

Diversity in Living Organisms :

Chapter

QUESTION AND ANSWERS

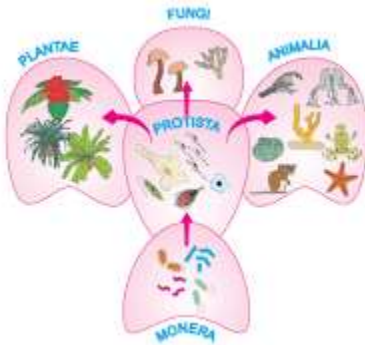
Question: 1. Why do we classify organisms?

Answer:- we classify organisms to understand characteristics of life form on the earth.

Question: 2. Give three examples of the range of variations that you see in life forms around you.

Answer:- Three examples of the range of variations in life forms:

Bacteria is microscopic whereas Red wood tree is giant



pine trees live for years whereas mosquito for few days

Variety of flower having different colors

Question: 3. which do you think is a more basic characteristic for classifying organisms?

(a) The place where they live. (b) The kind of cells they are made of. Why?

Answer: The kind of cells an organism is made of is more basic characteristic of classifying organism because form and function depends on cell

Question :- 4. What is the primary characteristic on which the first division of organisms is made?

Answer: Habitat.

Question: 5. (a) On what bases are plants and animals put into different categories?

(b) What is the basis on which living things are identified and categorized?

Answer: (a) Body design and mode and source of nutrition (b) On the basis of structure, mode and source of nutrition and body organization

Question: 6. which organisms are called primitive and how are they different from the so-called advanced organisms?

Answer: Groups of organisms which have ancient body designs and do not have not changed very much yet is called primitive. On the other hand, an organism acquired their particular body designs recently is called advanced.

**Question: 7. (a) Will advanced organisms be the same as complex organisms? Why?
(b) How can we say that the classification of life forms will be closely related to their evolution ?**

Answer:

- (a) No, this is because there is a possibility that complexity in design will increase over evolutionary time
- (b) As the characteristics that have come into existence earlier are likely to be more basic than characteristics that have come into existent latter.

Question: 8.What is the criterion for classification of organisms as belonging to kingdom Monera or Protista?

Answer: Organisms which are prokaryotes belong to the kingdom Monera and organism which are eukaryotes and unicellular belong to the kingdom Protista.

Question: 9. In which kingdom will you place an organism which is single-celled, eukaryotic and photosynthetic?

Answer: Protista

Question: 10. In the hierarchy of classification, which grouping will have the smallest number of organisms with a maximum of characteristics in common and which will have the largest number of organisms?

Answer: Kingdom will have the most number of organisms
Species will have the least number of organisms.

Question: 11. Which division among plants has the simplest organisms?

Answer: Thallophytic

Question: 12. How are pteridophytes different from the phanerogams?

Answer: In pteridophytes, the reproductive organs are hidden and they do not produce seeds. In phaenrogams, reproductive organs are conspicuous[clearly visible.] and they produce seeds.

**Question: 13. (a)How do gymnosperms and angiosperms differ from each other
(b) What are the differences between monocots and dicots?**

Answer: (a) Gymnosperms bear naked seeds and do not bear flowers eg. pines and deodar. Angiosperm have covered seeds and bear flower eg. pines and deodar

(b) Monocots produce one leaf[cotyledons] from the seed after germinating eg.Paphiopedilum
Dicots produce two. Monocots produce parallel leaf veins; Decoets produce a net-like display of veins. e.g. Ipomoea

Question: 15. What is evolution ? Who first of all gave the idea of evolution ?

Answer: All life forms that we see today have arisen by an accumulation of changes in body design that allow the organism possessing them to survive better is called evolution Charles Darwin first described this idea of evolution in 1859 in his book, The Origin of Species

Question: 16. State the name of scientist who proposed five kingdom classification systems of organisms.

Ans: Robert Whittaker in 1969 on the basis of (i) cell structure (ii) mode and source of nutrition and (iii) body organization.

