11th

Bio-Zoology

Complete Guide

Unit-1

The Living World

Success Starts Here

BY

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Bio-Zoology

Choose the correct Answer

1. A living organism is differentiated from non- living structure based on
   (a) Reproduction **(b) Growth** **(c) Metabolism** **(d) Movement**
2. A group of organisms having similar traits of a rank is
   (a) Species **(b) Taxon** (c) Genus (d) Family
3. Every unit of classification regardless of its rank is
   (a) Taxon (b) Variety (c) Species (d) Strain
4. Which of the following is not present on same rank?
   (a) Primata (b) Orthoptera (c) Diptera (d) Insecta
5. Which taxonomic aid gives comprehensive information about a taxon?
   (a) Taxonomic Key (b) Herbarium (c) Flora (d) Monograph
6. Who coined the term biodiversity
   (a) Walter Rosen (b) AG Tansley (c) Aristotle (d) AP de Candole
7. Cladogram considers the following characters
   (a) Physiological and Biochemical **(b) Evolutionary and Phylogenetic**
   (c) Taxonimic and systematic (d) None of the above
8. Molecular taxonomic tool consists of
   (a) DNA and RNA (b) Mitochondria and Endoplasmic reticulum
   (c) Cell wall and Membrane proteins (d) All the above
9. The word Taxonomy was coined by _____ .
   (a) Linnaeus **(b) Candolle** (c) Aristotle (d) John Ray
10. Father of Taxonomy is
    (a) Aristotle (b) Linnaeus (c) Bauhin (d) John Ray
11. _____is known as Father of Botany.
    (a) Aristotle (b) Linnaeus **(c) Theophrastus** (d) John Ray
12. _____is the father of modern taxonomy and found of systematics.
    (a) Linnaeus (b) Aristotle (c) John Ray (d) Bauhin
13. Three domain classification was proposed by
    (a) Carl woese (b) Ernst Haeckel (c) Whittaker (d) Theophrastus
14. Choose the odd one out.
    (a) Mule (b) Liger **(c) Red Panda** (d) Tigon
15. Book written by Darwin
    (a) Historia Generalis **(b) Origin of species** (c) Systema Naturae (d) Phylogeny of plants
16. _____was developed by Natural History Museum London.
    (a) SPIDA (b) ABIS (c) DAISY **(d) INOTAXA**
17. _____is called the bird man of India.
    (a) Dr. Subramaniam **(b) Dr. Salim Ali** (c) Whittaker (d) Varad Giri
18. Species Plantarum was written by
    (a) Linnaeus (b) Woese (c) Theophrastus (d) Darwin
19. _____established species as the ultimate unit of taxonomy. (He coined the term species).
    (a) Aristotle (b) Linnaeus **(c) John Ray** (d) Bauhin
20. Cladistics is based on
    (a) Natural characters (b) Reproductive organs (c) Molecular studies **(d) Phylogeny**
21. _____was the first to classify animals.
    (a) Aristotle (b) Linnaeus (c) Theophrastus (d) Haeckel

22. Five kingdom system of classification was given by
(a) Woese **(b) Whittaker** (c) Linnaeus (d) Cronquist

23. The concept of a c1adogram was introduced by
(a) Haeckel (b) Woese (c) Whittaker (d) John Ray

24. _____introduced the seven kingdom system of classification.
(a) John Ray **(b) Smith** (c) Bauhin (d) Linnaeus

25. Genus Felis refers to
(a) Dogs (b) Sparrow **(c) Cat** (d) Monkeys

26. "Historia Generalis Plantarum" was written by
(a) Linnaeus (b) Aristotle **(c) John Ray** (d) Bauhin

NEET Related Questions

1. The smallest taxon among the following is .....(PMT-94)
a.class b. order **c. species** d. genus

2. Taxonomically a species is ..... (PMT-94)
a.A group of evolutionary related population **b. A fundamental unit in the phylogeny of organisms**
c. Classical evolutionary taxonomy d. A community taken into consideration an evolutionary base

