CHAPTER 1

The Living World

What is living?

1. Which one of the following aspects is an exclusive characteristic of living things? *(2011 Mains)*

a. Perception of events happening in the environment and their memory

b. Increase in mass by accumulation of material both on surface as well as internally

c. Isolated metabolic reactions occur *in vitro*

d. Increase in mass from inside only

2. A living organism can be unexceptionally differentiated from a non living thing on the basis of its ability for: *(2007)*

a. Reproduction

b. Growth and movement

c. Responsiveness to touch

d. Interaction with environment and progressive evolution

3. Biological organisation begins at: *(2007)*

a. Cellular level

b. Atomic level

c. Organismic level

d. Submicroscopic molecular level.

Diversity in The Living World

4. Select the correctly written scientific name of Mango which was first described by Carolus Linnaeus. *(2019)*

a. *Mangifera indica* Car. Linn.

b. *Mangifera indica* Linn.

c. *Mangifera indica*

d. Mangifera Indica

5. Study the four statements (A–D) given below and select the two correct ones out of them: *(2016 - II)*

A. Definition of biological species was given by Ernst Mayr.

B. Photoperiod does not affect reproduction in plants.

C. Binomial nomenclature system was given by R.H. Whittaker.

D. In unicellular organisms, reproduction is synonymous with growth.

The two correct statements are

a. A and D

b. A and B

c. B and C

d. C and D

6. Biodiversity of a geographical region represents: *(2011 Mains)*

a. Genetic diversity present in the dominant species of the region

b. Species endemic to the region

c. Endangered species found in the region

d. The diversity in the organisms living in the region

7. ICBN is: *(2007)*

a. International Code for Biological Naming

b. International Code for Botanical Nomenclature

c. International Class for Biological Nomenclature

d. International Classification for Biological Nomenclature

8. Biosystematics aims at: *(2003)*

a. The classification of organisms based on broad morphological characters

b. Delimiting various taxa of organisms and establishing their relationships

c. The classification of organisms based on their evolutionary history and establishing their phylogeny on the totality of various parameters from all fields of studies

d. Identification and arrangement of organisms on the basis of their cytological characteristics

9. Linnaeus is credited with: *(1993)*

a. Binomial nomenclature

b. Theory of biogenesis

c. Discovery of microscope

d. Discovery of blood circulation

10. Linnaeus evolved a system of nomenclature called: *(1990)*

a. Mononomial

b. Vernacular

c. Binomial

d. Polynomial

11. The term "New Systematics" was introduced by: **[OS]** *(1988)*

a. Linnaeus

b. Bentham and Hooker

c. Julian Huxley

d. A. P. de Candolle

12. Static concept of species was put forward by: **[OS]** *(1988)*

a. de Candolle
b. Linnaeus
c. Theophrastus
d. Darwin

Taxonomic Categories

13. In the taxonomic categories which hierarchial arrangement in ascending order is correct in case of animals? *(2022)*

a. Kingdom, Order, Phylum, Class, Family, Genus, Species
b. Kingdom, Phylum, Class, Order, Family, Genus, Species
c. Kingdom, Class, Phylum, Family, Order, Genus, Species
d. Kingdom, Order, Class, Phylum, Family, Genus, Species

14. Which one of the following belongs to the family Muscidae? *(2021)*

a. Grasshopper
b. Cockroach
c. Housefly
d. Fire fly

15. Match Column–I with Column–II for housefly classification and select the correct option using the codes given below: *(2016 - II)*

	Column - I		Column - II
A.	Family	(i)	Diptera
B.	Order	(ii)	Arthropoda
C.	Class	(iii)	Muscidae
D.	Phylum	(iv)	Insecta

Codes:

a. A-iv B-iii C-ii D-i
b. A-iv B-ii C-i D-iii
c. A-iii B-i C-iv D-ii
d. A-iii B-ii C-iv D-i

16. Which of the following organisms is scientifically correctly named, correctly printed according to International Rules of Nomenclature and correctly described? *(2012 Mains)*

a. *Musca domestica*-The common house lizard, a reptile
b. *Plasmodium falciparum*-A protozoan pathogen causing the most serious type of malaria
c. *Felis tigris*-The Indian tiger, well protected in Gir Forests.
d. *E. coli*-Full name *Entamoeba coli*, a commonly occurring bacterium in human intestine.

