

Tools for study of Taxonomy?

UNIT -I

Diversity in Living World

What is living? Biodiversity, Need for classification, Taxonomy & Systematics; Concept of species and taxonomical hierarchy; Binomial nomenclature; Five kingdom classification: salient features and classification of Monera; Protista and Fungi into major groups: Lichens Viruses and Viroids. salient features and classification of plants into major groups-Algae, Bryo phytes, Pteridophytes, Gymnosperms (three to five salient and distinguishing features and at least two examples of each category).

1. Organism (Microorganism, plant and animals) who possesses life is living.

2. Life is a complex organization expressing itself through chemical reactions and exhibit characteristics of living organisms.

3. Characteristics of Living Organisms : Growth, reproduction, metabolism, cellular organisation, consciousness (ability to sense environment), selfreplicating and self regulation.

4. Biodiversity : Term used to refer to the variety of microorganisms, plant and animals on earth.

5. Need for classification : To organize the vast number of microorganisms, plants and animals into categories that could be named, remembered, studied and understood.

6. Three Domains of Life : Proposed by Carl Woese in 1990 who also proposed the six kingdom classification for living organisms. The three Domains of life are Archaea, Bacteria and Eukarya.

7. Taxonomy : Study of principles and procedures of identification, nomenclature and classification.

8. Systematics : It deals with classification of organisms based on their diversities and relationships among

them. Term was proposed by Carolus Linnaeus who wrote 'Systema Naturae'.

9. Concept of Species : All the members that can interbreed among themselves and can produce fertile offsprings are the members of same species. This is the biological concept of species proposed by Ernst Mayr.

10. Taxa : Each category (i.e., unit) of classification is called as a Taxon.

11. Taxonomic Hierarchy : Classification of Organisms in a definite sequence of taxon or category or rank in a descending order.

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

12. Binomial Nomenclature : Given by Carolus Linnaeus. Each scientific name has two components-Generic name + Specific epithet.

13. ICBN : International Code for Botanical Nomenclature (for giving scientific name to plants.)

14. Rule for Nomenclature : ▷ Latinised names are used.

▷ First word is genus, second word is species name.

▷ Printed in italics; if hand written then underlined separately.

▷ First word starts with capital letter while species name written in small letter.

▷ Scientific names of some organisms :

15. Man — Homo sapiens
Housefly — Musca domestica
Mango — Mangifera indica
Wheat — Triticum aestivum

16. Taxonomical Aids are the tools for study of taxonomy.

17. Museums in Educational Institutes (school and colleges) have collection of skeletons of animals, stuffed and preserved specimens of organisms for study and reference.

18. Zoological Parks (Places where wild animals are kept in protected environment under human care)



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Example :

National Zoological Park, Delhi.

19. Herbarium :

Store house of dried, pressed and preserved plant specimen on sheets, kept systematically according to a widely accepted system of classification, for future use.

20. Botanical Garden :

Collection of living plants for reference.

Example : Royal Botanical garden Kew (England), National Botanical Research Institute (Lucknow), Indian Botanical Garden Howrah.

21. Keys : Used for identification of plants and animals on the basis of similarities and dissimilarities.

Couplet : are the two alternate characteristic statement used in key to identify Organisation.

22. Each Statement of the key is called a Lead.

Flora (Index to plant species found in a particular area).

Manuals (Provide information for identification of name of species in an area.)

Monographs (Contain information on any one taxon.)

Add algae gymno Pteridophytes virus viroid lichen and 5 kingdom, box

and plant group box add
23. Algae: Occur in association with fungi (lichen) and animals (e.g., on sloth bear)

i) Isogamous - flagellated and similar in size (as in Ulothrix) or non-flagellated (non-motile) but similar in size (as in Spirogyra)

ii) Anisogamous – Eudorina

e.g., Volvox, Fucus

iv) Hydrocolloids (water holding substances)- e.g., algin (brown algae) carrageen (red algae)

Agar- obtained from Gelidium and Gracilaria are used to grow microbes and in preparations of ice-creams and jellies.

v) Chlorella a unicellular alga rich in proteins is used as food supplement even by space travellers.

vi) Chlorophyceae - Chlamydomonas, Volvox, Ulothrix, Spirogyra and Chara

vii) Phaeophyceae - Ectocarpus, Dicyota, Laminaria, Sargassum and Fucus

viii) Rhodophyceae - Polysiphonia, Pteryphyra, Gracilaria and Gelidium

24. BRYOPHYTES:

1. Liverworts – Marchantia

2. Mosses - Funaria, Polytrichum and Sphagnum

25. PTERIDOPHYTES:

• leaves in pteridophyta are small (microphylls) as in Selaginella or large (macro-

phylls) as in ferns.
strobili or cones (Selaginella, Equisetum)

• Psilopsida (Psilotum); Lycopoda (Selaginella, Lycopodium),

• Sphenopsida (Equisetum); Pteropsida (Dryopteris, Pteris, Adiantum)

26. GYMNOSPERMS :

• The giant redwood tree Sequoia is one of the tallest tree species

• Fungal association - mycorrhiza (Pinus)

• (Cycas) small specialized roots called coralloid roots

• Stems are unbranched (Cycas) or branched (Pinus, Cedrus)

27. ANGIOSPERMS:

• smallest Wolffia to tall trees of Eucalyptus (over 100 metres)

28. LIFE CYCLES :

• Haplontic life cycle - Spirogyra, Volvox, some species of Chlamydomonas

Diplontic life cycle - Fucus, Gymnosperms and Angiosperms

• Haplo diplontic - Bryophytes and Pteridophytes, Ectocarpus, Polysiphonia , kelps Morphology of Flowering Plants

29. TYPES OF ROOTS

1) Tap root- Carrot, Turnip, mustard

2) Fibrous root – Wheat

3) Adventitious root - Monstera, banyan tree, grass

30. Modifications of root

1) Prop roots- Banyan tree

2) Stilt roots- Sugarcane and maize

3) Pneumatophores – rhizophora

31. Modifications of stem

1) underground - Potato, Ginger, Turmeric, Zamain kand, Colocasia

2) Tendril- Cucumber, Pumpkin, Watermelon, Grapevine

3) Thorns - Citrus, Bougainvillea

4) Flat- opuntia

5) Cylindrical- euphorbia

6) Stolen - mint, jasmine

7) Offset - Pistia, Eichhornia (water hyacinth)

8) Sucker- Pineapple, Chrysanthemum, Banana

32. Types of Leaves

1) Pinnately - Neem

2) Palmately - Silk cotton

33. Modifications of Leaves

1) Spines - Cactus

2) Tendril - pea

3) storage - onion

4) Small and Short lived leaves, Petioles expand - Australian acacia

5) Insectivorous plant - Pitcher plant, venus fly trap

34. Phytotaxy

1) Alternate - Mustard, sun flower, china rose

2) Opposite - Calotropis, guava

3) Whorled - Alstonia

35. Types of symmetry in flower

1) Actionomorphic - Mustard, datura, chilli

2) Zygomatic - Pea, bean, gomphocarpus, cassia

3) Asymmetric Canna

36. Types of ovary

1) Hypogynous - Mustard, china rose, brinjal

2) Perigynous - Rose, plum, peach

3) Epigynous - Guava, cucumber, ray florets of sunflower

37. Types of Aestivation

1) Valvate - Calotropis

2) Twisted - China rose, Lady finger, cotton

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మార్చి 18 తరువాయి



సంచి అమల్కీ వచ్చింది
సి. ఈ. చ్చింది ప్రకారం కొన్సెప్టులు గుర్తుంది

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అమల్కీ అంధకార