Kingdom	Types of Organisms
Monera	Bacteria and Cyanobacteria.
Protista	Unicellular organisms.
Plantae	All photosynthetic green plants.
Fungi	Lack chlorophyll and obtain their food through absorption.
Plantae	All multicellular photosynthetic green plants.
Animalia	Multicellular heterotrophs

Question.17. Who proposed division of Monera kingdom? State the groups proposed

Answer: Carl Woese. The groups are – (i) Archaeobacteria or Archaea (ii) Eubacteria or Bacteria.

Question: 18. (a) Define species.

(b) State the hierarchic categories generally used for classification of animals.

Answer: (a) All organism that are similar enough to inter breed is called species.

(b) The characteristics dependent on the previous one and would decide the variety in the next level should be chosen for developing a hierarchy in classification.

The hierarchic categories generally used for classification of animals

(i) Kingdom – Plant kingdom and animal kingdom.

(ii) Phylum (for animals)/Division (for plants) – Group of closely related classes having certain common characters.

(iii) Class – Group of closely related orders having certain common characters.

(iv) Order – Group of closely related families with certain common characters.

(v) Family – Group of closely related genus with certain common characters.

(vi) Genus – Group of closely related species with certain common characters.

(vii) Species – Group of organisms similar enough to breed and perpetuate.

Question: 19. Why blue green algae are included under monera and not under plantae ?

Ans: (i) Nuclear material is not enclosed with nuclear membrane and cell organelles are also not enclosed with membrane. (ii) Do not show multicellular body design.

Question: 20. State the groups of organism under kingdom monera.

Ans: (i) Bacteria (ii) Cyanobacteria (iii) Mycoplasma.

Question: 21. What are mycoplasma ?

Answer: Mycoplasmas are the smallest and the simplest organisms. They have nucleoid and their body can change shape easily. They are heterotrophs.

Question: 22. Why do bryophytes are called amphibians of the plant kingdom ?

Answer: Bryophytes are also called amphibians of the plant kingdom because they can live on soil but need water for sexual reproduction. They are usually found in damp, humid and shaded localities.

Question: 23. what are the contribution of Ernst Haeckel in biology?

Ans: Haeckel provide a reasonable pictures of how multicellular organisms evolved.

Question: 24. What are the important characteristics of the five kingdoms of Whittaker ?

The Five Kingdoms

MONERANS	PROTISTS	FUNGI	PLANTS	ANIMALS
One Cell	Most One Cell	Some One Cell	All Many Cells	All Many Cells
No Nucleus	Some Many Cell	Some Many Cell	Nucleus	Nucleus
No Organelles	Nucleus	Nucleus	Organelles	Organelles
Some Cell Wall	Organelles	Organelles	Cell Wall	Food
Food	Some Cell Wall	Cell Wall	Food	All Ingests Food
Make Food	Food	Food	All Make Food	Movement
Absorb Food	Make Food	Absorb Food	Some Ingest Food	Muscles
Ingest Food	Absorb Food	Ingest Food	Movement	Reproduction
	Ingest Food	Movement	Grow	Asexual
Movement	Movement	Host	Phototropism	Sexual
Water	Pseudopodium	Reproduction	Geotropism	Examples
Host	Cilia	Spores	Reproduction	Sponges
Reproduction	Flagella	Budding	Sexual	Worms
Fission	Reproduction	Examples	Asexual	Mollusks
	Fission	Mushrooms	Grafting	Insects
Examples	Asexual	Molds	Budding	Starfish
Bacteria	Sexual	Mildews	Cuttings	Mammals
	Examples	Yeasts	Examples	Amphibians
	Plankton		Mosses	Fish
	Algae		Ferns	Birds
	Amoeba		Liverworts	Reptiles
	Paramecium		Horsetails	
	Diatoms			
	Euglena			
	Volvox			

Notes

Biodiversity or biological diversity means the variety of living organisms present on a particular region. There are about 20 lac organisms known on the Earth which differ from one another in external form, internal structure, mode of nutrition, habitat, etc.

The warm and humid tropical regions of the Earth between the tropic of Cancer and the tropic of Capricorn have a rich diversity of life, i.e. plants, animals, and microorganisms and are called **the region of mega biodiversity**. India is one of the 12 countries which consist of more than half of the biodiversity of the Earth.