3. Species is .....
a. not related to evolution b. specific class of evolution
b. specific unit of evolution **d. fertile specific unit in the evolutionary history of a race**

4. Two words comprising the binomial nomenclature are ..... (DPMT-96)
a.Family & genus b. order & family **c. genus & species** d. species & variety

5. A group of plants or animals with similar traits of any rank is kept under .... (PMT-96)
a.species b. genus c. order **d. taxon**

6. Which of the following is the correct sequence in the increasing order of complexity ? (PMT-97)
a.molecules, tissues, community, population b.cell, tissues, community, population
c.**tissues, organisms, population,community** d.molecules, tissues, community, cells

7. New systematic and the concept of life was given by (BHU-98)
a.Huxley b. Odom **c. Elton** d. Linnaeus

8. Two organisms of same class but different families will be kept under the same (CET-98)
a.genera b. species **c. order** d. family

9. Which of the following will form a new species ? (PMT-98)
a.inter breeding **b. variations** c. differential reproduction d. none of the above

10. A community includes ..... (CET-98)
a. a group of same genera b. a group of same population
c. a group of individuals from same species **d. different populations interacting with each other**

11. Binomial nomenclature was given by ..... (BHU-97)
a.Huxley b. Ray c. Darwin **d. Linnaeus**

12. In classification the category below the level of family is ..... (CET-98)
a.class b. species c. phylum **d. genus**

13. Taxon is ..... (CET-2000)
a.species **b. unit of classification** c. highest rank in classification d. group of closely related

14. One of the following includes most closely linked organisms (PMT-2001)
a.**species** b. genus c. family d. class

15. Which of the following taxons cover a greater number of organisms ? (PMT-2001)
a. order b. family c. genus **d. phylum**

16. Inbreeding is possible between two members of ..... (AMU-2005)
a.order b. family c. genus **d. species**

17. Which of these is correct order of hierarchy? (WARDHA-2002)
a.**kingdom, division, phylum genus & species** b. phylum, division, genus & class
c. kingdom, genus, class, phylum & division d. phylum, kingdom, genus, species &class

18. Which is not a unit of taxonomic category? (BVP-2002)
a.series **b. glumaceae** c. class d. phylum

19. Which is the first step of taxonomy ? (MGIMS-2002)
a.nomenclature b. classification **c. identification** d. hierarchical arrangement

20. The five kingdom classification was given by ..... (BYP-2002)
a.**Whittaker** b. Linnaeus c. Copeland d. Haeckel

21. Taxon includes ..... (PMT-2002)
a.Genus and species b. kingdom and division c.**all ranks of hierarchy** d. none of the above

22. Binomial nomenclature refers to ..... (CET-2000)
a.Two names of a species b. one specific and one local name of a species
c.**two words for the name of a species** d. two life cycles ofa. organism

23. Carl Linnaeus is famous for ..... (GGSPU-2002)
a. coining the term 'systematics' **b. introducing binomial nomenclature**
c. giving all natural system of classification d. all of these

24. True species are .....
a.interbreeding b. sharing the same niche c. feeding on the same food **d. reproductively isolated**

25. The smallest unit of classification is ..... (GGSPU-2002)
a.**species** b. sub-species c. class d. genus

26. Who coined the term 'taxonomy' ? (BVP-2003)
a.**Candolle** b. Waksman c. Leuwenhoek d. Louis Pasteur

27. Basic unit of classification of organisms is ..... (CET-2003)
a.**species** b. population c. class d. family

28. The unit of classification containing concrete biological entities is .....(WARDHA-2003)
a.**taxon** b. species c. category d. order

