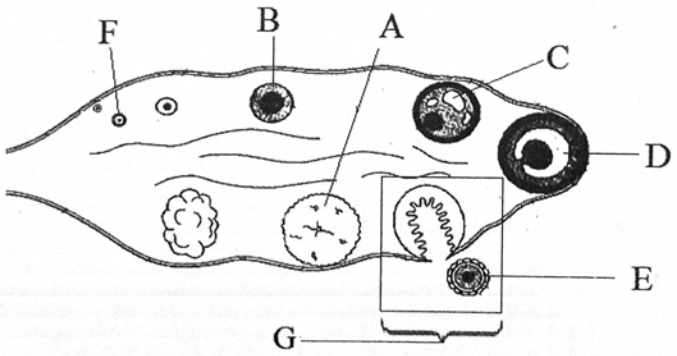

Figure 3

(a) Arrange the labeled **A**, **B**, **C**, **D**, **E** and **F** in a correct sequence starting from the first to the last stage of oogenesis.

(b) Why is it not advisable to undergo surgical operation which involves removal of the structure represented by Figure 3 for the first three weeks of pregnancy? Give four points.

6. (a) Carbon dioxide and water are the raw materials of photosynthesis while sunlight energy, chlorophyll and optimum temperature are the important conditions for effective

photosynthesis. Under which condition does each of the following factors limit the process of photosynthesis?

(i) Temperature

(ii) Carbon dioxide concentration.

(b) A certain person encountered a motor cycle accident which severely damaged his Brunner's gland. State six digestive processes which will be impaired in that person.

7. (a) Coordination in human being involves endocrine and nervous systems. How do endocrine and nervous coordination differ? Give five points.

(b) How are the nervous tissues adapted for their roles? Give five points.

SECTION B (30 Marks)

Answer **two (2)** questions from this section. Each question carries **fifteen (15)** marks.

8. Describe the structure of mammalian lungs. Use nine points.

9. The transport of materials in an organism may be passive or active. How do active and passive transportation of materials differ? Give seven points.

10. Describe the process which leads to the formation of embryo and endosperm in flowering plants.