Taxonomy - It is a branch of biology which deals with identification, nomenclature, and classification of organisms. Carolus Linnaeus is called the father of taxonomy.

Classification

The method of arranging organisms into groups or sets on the basis of similarities and differences is called classification.

Importance of classification:

- It makes the study of wide variety of organisms easy and in systematic manner.
- It helps to understand how the different organisms have evolved with time.
- It helps to understand the inter-relationships among different groups of organisms.
- It forms a base for the study of other biological sciences, like biogeography.

Basis of classification:

There are the certain features or properties used for the classification of living organisms which are known as **characteristics**. Organisms with same characteristics are placed in same groups.

Classification system

1. Two kingdom classifications: Carolus Linnaeus in 1758 classified the living organisms into two groups as plants and animals.

2. Five kingdom classification: H. Whittaker in 1959 further classified the organisms into five kingdoms as Kingdom Monera, Kingdom Protista, Kingdom Fungi, Kingdom Plantae, and kingdom Animalia.

Note - Carl Woese in 1977 further divided kingdom Monera into archaebacteria (or Archae) and Eubacteria (or Bacteria).

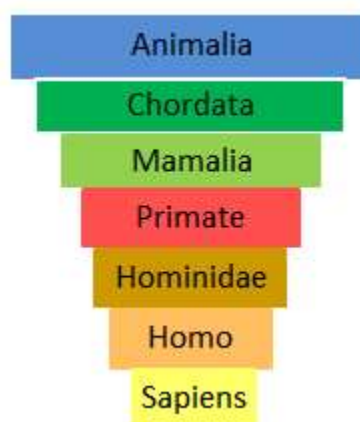
Hierarchy of classification

Linnaeus proposed a classification system by arranging organisms into taxonomic groups at different levels according to the characteristics they have. The groups or the levels from top to bottom are:

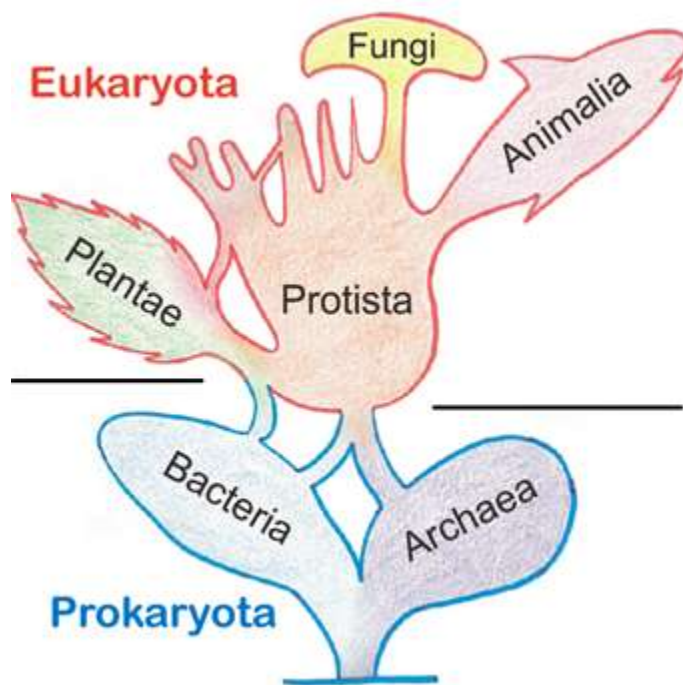
1. Kingdom
2. Phylum(Animals) / Division(Plants)
3. Class
4. Order
5. Family
6. Genus
7. Species

Species: A species is a group of living beings which can reproduce among themselves and keep their population alive.

Hierarchical naming of Human



The Five kingdom classification



The major characteristics considered for classifying all organisms into five major kingdoms are:

1. Type of cellular organization -

- a) Prokaryotic cells: These are primitive and incomplete cells without well - defined nucleus.
- b) Eukaryotic cells: These are advanced and complete cells with well - defined nucleus.

2. Body organization -

- a) Unicellular organisms: These are organisms made up of single cell with all activities performed by the single cell.

b) Multicellular organisms: These are organisms made up of large number of cells with different functions performed by different cells.

