1 UNIT 1: DIVERSITY IN LIVING WORLD

The Living World

1.1 Introduction

1. Biology is concerned with: **[PMT/NEET-1994]**
a. DNA **b.** Biomass
c. Living organisms **d.** Life as recorded for fossils

2. Living fossil is: **[PMT/NEET-1994]**
a. Latimeria **b.** Uromastix
c. Archaeopteryx **d.** All the above

3. The four elements that make up 99% of all elements found in a living system are: **[PMT/NEET-1994]**
a. *H, O, C, N* **b.** *C, H, O, S* **c.** *C, H, O, P* **d.** *C, N, O, P*

4. The living organisms can be unexceptionally distinguished from the non-living things on the basis of their ability for: **[PMT/NEET-2007]**
a. interaction with the environment and progressive evolution
b. reproduction
c. growth and movement **d.** responsiveness to touch

5. Biological organization starts with: **[PMT/NEET-2007]**
a. cellular level **b.** organismic level
c. atomic level
d. submicroscopic molecular level

6. Which one of the following aspects is an exclusive characteristic of living things? **[PMT/NEET-2011]**
a. Isolated metabolic reactions occur in *vitro*
b. Increase in mass from inside only
c. Perception of events happening in the environment and their memory.
d. Increase in mass by accumulation of material both on surface as well as internally.

1.2 Living Organisms and Diversity in the Living World

7. The term "New Systematics" was introduced by:
a. Bentham and Hooker **[PMT/NEET-1988]**
b. Linnaeus
c. Julian Huxley **d.** A. P. de Candolle

8. Linnaeus evolved a system of nomenclature called: **[PMT/NEET-1990]**
a. monomial **b.** vernacular
c. binomial **d.** polynomial

9. Linnaeus is credited with: **[PMT/NEET-1990]**
a. binomial nomenclature **b.** theory of biogenesis
c. discovery of microscope
d. discovery of blood circulation

10. The diversity in the type of beaks of finches adapted of different feeding habits on the Galápagos Islands as observed by Darwin, provides evidence for: **[PMT/NEET-1998]**
a. Origin of species by natural selection
b. Intraspecific variations
c. Intraspecific competition **d.** Interspecific competition

11. The book '*Genera Plantarum*' was written by: **[PMT/NEET-1999]**
a. Engler and Prantl **b.** Benthan and Hooker
c. Bessey **d.** Hutchinson

12. Biosystematics aims at: **[PMT/NEET-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.

13. ICBN stands for: **[PMT/NEET-2007]**
a. International Code of Botanical Nomenclature
b. International Congress of Biological Names
c. Indian Code of Botanical Nomenclature
d. Indian Congress of Biological Names.

14. Nomenclature is governed by certain universal rules. Which one of the following is contrary to the rules of nomenclature? **[PMT/NEET-2016]**
a. The names are written in Latin and are italicised.
b. When written by hand the names are to be underlined.
c. Biological names can be written in any language.
d. The first word in a biological name represents the genus name and the second is specific epithet.

15. Which of the following is against the rules of ICBN? **[PMT/NEET-2019]**
a. Hand written scientific names should be underlined.
b. Every species should have a generic name and a specific epithet.
c. Scientific names are in Latin and should be italicized.
d. Generic and specific names should be written starting with small letters.

16. Select the correctly written scientific name of Mango which was first described by Carolus Linnaeus. **[PMT/NEET-2019]**
a. *Mangifera indica* **b.** *Mangifera indica Car. Linn.*
c. *Mangifera indica Linn.* **d.** *Mangifera indica Car.*

1.3 Taxonomic Categories

17. Static concept of species was put forward by: **[PMT/NEET-1988]**
a. de Candolle **b.** Linnaeus **c.** Theophrastus **d.** Darwin

18. In the scientific name of *Mangifera Indica* L. **[PMT/NEET-1988]**
a. Letter L. signifies Latin language
b. The name is reverse with *Indica* preceding *mangifera*
c. Letter L. signifies taxonomist Linnaeus
d. Letter L. is superfluous