29. Species are considereda. .....
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 devised by taxonomists

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

31. Taxonomic category arrange in descending order ..... (MH-01)
a. key b. hierarchy c. taxon **d. taxonomic category**

32. In which of the animal dimorphic nucleus is found? (PMT 2002).
a.Amoeba proteus b. Trypanosoma gambiense c. Plasmodium vivax **d. Paramecium caudatum**

33. When a fresh-water protozoan possessing a contractile vacuole, is placed in a glass containing marine water, the vacuole will. (PMT 2004)
a. increase in number b. disappear c. increase in size **d. decrease in size**

34. Which form of reproduction is correctly matched? (AIIMS 2007)
a. Euglena transvers binary fission b. Paramecium longitudinal binary fission
a. **Amoeba multiple fission** d. Plasmodium binary fission

35. The presence of two types of nuclei, a macronucleus and a micronucleus,is characteristic of protozoans are grouped under the class. (BHU 1994, 1999)
a. sporozoa b. flagellate c. sarcodina **d. ciliata**

36. Which class of protozoa is totally parasitic? (BHU 1994)
a. **sporozoa** b. mastigophora c. ciliate d. sarcodina

37. Reproduction in paramecium is controlled by (BHU 1999).
a. flagella b. cell wall **c. micronucleus** d. macronucleus

38. In the life cycle of plasmodium exflagellation occurs in (BHU 2007)
a. sporozoties **b. microgametes** c. macrogametes d. signet ring

39. Excretion in Amoeba occurs through (DPMT 1997)
a. lobopodia b. plasma membrane c. uroid portion **d. contractile vacuole**

40. Method of dispersal in Amoeba is (DPMT 1995)
a. locomotion **b. encystment** c. sporulation d. binary fission

41. Mode of feeding in free living protozoans is (DPMT 2007).
a. holozoic b. saprozoic **c. both (a) and (b)** d. none of these

42. Infection of Entamoeba is caused (UP- CPMT 1996, 1999).
a. by kissing b. by wearing clothes of patient **c. by contaminated food** d. none of these

43. Choose the correct statement
a. All reptiles have a three chambered heart. b. All Pisces have gills covered by a operculum
c. All mammals are viviparous **d. All cyclostomes do not posses jaws and paired fin**

44. Which of the following characteristics is mainly responsible for diversification of insects on land?
a. Segmentation b. Bilateral symmetry **c. Exoskeleton** d.Eyes.

45. The primitive prokaryotes responsible for the production of biogas from the ruminant animals Include the (2016)
a. Thermoacidophiles **b. methanogens** c. Eubacteria d. Halophiles.

46. Methanogens belong to (2016)
a. Dino flagellates b. Slime moulds c. Eubacteria d. Archaebacteria

2 Mark Questions

27) Differentiate between probiotics and pathogenic bacteria

Probiotic bacteria	Pathogenic bacteria
1. Beneficial bacteria	Disease-Causing bacteria
Eg: Bacteria present in curd	**Eg:** Bacteria causing cholera

28) Why mule is sterile in nature?

- Mules are produced by mating of **Male donkey and female horse**.
- Mules are sterile animals because they **cannot produce gametes due to problems in pairing** up of chromosomes.
- They have **odd number of chromosomes**.

29) What is biodiversity?

- The presence of a large number of species in a particular ecosystem is called **'biological diversity'** or in short' **biodiversity**'.
- The term biodiversity was first introduced by Walter Rosen (1985), and defined by E.D. Wilson

30) Define Taxonomy.

- Taxonomy = G. *taxis*- arrangement + *nomos*- law
- **Taxonomy** is the **science of arrangement of living organisms** along with **classification, description, identification, and naming of organisms** which includes all flora and fauna including microorganisms of the world.
- The word taxonomy was coined by **Augustin Pyramus de Candole (1813).**

31) How did Aristotle classify animals based on the presence or absence of red blood?

Based on the presence or absence of red blood he classified the animals into two as

a) **Enaima** with blood b) **Anaima** without blood as.

