INDIAN SCHOOL AL WADI AL KABIR		
Class: XI	**Department: SCIENCE 2025-2026** **SUBJECT: BIOLOGY**	**Date: 28/10/2025**
Worksheet: 13	**UNIT – Diversity in the living world** **CHAPTER: The Living World**	**Note:** **A4 FILE FORMAT**
CLASS & SEC:	**NAME OF THE STUDENT**	**ROLL NO.**

I. OBJECTIVE TYPE QUESTIONS:

1. A binomial nomenclature consists of _____ and_____.
   A. Generic name and Phyla
   B. Class and Phyla
   C. Generic name and specific epithet
   D. Phyla and Kingdom
2. The scientific name of lion is _____.
   A. *Panthera Leo*
   B. *Panthera Tigress*
   C. *Panthera Lion*
   D. *Panthera leo*
3. What is the correct sequence of taxa from larger to smaller?
   A. Genus-species-order-kingdom
   B. Species-order-phylum-kingdom
   C. Species-genus-order-phylum
   D Kingdom-phylum-class-order
4. Binomial nomenclature is given by _____.
   A. Carolus Linnaeus
   B. Charles Darwin
   C. Henry Cavendish
   D. James Chadwick
5. The word "Taxa" means a _____.
   A. Unit of Phyla
   B. Genus
   C. Unit of Classification
   D. Unit of Kingdom

For the following questions two statements are given, one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below:

i) Both A and R are true and R is the correct explanation of the assertion.
ii) Both A and R are true but R is not the correct explanation of the assertion.
iii) A is true but R is false.
iv) A is false but R is true

6. Assertion (A): The generic name begins with capital letter while specific name begins with small

letter.

Reason (R): Scientifically mango is written as *Mangifera indica*.

7. Assertion(A): System of providing name with two compounds is called binomial nomenclature.
   Reason(R): Each name consists first of a specific name and second of a generic name.
8. Assertion(A): Systematics is defined as the science of diversity of organisms in evolutionary context.
   Reason(R): Systematics include interrelationship between organisms.

II. VERY SHORT ANSWER TYPE QUESTIONS (2M):

9. Why do we need to classify the different organisms?
10. What are the different defining properties of a living organism?
11. Define a taxon. Give some examples of taxa at different hierarchical levels.
12. What do you understand by the term species? Discuss its meaning in higher plants, animals, and bacteria.

III. SHORT ANSWER TYPE QUESTIONS (3M):

13. Differentiate between taxonomy and systematics.
14. What are the key reasons why classification systems change?
15. *Brassica campestris* Linn
    (i) Give the common name of the plant. Why are they written in italics?
    (ii) What do the first two parts of the name denote?
    (iii) What is the meaning of Linn written at the end of the name?

IV. CASE STUDY BASED QUESTIONS (4M):

16. A group of botanists from different countries convened to discuss the classification of tropical plants. During a discussion about a specific mango variety, a botanist from India referred to it by its local name, "Aam." A colleague from Mexico used the name "Mango," while another from Thailand used "Mamuang." The conversation quickly became confusing due to these regional names.

To resolve the issue and ensure a clear, shared understanding, they turned to the universally accepted system of nomenclature. They consulted the International Code for Botanical Nomenclature (ICBN) to standardize the plant's name. They agreed that the scientific name, *Mangifera indica*, should be used to refer to this specific organism. This name is composed of two parts: the generic name, *Mangifera*, and the specific epithet, *indica*, following the rules of binomial nomenclature established by Carolus Linnaeus. By adopting this standardized scientific name, the botanists could communicate unambiguously, regardless of their native language or location. This case highlights the critical importance of a standardized naming system for accurate and consistent scientific communication.

A. What is binomial nomenclature?
B. What do ICBN and ICZN stand for?
C. Explain the significance of using the scientific name *Mangifera indica* instead of local names like "Aam" or "Mamuang" in scientific discussions.
D. What are the universal rules of nomenclature?

V. LONG ANSWER TYPE QUESTIONS (5M)

17. Define and understand the following terms:
    (i) Phylum (ii) Class (iii) Family (iv) Order (v) Genus
18. Illustrate the taxonomical hierarchy with suitable examples of a plant and an animal.