17. Which one of the following animals is correctly matched with its particular named taxonomic category? *(2011 Pre)*

a. Housefly - *Musca*, an order
b. Tiger - *Tigris*, the species
c. Cuttlefish - Mollusca, a class
d. Humans - Primata, the family

18. Species are considered as: **[OS]** *(2003)*

a. Real basic units of classification
b. The lowest units of classification
c. Artificial concept of human mind
d. Real units of classification devised by taxonomists

19. Which of the following is less general in characters as compared to genus? *(2001)*

a. Species
b. Division
c. Class
d. Family

20. Practical purpose of taxonomy or classification: *(1999)*

a. Facilitate the identification of unknown species
b. Explain the origin of organisms
c. To know the evolutionary history
d. Identification of medicinal plants

21. Which arrangement is in correct ascending order? *(1999)*

a. Species < Genus < Order < Family
b. Genus < Species < Family < Order
c. Order < Family < Genus < Species
d. Species < Genus < Family < Order

22. 'Taxon' is the unit of a group of: *(1996)*

a. Order
b. Taxonomy
c. Species
d. Genus

23. Gorilla, chimpanzee, monkeys and human belong to the same: *(1993)*

a. Species
b. Genus
c. Family
d. Order

24. Sequence of taxonomic categories is: *(1992)*

a. Class-phylum-tribe-order-family-genus-species
b. Division-class-family-tribe-order-genus-species
c. Division-class-order-family-tribe-genus-species
d. Phylum-order-class-tribe-family-genus-species

25. The term phylum was given by: **[OS]** *(1992)*

a. Cuvier
b. Haeckel
c. Theophrastus
d. Linnaeus

26. A group of plants or animals with similar traits of any rank is: *(1992, 91)*

a. Species
b. Genus
c. Order
d. Taxon

27. A taxon is: *(1992)*

a. A group of related familes
b. A group of related species
c. A type of living organisms
d. A taxonomic group of any ranking

28. Basic unit or smallest taxon of taxonomy/classification is *(1990)*

a. Species
b. Kingdom
c. Family
d. Variety

Taxonomical Aids

29. Match the items given in Column I with those in Column II and select the **correct option** given below *(2018)*

	Column-I		Column-II
A.	Herbarium	(i)	It is a place having a collection of preserved plants and animals.
B.	Key	(ii)	A list that enumerates methodically all the species found in an area with brief description aiding identification
C.	Museum	(iii)	Is a place where dried and pressed plant specimens mounted on sheets are kept.
D.	Catalogue	(iv)	A booklet containing a list of characters and their alternates which are helpful in identification of various taxa.

a. A-i B-iv C-iii D-ii
b. A-iii B-ii C-i D-iv
c. A-ii B-iv C-iii D-i
d. A-iii B-iv C-i D-ii

30. The label of a herbarium sheet does not carry information on: *(2016 - II)*

a. Local names
b. Height of the plant
c. Date of collection
d. Name of collector

31. Which one of the following is not a correct statement? *(2013)*

a. Key is a taxonomic aid for identification of specimens.
b. Herbarium houses dried, pressed and preserved plant specimens.
c. Botanical gardens have collection of living plants for reference.
d. A museum has collection of photographs of plants and animals.

Answer Key

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
a	c	d	b	a	d	b	c	a	c	c	b	None	c	c	b	b

18	19	20	21	22	23	24	25	26	27	28	29	30	31
a	a	a	d	b	d	c	b	d	d	a	d	b	d

Explanations

1. (a) The most obvious and technically complicated feature of all living organisms is the ability to sense their surroundings or environment and respond to these environmental stimuli which could be physical, chemical or biological.