3. Mode of obtaining food -

a) Autotrophs: These are the organisms that make their own food by photosynthesis.

b) Heterotrophs: These are the organisms which depend on other organisms for food.

Nomenclature - An organism can have different names in different languages. This creates confusion in naming organism. So, a scientific name is needed which is same in all languages. Binomial nomenclature system given by Carolus Linnaeus is used for naming different organisms.

Following are some conventions in writing the scientific names:

- Genus should be written followed by the species.
- First letter of the genus should be capital and that of the species should be in small letter.
- When printed the name should be written in italics and when written with hands genus and species should be underlined separately.

Example - *Homo sapiens* for humans, *Panthera tigris* for tiger.

Kingdom 1: Monera

Following are its basic features:

- Prokaryotic, Unicellular.
- Can be autotrophic or heterotrophic.
- May or may not have cell wall.
- Examples- Anabaena and Bacteria (heterotrophic), Cyano-bacteria or Blue green algae (autotrophic).



BACTERIA

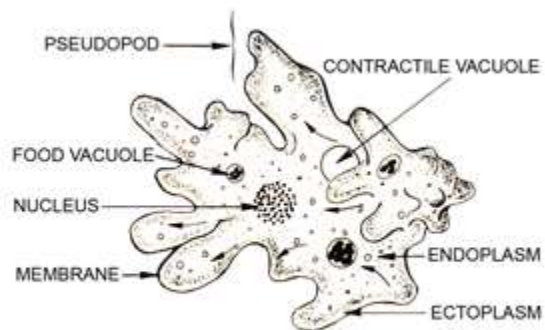


ANABAENA

Kingdom 2 : Protista

Following are its basic features:

- Eukaryotic, Unicellular.
- Can be autotrophic or heterotrophic.
- May have cilia, flagella or pseudopodia for locomotion.
- Examples: plants like- Unicellular algae, Diatoms; animals like- protozoans (Amoeba, Paramecium, Euglena); fungi like- slime molds and water molds.



AMOEBIA



EUGLENA

Kingdom 3: Fungi

Following are its basic features:

- Eukaryotic
- Mostly multicellular but sometimes unicellular(yeast)
- Source of food:

a) Mostly **saprophytes** - these organisms use decaying material for food.

b) Some **parasitic** - these organisms live inside body of other living organism to have food and can be disease causing.

c) **Symbiotic relation** - these are relations between two organisms in which they live together for benefit of one or both. Lichens are a symbiotic relation between fungi and cyanobacteria. Here fungi gets food from cyanobacteria and in return cyanobacteria gets water and protection from sunlight through fungi.

- Cell wall is made of chitin
- Examples-mushrooms(Agaricus), green mold(Penicillium), smut(Aspergillus)



PENICILLIUM



AGARICUS

Kingdom 4: Plantae

Following are its basic features:

- Eukaryotic, Multicellular
- Autotrophs

- Cell wall present

Basis of division in Kingdom Plantae

1. Differentiated body parts: Body is differentiated into leaves, stems, roots, flower, etc.

2. Presence of vascular tissue: There are two types of vascular tissues present in the plants:

- Xylem: helps in transport of water.
- Phloem: helps in transport of food.

3. Reproduction through seeds or spores:

- Phanerogamae: Plants with seeds are called phanerogamae. They contain embryo with stored food and are multicellular.
- Cryptogamae: Plants with spores are called cryptogamae. They contain only naked embryo and are generally unicellular.

4. Seeds are inside the fruit or naked:

- Angiospermae - these are plants with seeds inside the fruit and bear flowers.
- Gymnospermae - these are plants with naked seeds and do not bear flowers.

Note - If xylem and phloem are absent the plants would be small as transport of food and water will be difficult.

Division 1: Thallophyta

Following are its basic features:

- Basic and elementary plants with undifferentiated body parts.
- Generally called algae.
- No vascular tissue present.

- Reproduce through spores.
- Mainly found in water.
- Example- Ulva, Spirogyra, Ulothrix, Cladophora, Chara.