32) Mention the subdivisions of Five Kingdom classification.

- R.H. Whittaker (1969) proposed the Five kingdom Classification.
- The Kingdoms defined by him were **Monera, Protista, Fungi, Plantae, and Animalia**, based on the cell structure, mode of nutrition, mode of reproduction and phylogenetic relationships.

33) How do Bacteria differ from Eukaryotes?

Bacteria	Eukaryotes
1. No defined **nuclear, circular DNA seen.**	Defined nuclear with **nuclear membrane and linear chromosomes.**
2. **70s Ribosomes** are seen in the cell.	**80s Ribosomes** are seen in the cell.

34) Define Species.

- Species is the **basic unit of classification** in the taxonomic hierarchial system.
- It is a group of animals having **similar morphological features** (traits) and is reproductively **isolated to produce fertile off spring.**

35) What is binomial nomenclature?

- Biologists follow **universally accepted principles** to provide scientific names to known organisms.
- Each name has **two components**, a **generic name and a specific epithet.**
- This system of naming the organism is called **Binomial Nomenclature**
- This was **popularised by Carolus Linnaeus** and practised by biologists all over the world.

Eg. The **National Bird** (Indian Peafowl) – ***Pavo cristatus,***
The National Animal (tiger) – ***Panthera* tigris,**
The Tamil Nadu State bird (common Emerald dove) – ***Chalcophaps indica***.

36) What is Tautonymy?

- The practice of naming the animals in which the generic name and species name are the same is called Tautonymy.
- Eg: **Naja naja** (The Indian Cobra).

37) Name the classical taxonomical tools.

- Taxonomical keys
- Museum
- Zoological park
- Printed Taxonomical tools ,Marine parks

38) Name some Molecular taxonomic tools used.

- DNA barcoding
- DNA hybridization
- DNA Finger printing
- Marine parks
- Restriction Fragment Length Polymorphisms analysis.

39) Give examples of Cyber tools employed in taxonomic studies. (any two)

1. **ALIS** - Automated Leafhopper Identification system.
2. **DAISY** – Digital Automated Identification system.

40) What is INOTAXA

- **e-Taxonomic resources** - INOTAXA is **an electronic resource** for digital images and description about the species which was developed by Natural History Museum, London.
- INOTAXA means **IN**tegrated **O**pen **TAX**onomic **A**ccess

41) Name the books written by Linnaeus.

- Species Plantarum (1753)
- Systema Naturae (1758)

3 Mark Questions

42) List any five salient features of the family Felidae.

Salient features of the family Felidae:

- They are commonly called as **wildcat family**.
- They have adaptations-to **detect and hunt prey**.
- They are **meat eaters** (carnivores).
- They have **cutting teeth to shear meat**.
- Canine teeth are **large and sharp**.
- Their sizes vary from **2 kgs to 300 kgs**.
- They have actue senses - **hearing, smell, vision, and touch**.
- They have well-padded toes with **powerful and flexible bodies**. Eg: Lion, Tigers, Cats.

43) What is the need for classification

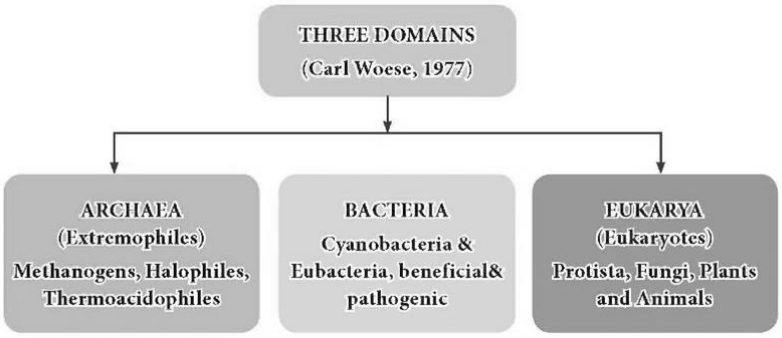
The basic need for classification is:

