G Botany by Dilip Kumar Sah

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Introduction to Botany

Pure branches of biology include the Following:-
- Morphology:- Forms & external Features - Anatomy:- Internal structure.
- Histology:- study of tissue - Cytology:- study of Form & str. of cell.
- Cell biology: Form, structure and function of cell.
- Botany: study of plant → phytology > Biology
- Zoology: study of animal →

* The term biology was coined by:- Lamark and Treviranus
* Father of zoology
* Father of Biology → Aristotle
* Founder of Embryology
* 1st attempt to classify plant and animal was done
* Wrote the book 'Historia Animalia'

* Father of botany
* Term 'Lichen' was coined by → Theophrastus
* Wrote - Historia Plantarum

* Taxonomy → (1) Identification (2) Nomenclature (3) Classification
  - The branch of botany which deals with:-
    - (i) identification
    - (ii) Nomenclature
    - (iii) Classification of organism.

- The term taxonomy was coined by:- De Candolle
- Father of taxonomy → C. Linnaeus
- Father of modern taxonomy → De Candolle.

* Carolous Linnaeus:- Father of taxonomy.
- Father of binomial system of nomenclature. (species & Genus).
- Father of modern botany.
- 2-kingdom system of classification.

- Artificial system of classification
- Sexual system of classification.
- wrote the book:- (1) System Nature
(2) species plantarum
(3) philosophia botania.

Taxonomic Hierarchy:- If the organism are classified into different taxon on the basis of their characters, then it is called taxonomic Hierarchy.

* Taxon:- The classificatory unit of any rank.

* Order of taxonomic Hierarchy

(a) Keep Dish Clean Otherwise Family Get Sick

(1) Kingdom (2) Division or phylum (3) class (4) order (5) Family (6) Genus (7) Species

similarity ↑

Q. Which one of the following has least similar characters among the individual?

(a) Family (b) Class (c) Genus (d) Species

Q. Basic smallest unit of classification is:-

(a) Species (b) Family (c) Class (d) Sub-species

Species:- The lowest, basic and fundamental unit of classification is called species.

→ The term 'species' was coined by John Ray

→ Minimum condition to be same species:-

They should freely interbreed with each other and produce fertile offspring.

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Systematics:- Taxonomy + Evolution

→ Term systematics was given by → C. Linnaeus

* System of classification

(1) Artificial system of classification:- given by C. Linnaeus.

→ Few morphological character को Basis मा

(2) Natural system of classification:- given by Bentham and Hooker

- All available character of organism - को Basis मा

(3) Phylogenetic system of classification:- given by Engler & Prantl.

- Evolutionary history of organism को Basis मा

Evolution

Q. Who proposed two kingdom system of classification? [IOM/BP KU.]

(a) R. Whittaker
(b) Eichler
(c) Eichler
(d) Carolous Linnaeus

Organism

- Prokaryotes
  - unicellular prokaryotes
    - (1) Monera
- Eukaryotes
  - Unicellular
    - (2) Protista
  - Multicellular
    - without cell wall
      - (5) Animalia
    - with cell wall
      - Able to perform photosynthesis
        - (3) Plantae
      - Don't perform photosynthesis
        - (4) Fungi / Mycota

Classification of organisms into 5 Kingdom

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1st attempt to classify.

(i) Two kingdom classification: Aristotle, Linnaeus

Living → Plant kingdom
Living → Animal kingdom

basis: cell wall

(ii) Three kingdom classification: Haeckal, Protista kingdom established by Haeckel.

Living → Protista kingdom
Living → Plantae kingdom
Living → Animalia kingdom

basis: complexity of organism (unicellular or multicellular)

(iii) four kingdom classification: Copeland

Living → Monera – unicellular prok
Living → Protista
Living → plantae
Living → Animalia

basis: complexity of cell. V.I. (prokaryotes or eukaryotes)

(iv) five kingdom classification: Whittakar

Living → Monera
Living → Protista
Living → Fungi / Mycota.
Living → Plantae
Living → Animalia

basis: Mode of Nutrition V.I

(v) Six kingdom classification: Carl woese et al & teams

basis: Genetic material & DNA sequencing ~~material~~ method

3-Domains 6-kingdoms

Living organisms → Bacteria → Eubacteria – uni, prok
Living organisms → Archea (primitive) → Archeabacteria – uni, eukaryotes
Living organisms → Eukarya (True nucleus.) → Protista, Plantae, Fungi, Animalia

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Books and Authors

1. Historia Plantarum → Theoprastus
2. Historia Animalia → Aristotle.
3. System nature, Species plantarum, Philosophie Botanica → C. Linneous
4. Origin of life → Oparin
5. Origin of species → Charles Darwin
6. Genera Plantarum → Bentham and Hooker. (V.I.)
7. Philosophy Zoologique → Lamarck.
8. Micrographia → Robert Hooke

John Ray → developed term Key

Past Quest.

Q.1 The study of nuclear cytology is called →
(a) Serology (study of antigen-antibody reaction.) (b) Embryology (development of organ.) (c) Karyology (nucleus.) (d) Physiology (life, function of cell.)

2. Gerontology is the study of :-
(a) Regeneration (b) Ageing (c) Death → Thanatology (d) Growth

3. The study of plants related to chemistry is :-
(a) Pteridology (b) Sericulture (rearing of silkworm.) (c) Biochemistry (d) Phytochemistry

Sarcology → Muscles

4. Ophiology is the study of :-
(a) Lizard → Saurology (b) frog → Batrachology (c) Snake (also serpentology) (d) Fish → Ichthyology

5. The process by which all organelles are separated from cell is :-
(a) electrophoresis (b) Cytochemistry (c) Radiobiology (d) Fractionation

6. Which microscope would you use to examine a culture of living cells?
(a) Scanning electron microscope
(b) Transmission electron microscope
(c) Phase contrast
(d) Polarization microscope

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7. The branch of science which deals with the study of trees and shrubs is called:-
(a) forestry (b) Dendrology (c) Agriculture (d) Horticulture

8. Production of silk threads in commercial scale is called:-
(a) apiculture (b) sericulture (c) Pisciculture (d) lacculture
└ reazing of honey bee. └ rea. of fish └ rea. of lac insect.

9. The study of growth rings of tree in relation to climate:-
(a) Paleotdgy (b) Dendrology
(c) Dendrodimatology (d) Ethnobotany

(10) Branch of Biology that deals with structure and functions of cell is:
(a) Histology (b) Morphology (c) Cytology (d) Physiology
cell bio- आको भए हुन्थ्यो।

(11) The study of fossils is known as:- Paleontology

(12) The 5 kingdom classification was given by:- R.H. Whittaker

(13) Binomial nomenclature was proposed by:-
(a) Karl Hooker (b) linneous (c) Linnaeus (d) R.H Whittaker

(14) Gerentology is the study of:
(a) Youth (b) old age (c) Disease (d) Children

(15) Anthropology is the study of:-
(a) Races (b) History (c) Architecture (d) Man

(16) True fish is:-
(a) Star fish - Astrodia, Echinodermata (b) Cuttle fish - Mollusca, └ Sepia (c) Dog fish (d) Cray fish - Arthopoda
Scolodion → Bony fish

Abishek singh