19. The basic unit of classification /taxonomy is:
a. Genus **b.** Species **[PMT/NEET-1988]**
c. Family **d.** Order

20. The science of naming the plant is known as:
a. Classification **[PMT/NEET-1989]**
b. Identification
c. Nomenclature **d.** Taxonomy

21. Basic unit of smallest taxon of taxonomy classification is: **[PMT/NEET-1990]**
a. species **b.** kingdom **c.** family **d.** variety

22. A taxon is: **[PMT/NEET-1990]**
a. a group of related families **b.** a group of related species
c. a type of living organisms
d. a taxonomic group of any ranking

23. In which of the following taxonomy, is equal weightage given to each of thousands of characters that a taxon exhibits: **[PMT/NEET-1991]**
a. Classical taxonomy **b.** Chemotaxonomy
c. Numerical taxonomy **d.** Alpha taxonomy

24. Branch connected with nomenclature, identification and classification is: **[PMT/NEET-1991]**
a. Ecology **b.** Taxonomy
c. Morphology **d.** Physiology

25. A group of plants or animals with similar traits of any rank is: **[PMT/NEET-1992]**
a. species **b.** genus **c.** order **d.** taxon

26. The term phylum was given by: **[PMT/NEET-1992]**
a. Cuvier **b.** Haeckel
c. Theophrastus **d.** Linnaeus

27. Sequence of taxonomic categories is: **[PMT/NEET-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

28. A group of plants with similar traits of any rank is:
a. Species **b.** Genus **[PMT/NEET-1994]**
c. Order **d.** Taxon

29. Founder of ''*Taxonomy''* is: **[PMT/NEET-1994]**
a. Aristotle **b.** John Ray **c.** Haeckel **d.** Linnaeus

30. 'Taxon' is the unit of a group of: **[PMT/NEET-1996]**
a. order **b.** taxonomy **c.** species **d.** genes

31. The meaning of taxon in the classification of animals:
a. A group of same species **[PMT/NEET-1996]**
b. A group of animals on the basis of number of chromosomes
c. A group of same type of animals
d. A group of similar genera

32. Who amongst the following is regarded as the "*Father of Taxonomy*" : **[PMT/NEET-1998]**
a. Takhtajan **b.** Linnaeus
c. Bentham and Hooker **d.** Theophrastus

33. Phylogeny and inter-relationship found between taxa on the basis of number, type and arrangement of chromosomes is: **[PMT/NEET-1998]**
a. Cytotaxonomy **b.** Chromotaxonomy
c. Karyotaxonomy **d.** Chemotaxonomy

34. Which of the following taxonomical ranks contain organisms least similar to one another? **[PMT/NEET-1999]**
a. Class **b.** Genus **c.** Family **d.** Species

35. Sequence of taxonomic categories is: **[PMT/NEET-2001]**
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

36. Which of the following is less general in characters as compared to genus? **[PMT/NEET-2001]**
a. Species **b.** Division **c.** Class **d.** Family

37. Species are considered as: **[PMT/NEET-2003]**
a. real basic units of classification
b. the lowest units of classification
c. artificial concept of human mind which cannot be defined in absolute terms
d. real units of classification devise by taxonomists

38. Which one of the following animals is correctly matched with its particular taxonomic category? **[PMT/NEET-2011]**
a. Tiger – *tigris*, species **b.** Cuttlefish – Mollusca, class
c. Human – primate, family **d.** Housefly – *musca*, order

39. Which one of the following organisms is scientifically correctly named, correctly printed according to the International Rules of Nomenclature and correctly described? **[PMT/NEET-2012]**
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.