SPIROGYRA

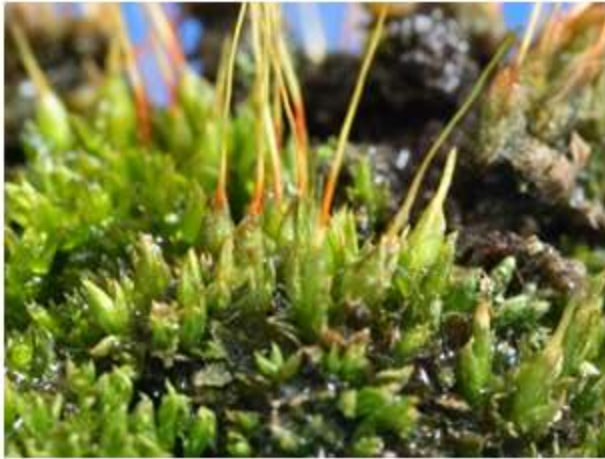


ULVA

Division 2: Bryophyte

Following are its basic features:

- Body structure differentiated but not fully developed.
- No vascular tissues present.
- Reproduce through spores.
- Found on both land and water therefore known as '**Amphibians of Plantae kingdom**'.
- Example - liverwort(Marchantia, Riccia), mosses(Funaria), hornwort (dendrocerous).



FUNARIA



RICCIA

Division 3: Pteridophyta

Following are its basic features:

- Differentiated body structure- leaves, stems, roots,etc.
- Vascular tissues present.
- Reproduce through spores
- Examples- Marsilea, fern, horsetails



MARSILEA



FERN

Division 4: Gymnosperms

Following are its basic features:

- Differentiated body parts
- Vascular tissues
- Naked seeds without fruits or flowers
- Perennial, evergreen and woody
- Examples- Pines(deodar), Cycus, Ginkgo.



PINUS



CYCUS

Division 5: Angiosperms

Following are its basic features:

- Also known as **Flower - bearing plants**.
- Later on flower becomes fruit.
- Seeds are inside the fruit.
- Embryos in seeds have structure called They are also called seed leaves because in many plants they emerge and become green when they germinate.

Angiosperms are further divided on the basis of number of cotyledons into two parts:

S.No.	Features	Monocots	Dicots
1.	Seed	One cotyledon	Two cotyledons
2.	Root	Fibrous root	Prominent primary root
3.	Stem	False or hollow	Strong
4.	Leaf	Parallel venation	Reticulate venation
5.	Flower(petals)	Five or multiple of five	Three or multiple of three
6.	Example	Potato, Sunflower, Banyan, wheat etc.	Peanuts, Beans, Mango etc.

Kingdom 5: Animalia

Basis of classification of Animalia kingdom:

1. Symmetry:

i) Bilateral symmetry: it is when an organism can be divided into right and left halves, identical but mirror images, by a single vertical plane.

ii) Radial symmetry: it is when an organism is equally spaced around a central point, like spokes on a bicycle wheel.

2. Germ layers : in embryonic stages there are different layers of cells called germ cells. The three different types of germ cells are -

- Ectoderm - It is the outermost layer which forms nail, hair, epidermis, etc.
- Endoderm - It is the innermost layer which forms stomach, colon, urinary bladder, etc.
- Mesoderm - It is the middle layer between ectoderm and endoderm which forms bones, cartilage, etc.

So, according to the number of germ layers present in embryonic stage, animal could be:

i) **Diploblastic** - organisms which derived from two embryonic germ layers (ecto and endo).

ii) **Triploblastic** - organisms which derived from all the three embryonic germ layers.

3. Coelom: Body cavity or coelom is important for proper functioning of various organs. For example, heart which has to contract and expand needs some cavity or empty space, which is provided by the coelom.

On the basis of presence or absence of coelom, organisms are divided into:

i) **Acoelomates** - these are the simple organisms having no body cavity.

ii) **Coelomates** - these are complex organisms having true cavity lined by mesoderm from all sides. These are further sub- divided into **schizocoelomates** or **protostomes**(coelom formed due to splitting of mesoderm) and **enterocoelomates** or **deuterostomes**(coelom formed from pouches pinched off from endoderm)

iii) **Pseudo coelomate** - these are organisms having false coelom. They have pouches of mesoderm scattered between endoderm and ectoderm.