1) To identify and **differentiate closely related** species
2) To **know the variation** among the species
3) To **understand the evolution** of the species
4) To **create a phylogenetic tree** among the different groups
5) To **easily study** living organisms

44) What is Cladistics

- *Arranging organisms on the basis of their similar or derived characters which differ from the ancestral characters produced a phylogenetic tree or cladogram*
- 2. It is an evolutionary' classification which summarizes the genetic differences between all species in the **'phylogenetic tree'.**
- 3. Ernst Haeckal introduced the method of **representing evolutionary relationships with the help of a tree** diagram known as **cladogram**

45) Give a Schematic representation of Three domain classification.

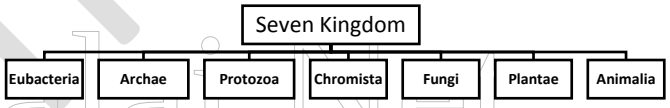


46) What are the salient features of Three domain classification

- This classification was proposed by **Carl Woese** (1977) and **his co-workers.**
- They classified organisms **based on the difference in 16S rRNA genes.**
- The three domain system adds the taxon **'domain' higher than the kingdom.**
- This system emphasizes the separation of **Prokaryotes into two domains, Bacteria and Arachaea**, and all the **eukaryotes are placed into the domain Eukarya.**
- Archaea appears to have **more in common with the Eukarya than the Bacteria.**
  Archaea differ from bacteria in **cell wall composition** and differs from bacteria and eukaryotes in **membrane composition and rRNA types**

47) Mention the Subdivisions of the seven kingdom classification.

Cavalier-Smith revised' the six-kingdom system to Seven Kingdom system.



- The concept of **super kingdom was introduced** and revised to seven kingdom classification.
- The classification is divided into **two Super Kingdoms** (Prokaryota and Eukaryota) and **seven kingdoms, two Prokaryotic Kingdoms** (Eubacteria and Archaebacteria) and **five Eukaryotic Kingdoms** (Protozoa, Comista, Fungi, Plantae and Animalia).

48) What is genus? Mention the types.

- ***It is a group of closely related species which have evolved from a common ancestor.***
- In some genus there is **only one species** which is called as **monotypic genus**
  e.g. Red panda is the only species in the genus ***Ailurus*** : ***Ailurus fulgens***
- If there are **more than one species in the genus** it is known as **polytypic genus.**
- E.g.'cats' come under the Genus ***Felis***, which has a number of closely related species, ***Felis domestica*** (domestic cat), ***Felis margarita*** (jungle cat). ***Felis silvestris*** (wild cat)

Family:

- It includes a **group of related genera with less similarity** as compared to genus and species. Eg. the family **Felidae** includes the **genus *Felis*** (cats) and the **genus *Panthera*** (lions, tigers, leopards).

49) What is Phylogeny

Phylogeny - **Relationships among various biological species** based upon similarities and differences in their physical or genetic characteristics

50) What are Threatened species?

Threatened species - Species which are **susceptible to endangerment** in the near future

51) What is a phylogenetic tree?

- biologists initiated studies on the **evolutionary and genetic relationships** among organisms, which lead to **phylogenetic classification or cladistics.**
- It is based on - **common ancester between them.**
- **phylogenetic classification** - summarizes the **genetic differences between** all species in the **'phylogenetic tree'**

52) Distinguish between Shared character and Derived character

1. **In a cladogram**, a shared character is one that **two lineages have in common**
2. Derived character is one that **evolved in the lineage leading** up to a clade.

53) What is systematics?

1. The main criteria of systematics is **identifying, describing, naming, arranging, preserving** and **documenting** the organisms.
2. Evolutionary history of the species and the **environmental adaptations and interrelationship** between species are also being investigated in systematics

54) What are extremophiles?