<table>
<tr><th>S.NO</th><th>ANSWERS</th></tr>
<tr><td>1.</td><td>C. Generic name and specific epithet</td></tr>
<tr><td>2.</td><td>D. Panthera leo</td></tr>
<tr><td>3.</td><td>D Kingdom-phylum-class-order</td></tr>
<tr><td>4.</td><td>A. Carolus Linnaeus</td></tr>
<tr><td>5.</td><td>C. Unit of Classification</td></tr>
<tr><td>6.</td><td>i) Both A and R are true butR is the correct explanation of the assertion.</td></tr>
<tr><td>7.</td><td>iii) A is true but R is false.</td></tr>
<tr><td>8.</td><td>ii) Both A and R are true but R is not the correct explanation of the assertion.</td></tr>
<tr><td>II</td><td>VERY SHORT ANSWER TYPE QUESTIONS(2M)</td></tr>
<tr><td>9.</td><td>It helps in the identification of any species, helps in understanding biodiversity and evolutionary path, It helps in the systematic study of any organism.</td></tr>
<tr><td>10.</td><td>i)Consciousness
ii)A living organism can grow.
iii)All living organisms can reproduce.
iv)All living organisms show metabolism.</td></tr>
<tr><td>11.</td><td>A taxon (plural: taxa) is a unit of classification in the biological system, representing a group of organisms at any hierarchical levelExamples of taxa at different hierarchical levels:
Kingdom: The taxon for all animals is Animalia.
Phylum: The taxon for all animals with a backbone is Chordata.
Genus: The taxon for the genus of lions, tigers, and leopards is Panthera.
Species: The taxon for modern humans is Homo sapiens.</td></tr>
<tr><td>12.</td><td>Species refers to a group of organisms with similar characteristics. In higher plants and animals, reproductive isolation helps define species, while in bacteria, genetic information is used to classify species due to the inability to use reproduction as a criterion.</td></tr>
<tr><td>III</td><td>SHORT ANSWER TYPE QUESTIONS (3M)</td></tr>
<tr><td>13.</td><td>
<table>
<tr><th>Feature</th><th>Taxonomy</th><th>Systematics</th></tr>
<tr><td>Scope</td><td>The branch of science that deals with the identification, nomenclature, and classification of organisms.</td><td>A broader field that includes taxonomy and also studies the evolutionary relationships (phylogeny) among organisms.</td></tr>
<tr><td>Focus</td><td>Primarily focused on the principles and rules of classification.</td><td>Concerned with the diversity of organisms and all their comparative and evolutionary relationships.</td></tr>
<tr><td>Basis</td><td>Based on the characterization, identification, classification, and naming of organisms.</td><td>Takes into account a broader range of evidence, such as morphology, ecology, biochemistry, and genetics, to establish evolutionary links.</td></tr>
</table>
</td></tr>
<tr><td>14.</td><td>Expanding knowledge: Scientific knowledge and understanding of organisms, their internal and external structures, and their relationships are constantly evolving.
Advancements in technology: New techniques in molecular biology, biochemistry, and</td></tr>
</table>

<table>
<tr><td></td><td>genetics provide deeper insights into the relationships between different organisms, leading to revisions in classification.
Understanding of relationships: Early classification systems were based mainly on morphological features. Modern classification, known as biosystematics, focuses on evolutionary and genetic relationships.
New discoveries: New species of organisms are still being discovered, and their features necessitate adjustments to the existing classification systems to accommodate them.</td></tr>
<tr><td>15.</td><td>i) Mustard, Biological names are generally in Latin and written in italics.
ii) The first part denoting the genus starts with a capital letter while the second part is the specific epithet starts with a small letter.
iii) Mangifera indica Linn. It indicates that this species was first described by Linnaeus.</td></tr>
<tr><td>IV</td><td>CASE STUDY BASED QUESTIONS (4M)</td></tr>
<tr><td>16.A.</td><td>Binomial nomenclature is the internationally accepted system for naming species, giving every organism a unique, two-part scientific name.</td></tr>
<tr><td>B.</td><td>International Code for Botanical Nomenclature (ICBN), International Code of Zoological Nomenclature (ICZN).</td></tr>
<tr><td>C.</td><td>Using a standardized scientific name like Mangifera indica ensures that a particular organism is known by the same name all over the world. This avoids the confusion that would arise from using local names, which can vary from place to place, and facilitates unambiguous communication among scientists globally.</td></tr>
<tr><td>D.</td><td>1. Biological names are generally in Latin and written in italics. They are Latinised or derived from Latin irrespective of their origin.
2. The first word in a biological name represents the genus while the second component denotes the specific epithet.
3. Both the words in a biological name, when handwritten, are separately underlined, or printed in italics to indicate their Latin origin.
4. The first word denoting the genus starts with a capital letter while the specific epithet starts with a small letter. It can be illustrated with the example of Mangifera indica.</td></tr>
<tr><td>V</td><td>LONG ANSWER TYPE QUESTIONS (5M)</td></tr>
<tr><td>17.</td><td>(i) Phylum: A taxonomical rank below Kingdom and above Class. It includes organisms sharing common characteristics.
(ii) Class: A group of orders with similar characteristics, classified below Phylum and above Order.
(iii) Family: A category below Order and above Genus, grouping closely related genera.
(iv) Order: A group of families with some shared characteristics.
(v) Genus: A group of related species with more similarities than those within different genera.</td></tr>
<tr><td>18.</td><td>A taxonomical hierarchy is the system of classifying organisms into a graded series of ranks, from the broadest (Kingdom) to the most specific (Species). This system reflects the evolutionary relationships and shared characteristics of organisms.
Here is an illustrated example with a plant and an animal:
<table>
<tr><td>Taxonomic Category</td><td>Example (Plant: Mango)</td><td>Example (Animal: Human)</td></tr>
<tr><td>Kingdom</td><td>Plantae</td><td>Animalia</td></tr>
<tr><td>Phylum/Division</td><td>Angiospermae</td><td>Chordata</td></tr>
<tr><td>Class</td><td>Dicotyledonae</td><td>Mammalia</td></tr>
<tr><td>Order</td><td>Sapindales</td><td>Primata</td></tr>
</table></td></tr>
</table>

Family	Anacardiaceae	Hominidae	
Genus	*Mangifera*	*Homo*	
Species	*indica*	*sapiens*	

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Prepared by: *Ms Sreeja Aravindakshan*	*Checked by:* *HOD Science*