4. Notochord: it is a long rod like structure, which runs along the body between nervous tissues and gut and provides place for muscle to attach for ease of movement.

Organisms could be:

- Without notochord
- With Notochord
- With Notochord in initial embryonic stages and vertebral column in adult phase.

Phylum 1: Porifera or sponges

Following are its basic features:

- Cellular level of organization.
- Non motile animals.
- Holes on body which led to a canal system for circulation of water and food.
- Hard outside layer called as skeletons.
- Examples - Sycon, Spongilla, Euplectelia.



SYCON



EUPLECTELIA

Phylum 2: Coelenterata

Following are its basic features:

- Tissue level of organization
- No coelom
- Radial symmetry, Diploblastic
- Hollow gut
- Can move from one place to another.
- Examples: hydra, sea anemone, jelly fish(solitary) ; corals (colonies)



SEA ANNEMON

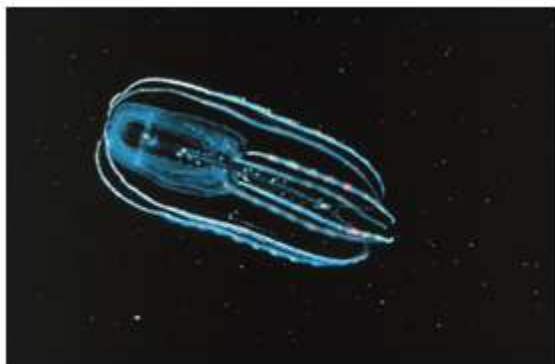


CORALS

Phylum 3: Ctenophores

Following are its basic features:

- Tissue level of organization
- No coelom present
- Radial symmetry, Diploblastic
- Have Comb plates for locomotion
- Aquatic
- Examples- Pleurobrachia



PLEUROBRACHIA

Phylum 4: Platyhelminthes

Following are its basic features:

- Also called **flat worms**.
- No coelom present
- Bilateral symmetry, Triploblastic
- Free living or parasite
- Digestive cavity has one opening for both ingestion and egestion.
- Example - Planaria (free living), Liver fluke (parasitic).



PLANARIA



LIVER FLUKE

Phylum 5: Nematode

Following are its basic features:

- False coelom
- Bilateral symmetry, Triploblastic
- Cylindrical
- Many are parasitic worms living inside human body, and can cause various diseases, like Filarial worm causes elephantiasis, Round worms and Pin worms live in human intestine.
- Example - Ascaris, Wuchereria.



ASCARIS



WULCHERERIA

Phylum 6: Mollusca

Following are its basic features:

- Coelom present
- Triploblastic, bilateral symmetry
- Soft bodies sometimes covered with shell
- Generally not segmented
- No appendages present
- Muscular foot for movement
- Shell is present
- Kidney like organ for excretion
- Examples - Chiton, Octopus, Pila, Unio.



CHITON



OCTOPUS

Phylum 7: Annelida

Following are its basic features:

- Second largest phylum
- Coelom present
- Bilateral, triploblastic
- Segmented (segments specialized for different functions)
- Water or land
- Extensive Organ differentiation
- Examples - Earthworm, Leech, Nereis



EARTHWORM



NEREIS

Phylum 8: Arthropoda

Following are the basic features:

- Largest phylum (consist of 80% of species)
- Generally known as insects.
- Coelom present
- Bilateral, triploblastic
- Segmented, sometimes fused
- Tough exo-skeleton of chitin
- Joint appendages like feet, antenna
- Example- Prawn, Scorpio, Cockroach, Housefly, Butterfly, Spider,



PRAWN



HOUSEFLY

Phylum 9: Echinodermata

Following are its basic features:

- Spiny skin, Marine
- No notochord
- Coelom present, bilateral symmetry, triploblastic
- Endoskeleton of calcium carbonate.

- Water vascular system for locomotion.
- Bilateral symmetry before birth and radial symmetry after birth.
- Example- Antedon, Sea cucumber, Star fish, Echinus.