- It **single celled organisms, the prokaryotes** which have the ability to grow in extreme conditions like **volcano vents, hot springs and polar ice caps**, hence are also called **extremophiles.**
- They are capable of **synthesizing their food without sunlight and oxygen** by utilizing **hydrogen sulphide** and other chemicals from the volcanic vents. Some of them are,
  - **Methanogens** - produced methane
  - **Halophiles**- live in salty environments
  - **Thermoacidophiles** - live in acidic environments and at high temperatures.

55) What is the Significance of Bhupathy's purple frog?

1. Purple pig-nosed Frog was **discovered in the Western Ghats.**
2. It has shiny purple skin and spends its **entire adult life underground.**
3. It is called Bhupathy's purple frog by the scientists in memory of **Subramaniam Bhupathy** a respectable herpetologist who lost his life is the Western Ghats

56) What is the Significance of Thermus aquatics?

- ***Thermus aquatics*** *is a bacterium which can* ***tolerate high temperatures.***
- *The first* ***DNA polymerase enzyme*** *was isolated from* ***T. aquaticus*** *it is used in* ***PCR*** *(Polymerase Chain Reaction) for* ***DNA amplification.***

57) How can we save endangered species?

Saving Endangered Species:

- The greatest threat to survival is destruction of habitat. It is important to conserve the habitat or the special places where the species live.
- The animals must have places to find food, shelter, and care for their young ones.
- Setting up Zoological parks and nature reserves will help to conserve the species.

- Mutual agreement between countries can help to save forests and species in coastal waters.
- Scientists are setting up gene banks to conserve animals of a species.
- Several organisations are also working for the protection of endangered species.
- Hot spots/areas with high biodiversity must be protected from human intervention to conserve the animal and plant species.

58) Why are sparrows listed as endangered species?

Reasons for reduction in Population of sparrows:

- Absence of native plants which provide habitats (shelter, insects as food etc.)
- Grocery stores being replaced with Supermarkets (gunny bags were pecked by sparrows for grains earlier.)
- Cell phone radiation from Towers. Sparrow population is disappearing. fast. Thus it is important to conserve sparrows which is becoming endangered because every animal is an important link is an ecosystem.

59) Reproduction cannot be considered as a character to define living organism. Do you agree with this statement

- There are many organisms like the Mules, worker bees etc.
- which are sterile but they show the characteristics of living organism.
- Hence, Reproduction cannot be considered as a character to define living organisms

60) Name the kingdom in Five Kingdom Classification in which organisms lack a nuclear membrane.

- **Kingdom Monera** includes bacteria which are prokaryotic organisms lacking a nuclear membrane.

61) List out the limitations of Aristotle's classification

- ✕ **many organisms were not fitting** into his classification.
  Eg. Tadpoles of frogs are **born in water and have gills** but when they became into **adult frogs they have lungs** and can **live both in water** and **land.**
- ✕ Aristotle classified organisms based on locomotion, hence, **birds, bats, and flying insects were grouped together** based one single characteristic feature, the **flying ability.**
- ✕ On other hand the **ostrich, emu and penguin are all birds but cannot fly.**
- ✕ So Aristotle would **not have classified them as birds.**

63) What are the characters of organisms in Five kingdom classification

Features	Monera	Protista	Fungi	Plantae	Animalia
Cell type	Prokaryotic	Eukaryotic	Eukaryotic	Eukaryotic	Eukaryotic
Cell wall	Non-cellular	Present in some	Present	Present	Absent
Body organisation	Cellular	Cellular	Multicelluar Tissue	Tissue Organ	Tissue, Organ system
Mode of nutrition	Autotrophic Heterotrophic	Autotrophic Heterotrophic	Heterotrophic	Autotrophic	Heterotrophic