2. (c) The most complicated feature of all living organisms is the ability to sense their surroundings or environment and respond to these environmental stimuli which could be physical, chemical or biological.

3. (d) Biological organisation starts with submicroscopic molecular level.

4. (b) According to rules of binomial nomenclature, correctly written scientific name of mango is *Mangifera indica* Linn.

5. (a) Photoperiod affects reproduction in seasonal breeders, both in plants and animals.

Binomial nomenclature system was given by Carolus Linnaeus and is being practiced by biologists all over the world.

6. (d) Biodiversity refers to all of the species (including plants, bacteria, animals and humans) that is present in one region or ecosystem.

7. (b) ICBN: International code for Botanical Nomenclature

8. (c) Biosystematics aims at the classification of organisms based on their evolutionary history and establishing their phylogeny on the totality of various parameters from all fields of studies.

9. (a) Binomial nomenclature was given by Carolus Linnaeus.

10. (c) Binomial nomenclature has two components - generic name & specific epithet.

11. (c) Julian Huxley introduced the term 'New Systematics'.

12. (b) According to static concept of species, species are unchangeable over the course of time & evolution. It was stated by Linnaeus.

13. (None) The taxonomic hierarchy was introduced by Linnaeus. It is also known as a Linnaean hierarchy. It is used to classify organisms into different categories. It includes the sequence of categories in a descending order from kingdom to species and vice versa.

The descending order of the taxonomic hierarchy is - Kingdom, Phylum (Division), Class, Order, Family, Genus, and Species.

14. (c) House fly belongs to family Muscidae.

15. (c) Family - Muscidae

Order - Diptera

Class - Insecta

Phylum - Arthropoda

16. (b) In binomial nomenclature, the scientific name consists of two words. The first word represents genus and starts with a capital word. The second word represents specific epithet and starts with a small letter. *Musca domestica* is a housefly. *Panthera tigris* is the Indian tiger. The full name of *E. coli* is *Escherichia coli*. *Plasmodium*, a tiny protozoan, is responsible for malarial disease.

17. (b) Human : *Homo* (Genus), *sapiens* (species), Hominidae (family)

Housefly : *Musca* (genus), *domestica* (species)

Tiger : *Panthera* (genus), *tigris* (species)

Cuttlefish : Mollusca (phylum)

18. (a) Species is a group of individual organisms with fundamental similarities, so they are considered as real basic unit of classification.

19. (a) Genus has more characters in common in comparison to species of other genera, Thus, genera are aggregates of closely related species and species are less general in characters than genus.

20. (a) Through classification, unknown species are grouped into convenient categories based on observable characters and thus easily identified.

21. (d) Hierarchical arrangement of taxonomic categories in ascending order:

Species → Genus → Family → Order → Class → Phylum / Division → Kingdom.

22. (b) Taxonomy : Branch of science concerned with grouping & naming biological organisms (or classification)

Taxon : Unit of classification.

23. (d) Gorilla, chimpanzee, monkeys and humans belong to the same order, i.e., primates.

24. (c) Sequence; Division - a Class - Order - Family - Tribe - Genus - Species, is correct.

25. (b) Ernst Haeckel coined the term phylum in 1866.

26. (d) Taxon is a unit of classification represents any rank, e.g., at basic rank taxon is called species and then genus and so on.

27. (d) Taxon is a classification group of any rank.

28. (a) Species is the basic unit of classification.

29. (d) Dried plant specimens are pressed and preserved on sheets in herbarium. Key is a record of characters-based identification of specimen and in museum, all kind of plants and animals are preserved for exhibition purpose. Catalogue helps in identification purpose.

30. (b) The herbarium sheets carry a label providing information about date and place of collection, English, local and botanical names, family, collector's name, etc

31. (d) A museum has a collection of dead remains of plants and animals in preserved form.

Specimens are preserved in the containers or jars in preservative solutions. Plant and animal specimens may also be preserved as dry specimens. Insects are preserved in insect boxes after collecting, killing and pinning. Larger animals like birds and mammals are usually stuffed and preserved. Museums often have collections of skeletons of animals too.