SEA CUCUMBER



STAR FISH

Phylum 10: Hemichordata

Following are its basic features:

- Small group of marine animals
- Cylindrical, Bilateral symmetry, triploblastic
- Coelom present
- Gills for respiration
- Examples - Balanoglossus



BALANOGLOSSUS

Phylum 11: Chordata

Following are its basic features:

- Bilateral symmetry, Triploblastic
- Coelom present
- Notochord
- Gills present at some phase of life.
- Dorsal nerve chord
- Post anal tail present at some stage of life, For example, present in humans in embryonic stages.
- Subdivided into two

(a) Prochordata -

- Notochord at some stage of life
- Marine
- Example- Herdmania, Amphioxus,

(b) Vertebrata -

- Notochord converted to vertebral column
- 2,3,4 chambered heart
- Organs like kidney for excretion
- Pair appendages
- Example- humans(4 chambered), frog(3 chambered), fishes(2 chambered)

Vertebrates are divided into five classes namely Pisces, Amphibia, Reptillia, Aves and Mammalia.

Following are some common features of the five classes of vertebrates:

S. no	Features	Pisces	Amphibian	Reptilia	Aves	Mammalia
1.	Inhabit	Water	Water and land	Water and land	Water land and air	Land or water
2.	Respiratory organs	Gills	Gills, lungs	lungs	lungs	lungs
3.	Heart	2 chambered	3 chambered	3 chambered	4 chambered	4 chambered
4.	Maintenance of Body temperature	Cold-blooded	Cold-blooded	Cold-blooded	Warm-blooded	Warm-blooded
5.	Young ones	Eggs	Eggs in water	Eggs with tough coating on land	Eggs	Young babies except platypus and echidna.
6.	Skin	Skin covered with scales	Mucus glands in skin	Skins covered with scales	Skin covered with feathers	Hair, oil and sweat glands are present on the skin
7.	Special features	Streamlined body				Mammary glands which produces milk for children.
8.	examples	Anabas, Dog fish, Angler fish, Mandarin fish, Electric ray, String fish, Sea horse, Flying fish.	Salamander, common frog, Toad, Hyla (tree frog).	Turtle, Snakes, Lizard, Flying lizard, Crocodile, Chameleon.	Ostrich, Sparrow, Crow, Pigeon, Tufted Duck, White Stork.	Humans, Lion, Tiger, Cat, Bat, Whale.

Note -

- **Warm blooded organism:** these are organisms which maintain same body temperature irrespective of outside temperature. Example - humans. Human's body temperature is approximately 37°.
- **Cold blooded organisms:** these are organisms which changes their body temperature as per surrounding temperature. Example - frog
- Fishes are divided into two on the basis of skeleton:

i) Fishes with bony skeleton called **bony fishes**. Example- Tuna.

ii) Fishes with cartilage skeleton called **Cartilaginous fishes**. Example - Shark

Classification and evolution

Evolution is a process by which a new species is developed from an old species with gradual changes. Charles Darwin first described this idea of evolution in his book 'The Origin of species' in the year 1839.

More complex organisms develop from the simpler organisms. The older, simpler organisms are called **primitive or lower organisms** while the younger, complex organisms are called **advanced or higher organisms**.

Evolution and classification is somehow related, as classification of organism is done considering how evolution has occurred. While organisms classified in same group are likely to have evolved in similar ways.

Question: 1. Why do we classify organisms?

Answer:- There are millions of species on this earth. For anybody, it is impossible to study about each of them in his lifetime. Classification makes it easy to study the organisms; on the basis of certain common characters.

Question: 2. Give three examples of the range of variations that you see in life forms around you.

Answer:- Three examples of the range of variations in life forms:

- Ants, cockroaches, spiders, houseflies, etc. live in the same building. They look entirely different from each other yet all of them belong to arthropoda.
- Humans, monkeys, cats and dogs lives in the same neighbourhood. They look entirely different yet all of them belong to mammalia.
- A nearby park may show wide variety of plants; right from small grass to a giant banyan tree.

Question: 3. Which do you think is a more basic characteristic for classifying organisms?