5 Mark Questions

61) What is the role of Charles Darwin in relation to concept of species

- Charles Darwin visited the Galapagos Islands as a naturalist on a **five-year voyage around South America.**
- He found 13 types of **"Mockingbirds"** on the same island but in different habitats.
- He brought back the different types and studied them.
- He found that only the beak pattern and usage was different in these **different varieties**.
- This made him think that **adaptation to suit a particular habitat** (for food) had brought about such changes in these birds which- lived in different habitats.
- After some time they **evolved into, different species**.
- The formation of **new species or 'speciation'** is brought about by Natural selection (**Nature being the deciding factor).**
- Hence Darwin gets this credit of attempting to explain how **species evolved and role of Natural selection.**
- The birds are referred to as **Darwin's finches.**
- In 1859 Charles Darwin in his book **Origin of species** explains the evolutionary connection of species by the process of natural selection.

62) Why elephants and other wild animals are entering. into human living area?

- Man is **destroying forests**.
- Deforestation is increasing due to **rapid urbanisation and increase in human population.**
- When habitats are destroyed the animals living there **do not find food and shelter**.
- They tend to wonder outside in **search of food or shelter and enter into human living area**.
- **Pollution is another major factor** due to which availability of water bodies with clean water is decreasing.
- The reality is that we have **entered into the habitats of animals**

63) What is the difference between a Zoo and Wild Life Sanctuary

S.No	ZOO	Wildlife sanctuary:
	• A zoo is a place where animals are held in **capitivity and Public** is allowed to visit and see the animals. • It is a **artificially created habitat.**	• A wild life sanctuary is a large area with natural surrounding where the animals are **allowed to roam freely.** • **A boundary wall Barrier** is in place to ensure that humans cannot enter the area. • The animal gets the feel of a natural surrounding.
	• A zoo can sell, buy, breed or trade animals.	• In many cases sanctuaries focus on maintaining and increasing the population of a particular species. • Eg: **Kaziranga sanctuary in Assam focuses on Rhinoceros population**

64) Can we use recent molecular tools to identify and classify organisms

Molecular taxonomical tools

- Technological advancement has helped to evolve **molecular taxonomical tools** from classical tools to molecular tools.

- The **accuracy and authenticity is more significant** in the molecular tools.
- The following methods are being used for taxonomical classification.
- **Molecular techniques and approaches are :**

1. **DNA barcoding** (short genetic marker in an organism's **DNA** to identify it as belonging to a particular species),
2. **DNA hybridization** (measures the degree of genetic similarity between pools of DNA sequences)
3. **DNA fingerprinting** (to identify an individual from a sample of DNA by looking at unique patterns)
4. **Restriction Fragment Length Polymorphisms** (RFLP) analysis (difference in homologous DNA sequences that can be detected by the presence of fragments of different lengths after digestion of the DNA samples)
5. **Polymerase Chain Reaction** (PCR) sequencing (to amplify a specific gene, or portion of gene,)

65) Explain the role of Latin and Greek names in Biology

- Knowledge of prefixes and suffixes in biology makes it easy to **understand unfamiliar words.**
- Biology involve a lot of descriptive words and it is easy to **adopt names from Greek and Latin.**
- Many words used in Biology are **derived from Greek or Latin.**
  Eg: 'autos' is greek word which means self.
- Autophagy means **self-destruction.**
- Autotroph means manufacture of own food.
- 'bis' is a Latin word which means **twice.**
- Binary fission, Bicuspid valve are Biological terms based on this **Meaning:**
- **Binary fission** - Divide in two
- **Bicuspid** - Two flaps
- Usage of Greek and Latin words also finds universal application.

66) List the rules of nomenclature as given by ICZN?