40. The common characteristics between tomato and potato will be maximum at the level of their: **[PMT/NEET-2013]**
a. family **b.** order **c.** division **d.** genus

41. Study the four statements (A-D) given below and select the two correct ones of them. **[PMT/NEET-2016]**
(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.
a. B and C **b.** C and D
c. A and D **d.** A and B

42. Match column I with column II for housefly classification and select the correct option using the codes given below. **[PMT/NEET-2016]**

Column I	Column II
(A) Family	**1.** Diptera
(B) Order	**2.** Arthropoda
(C) Class	**3.** Muscidae
(D) Phylum	**4.** Insecta

a. A→3, B→1, C→4, D→2 **b.** A→3, B→2, C→4, D→1
c. A→4, B→3, C→2, D→1 **d.** A→4, B→2, C→1, D→3

43. Which one of the following belongs to the Family Muscidae? **[PMT/NEET-2021]**
a. House fly **b.** Fire fly
c. Grass-hopper **d.** Cockroach

44. In the taxonomic categories which hierarchical arrangement in ascending order is correct in case of animals? **[PMT/NEET-2022]**
a. Kingdom, Phylum, Class, Order, Family, Genus, Species
b. Kingdom, Class, Phylum, Family, Order, Genus, Species
c. Kingdom, Order, Class, Phylum, Family, Genus, Species
d. Species, Genus, Family, Order, Class, Phylum or Division, Kingdom

1.4 Taxonomical Aids

45. One of the most important functions of botanical gardens is that: **[PMT/NEET-2005]**
a. they provide a beautiful area for recreation
b. one can observe tropical plants there
c. they allow *ex situ* conservation of germplasm
d. they provide the natural habitat for wild life

46. Which one of the following is not a correct statement?
a. A museum has collection of photographs of plants and animals. **[PMT/NEET-2013]**
b. Key is taxonomic aid for identification of specimens.
c. Herbarium houses dried, pressed and preserved plant specimens.
d. Botanical gardens have collection of living plants for reference.

47. The label of a herbarium sheet does not carry information on: **[PMT/NEET-2016]**
a. date of collection **b.** name of collector
c. local names **d.** height of the plant

48. Match the items given in column I with those in column II and select the correct option given below. **[PMT/NEET-2018]**

Column I	Column II
(A) Herbarium	**1.** It is a place having a collection of preservation of both animals and plants for future study.
(B) Key	**2**. A list of all species that found in an area with a brief description aiding identification.
(C) Museum	**3.** Is a place where dried and pressed plant specimens mounted on sheets are kept.
(D) Catalogue	**4.** A booklet containing a list of characters and their alternates which are helpful in identification of various taxa.

a. A→1, B→4, C→3, D→2 **b.** A→3, B→2, C→1, D→4
c. A→2, B→4, C→3, D→1 **d.** A→3, B→4, C→1, D→2

1.5 Miscellaneous

49. **Assertion (A):** We have lost all the direct evidences of origin of lie.
Reason (R): The person responsible to protect the evidences was not skilled. **[PMT/NEET-1998]**
a. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
b. If both the assertion and reason are true but the reason is not a correct explanation of the assertion
c. If the assertion is true but the reason is false
d. If both the assertion and reason are false

50. **Assertion (A):** *Ginkgo biloba* is a living fossil.
Reason (R): Organism which have persisted and remain unchanged for the past several million years while their relative disappeared. **[PMT/NEET-2000]**
a. If both the assertion and the reason are true and the reason is a correct explanation of the assertion
b. If both the assertion and reason are true but the reason is not a correct explanation of the assertion
c. If the assertion is true but the reason is false
d. If both the assertion and reason are false

51. Match Column I with Column II. **[NEET-2024]**

Column I	Column II
(A) Robert May	**1.** Species-area relationship
(B) Alexander von Humboldt	**2**. Long term ecosystem experiment using outdoor plots
(C) Paul Ehrlich	**3.**Global species diversity at about 7 million
(D) David Tilman	**4.** Rivet popper hypothesis

Choose the correct answer from the options given below:
a. A→2, B→3, C→1, D→4 **b.** A→3, B→1, C→4, D→2
c. A→1, B→3, C→2, D→4 **d.** A→3, B→4, C→2, D→1

52. Which one of the following statements refers to Reductionist Biology? **[NEET-2025]**
a. Behavioural approach to study and understand living organisms.
b. Physico-chemical approach to study and understand living organisms.
c. Physiological approach to study and understand living organisms.
d. Chemical approach to study and understand living organisms.