Rules of Nomenclature:

1. The scientific name should be **italicized in printed** form and if handwritten, it **should be underlined separately.**
2. The generic name's (*Genus*) **first alphabet should be in uppercase.**
   The specific name (*species*) **should be in lowercase.**
3. The scientific names of any **two organisms are not similar.**
4. The name or abbreviated name of the scientist who first publishes **the scientific name may be written after the species name** along with the year of publication.
   Eg. Lion-***Felis leo*** Linn., 1758 or ***Felis leo*** L., 1758.
5. If the species name is framed after any person's name the **name of the species shall end with i, ii or ae.**
6. For example, a new species of a **ground- dwelling lizard** (**Cyrtodactylus**) has been discovered and named after Scientist Varad **Giri, *Cyrtodactylus varadgirii***.

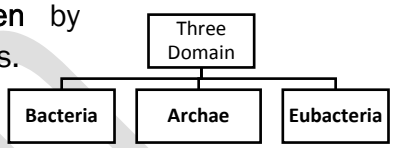
67) Write a note on three Domain system of classification?

- This classification was proposed by **Carl Woese** (1977) and **his co-workers.**

- They classified organisms **based on the difference in 16S rRNA genes.**
- The three domain system adds the taxon **'domain' higher than the kingdom.**
- This system emphasizes the separation of **Prokaryotes into two domains, Bacteria and Arachaea**, and all the **eukaryotes are placed into the domain Eukarya.**
- Archaea appears to have **more in common with the Eukarya than the Bacteria.**
- Archaea differ from bacteria in **cell wall composition** and differs from bacteria and eukaryotes in **membrane composition and rRNA types.**

1. Domain Archaea

- It **single celled organisms, the prokaryotes** which have the ability to grow in extreme conditions like **volcano vents, hot springs and polar ice caps**, hence are also called **extremophiles.**
- They are capable of **synthesizing their food without sunlight and oxygen** by utilizing **hydrogen sulphide** and other chemicals from the volcanic vents. Some of them are,
  - **Methanogens** - produced methane
  - **Halophiles**- live in salty environments
  - **Thermoacidophiles** - live in acidic environments and at high temperatures.



2. Domain Bacteria

- **Bacteria are prokaryotic,**
- They do not have **definite nucleus**
- have a **circular chromosomes in DNA** and **do not have histones associated** with it.
- They **do not possess membrane bound organelles** except for ribosome (70S type).
- Their **cell wall contains peptidoglycans.**
- Many are **decomposers**, some are **photo-synthesizers** (Autotrophic) and few cause diseases(**Pathogen**).
- There are beneficial **probiotic bacteria.**
- **Cyanobacteria** - are **photosynthetic blue green algae** which produce oxygen.
- **Role :** changes of **atmospheric oxygen levels** from anaerobic to aerobic during the early geologic periods.
- **Curd** - best sources of which are friendly bacteria that can improve our health. e.g. ***Lactobacillus sp.*** **(Probiotics** – live bacteria and yeast which are good for health)

3. Domain Eukarya (Eukaryotes)

- They have **true nucleus and membrane bound organelles.**
- DNA is arranged as a **linear chromosome** in nucleus **with histone proteins,**
- **Ribsosomes of 80S type** in the **cytosol** and **70S type in the chloroplast and mitochondria.**
- Animals are classified under **kingdoms**, namely, **Protista, Fungi, Plantae and Animalia.**
- 1987, **Cavalier-Smith** revised the **six kingdom system** to **Seven Kingdom system.**

68) Write a note on the classical taxonomical tools

Taxonomical Keys:

- Keys are based on **comparative analysis of the similarities and dissimilarities** of organisms.
- There are **separate keys** for different taxonomic categories.

Museum:

- It have **collection of preserved plants and animals** for study and ready reference.
- Specimens of both **extinct and living organisms** can be studied.

Zoological parks:

- These are places where **wild animals are kept in protected environments** under human care.
- It enables us to **study their food habits and behaviour.**

Marine parks:

- Marine organisms are maintained in protected enviroments.

Printed taxonomical tools

- Consist of **identification cards, description, field guides and manuals.**

11Th Biology

Lesson -2

And all lesson

Complete Notes will

Upload Soon....

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