ANSWERS

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
c	a	a	d	d	c	c	c	a	a
11.	**12.**	**13.**	**14.**	**15.**	**16.**	**17.**	**18.**	**19.**	**20.**
b	c	c	c	d	c	b	c	b	c
21.	**22.**	**23.**	**24.**	**25.**	**26.**	**27.**	**28.**	**29.**	**30.**
a	d	c	b	d	b	c	d	a	b
31.	**32.**	**33.**	**34.**	**35.**	**36.**	**37.**	**38.**	**39.**	**40.**
c	b	c	a	c	a	a	a	b	a
41.	**42.**	**43.**	**44.**	**45.**	**46.**	**47.**	**48.**	**49.**	**50.**
c	a	a	d	c	a	d	d	c	A
51.	**52.**								
b	b								

SOLUTIONS

1. **(c)** Living organisms **2. (a)** Latimeria
3. **(a)** *H, O, C, N* **4. (d)** Responsiveness to touch.
5. **(d)** Molecular assemblies are large organised sets of molecular units that make up parts of organelles. For example, one common macromolecular assembly is the microtubule which is important in forming structure in the cell related to maintaining the cell structure or related to cell movement.
6. **(c)** Perception of events happening in the environment and their memory.
7. **(c)** The term "New Systematics" was given by Julian Huxley (1940). This classification takes into account the cytological, morphological, genetical, anatomical, palynological and physiological characters.
8. **(c)** Linnaeus evolved a system of nomenclature called binomial.
9. **(a)** Binomial nomenclature was first given by C. Linnaeus (1735) in his book "*Systema Naturae*" and later in *"Species Plantarum"* (1753). He used two Latin words for any organism, the first being generic name and he second is specific name.
10. **(a)** Origin of species by natural selection.
11. **(b)** Bentham and Hooker in their monumental work *Genera Plantarum* (1862-1883) have provided elaborate keys for the easy identification of 202 natural orders and genera.
12. **(c)** Biosystematics is the sturdy of identification, nomenclature, classifications and relationships amongst living beings.
13. **(c)** The International Code of Botanical Nomenclature (ICBN) is a set of rules and recommendations dealing with the formal botanical names given to plant.
14. **(c)** Biological names are derived either from Latin language or are Latinised. This is because Latin language

is a dead language and therefore it will not change in from or spellings with the passage of time.

15. **(d)** According to International Code of Botanical Nomenclature (ICBN) the first word denoting the genus starts with a capital letter while the specific epithet starts with a small letter.
16. **(c)** As binomial nomenclature, *Mangifera indica* Linn indicates that species was first described by Linnaeus.
17. **(b)** Static concept of species was put forward by Linnaeus**.**
18. **(c)** Letter L. signifies taxonomist, Linnaeus.
19. **(b)** Species occupies a key position in classification. It is a basic unit of classification/taxonomy.
20. **(c)** Nomenclature (*Nomen* = name; *clature* = to call) is giving distinct scientific names to various structures, including living organisms.
21. **(a)** Basic unit or smallest taxon of taxonomy/ classification is species. Species is group of individuals that resemble one another in all essential morphological and reproductive characters so that they are able to interbreed freely and produce fertile offspring.
22. **(d)** A taxonomic group of any ranking.
23. **(c)** Numerical taxonomy (Phenetics) is also called adansonian taxonomy. In numerical taxonomy as many characters as possible are employed for evaluating degree of similarity and differences. All characteristics used in analysis are given equal weightages and importance.
24. **(b)** Taxonomy is a branch of biology which deals with the study of principles and procedures of classification, nomenclature and identification, coined by De Candolle.
25. **(d)** A taxon (plural taxa) or taxonomic units, it a name designating an organism or group of organisms. A taxon is assigned a rank and can be placed at a particular level in systematic hierarchy reflecting evolutionary relationships.
26. **(b)** The term phylum was given by Haeckel.
27. **(c)** Division-class-order-family-tribe-genus-species.
28. **(d)** A group of plants with similar traits of any rank is Taxon.
29. **(a)** Aristotle (384 – 322 B.C.) the 'Father of Zoology'. He is also considered as the 'Founder of taxonomy'.
30. **(b)** Taxon refers to all the categories in the taxonomic hierarchy. It may be a kingdom, class, order, family, genus or species.
31. **(c)** The meaning of taxon in the classification of animals is a group of same type of animals.
32. **(b)** Linnaeus is Father of Taxonomy.
33. **(c)** Karyotaxonomy.
34. **(a)** The closely related orders are grouped into a class (named as a taxonomical rank in classification) which have least similar organisms to another.
35. **(c)** Division – class – order – family – tribe – genus – species.
36. **(a)** A taxonomic hierarchy is the sequence of arrangement of taxonomic categories in seven obligate categories – kingdom, division, class, order, family, genus and species. Species is the lowest category while kingdom is the highest category. The number of common characters is maximum in case of organisms placed in the lowest category. Number of common characters decreases with the rise in category. Species are the smallest group of individuals which can be recognised by ordinary methods as groups and which are consistently and persistently different from other groups because their characters are less general.
37. **(a)** Species is a natural population or group of natural populations of individuals which are genetically distinct and reproductively isolated with similar essential morphological traits. Species is also genetically closed system because its members do not interbreed with members of others species.
38. **(a)** Tiger – *tigris*, species.
39. **(b)** *Plasmodium falciparum* is a protozoan parasite, one of the species of *Plasmodium* that causes malaria in humans. Being digenetic, its life cycle is complete in two hosts – man and mosquito.
40. **(a)** Potato (*Solanum tuberosum*) and tomato (*Lycopersicum esculentum*) both belong to Family Solanaceae, is called as the "potato family". Many plants belonging to this family are sources of vegetables, fruits, etc.
41. **(c)** Photoperiod affects flowering and reproduction in plants. Binomial nomenclature system was given by Carolus Linnaeus.
42. **(a)** A → 3, B → 1, C → 4, D → 2
43. **(a)** Housefly (*Musca domestica*) belongs to Family Muscidae.
44. **(d)** The correct sequence in ascending order is species, genus, family, order, class, phylum or division, kingdom.
45. **(c)** *Ex situ* conservation means "off-site conservation". It is the process of protecting endangered species of plants and animals by removing it from an unsafe or threatened habitat and placing it or part of it under the care of humans.
46. **(a)** Museums have collections of preserved plant and animal specimens for study and reference. Specimens are preserved in the containers or jars having preservative solutions.
47. **(d)** A herbarium is collection of plants, which have been dried, pressed, mounted on herbarium sheets, identified and classified according to some approved system of classification.
48. **(d)** A → 3, B → 4, C → 1, D → 2
49. **(c)** During the profound changes that have been taking place since the remote past, we have lost the direct evidences of origin of life. Due to these change, the scientists, though skilled were not able to protect the evidence.
50. **(a)** *Ginkgo biloba* is a living fossil because it has not changed for last several millions of years, while its relatives have disappeared.
51. **(b)** Robert May places the global species diversity at about 7 million.
    Alexander von Humboldt gave species-area relationship.
    Paul Ehrlich used an analogy "Rivet popper hypothesis" to explain the role of species in the ecosystem. David Tilman performed long term ecosystem experiments using outdoor plots.
52. **(b)** Physico-chemical approach to study and understand living organisms. Reductionist biology → studies life by breaking it down to chemical and physical principles.