(a) the place where they live.

(b) the kind of cells they are made of. Why?

Answer: The kind of cells an organism is made of is more basic characteristic of classifying organism because it gives a scientific angle to classification. Moreover, a particular dwelling place can be full of organisms of a wide variety.

Question:- 4. What is the primary characteristic on which the first division of organisms is made?

Answer: Organisation of nucleus is the primary characteristic on which the first division of organisms is made. Based on this, organisms can be either prokaryotic or eukaryotic.

Question: 5. On what bases are plants and animals put into different categories?

Answer: Plants are autotrophs, while animals are heterotrophs. Cell wall is present in plant cells, while it is absent in animal cells. Plants do not need to move from one place to another, while most of the animals need to move in search of food.

Question: 6. Which organisms are called primitive and how are they different from the so-called advanced organisms?

Answer: An organism which is simple is called primitive. On the other hand, an organism with high level of division of labour; by formation of organs and organ system is called advanced.

Question: 7. Will advanced organisms be the same as complex organisms? Why?

Answer: Complexity in body design evolves because of necessity to adapt according to the changing environment. Hence, a complex organism would be an advanced one; in comparison to a simple organism.

Question: 8. What is the criterion for classification of organisms as belonging to kingdom Monera or Protista?

Answer: Organisms which are prokaryotes belong to the kingdom Monera. On the other hand, organisms which are eukaryotes and unicellular belong to the kingdom Protista.

Question: 9. In which kingdom will you place an organism which is single-celled, eukaryotic and photosynthetic?

Answer: Plant Kingdom

: 10. In the hierarchy of classification, which grouping will have the smallest number of organisms with a maximum of characteristics in common and which will have the largest number of organisms?

Answer: Species will have the smallest number of organisms with a maximum of characteristics in common. On the contrary, kingdom will have the largest number of organisms.

Question: 11. Which division among plants has the simplest organisms?

Answer: Thallophyta

Question: 12. How are pteridophytes different from the phanerogams?

Answer: In pteridophytes, the reproductive organs are hidden and they do not produce seeds. In phanerogams, reproductive organs are conspicuous and they produce seeds.

Question: 13. How do gymnosperms and angiosperms differ from each other?

Answer: Seeds are naked in gymnosperms, while they are covered in angiosperms. Gymnosperms do not bear flowers, while angiosperms bear flowers.

Question: 14. How do poriferan animals differ from coelenterate animals?

Answer: In porifera, body has numerous pores, which are absent in coelenterates. Body has a cavity in coelenterates, while it is absent in porifera.

Question: 15. How do annelid animals differ from arthropods?

Answer: Segmented body in annelids, while true segmentation is absent in arthropods. Arthropods have jointed appendages, which are absent in annelids.

Question: 16. What are the differences between amphibians and reptiles?

Answer: Amphibians need water to lay eggs and fertilization is external. Reptilians do not need water to lay eggs and fertilization is internal. Amphibians use both skin and lungs for breathing. Reptilians breathe through lungs only.

Question: 17. What are the differences between animals belonging to the Aves group and those in the mammalian group?

Answer: In aves, body is covered with feathers; while in mammals, body is covered with hairs. Mammary glands are absent in aves. Forelimbs of aves are modified into

wings which is not the case in mammals. Aves are oviparous, while most of the mammals are viviparous.

EXTRA AMMUNITION

One Mark Questions:

1) What is biological classification ?

Ans: Grouping of organisms based on similarities & dissimilarities is called biological classification.

2) What is Taxonomy ?

Ans: The systematic study of identification classification and naming of organisms is called taxonomy.

3) Who made 1st attempt for scientific basis of classification ?

Ans : Aristotle.

4) On what morphological criteria Aristotle classified the plants ?

Ans : Based on the morphological nature of the stem.

5) Based on the nature of the stem name the types of plants classified by Aristotle.

Ans: Herbs, Shrubs & Trees.

6) Name the 2 kingdoms of classification ?

Ans: (1) Plantae & Metaphyta (2) Animalia Metazoa

7) What are prokaryotes ?

Ans: The organisms which do not have well organized nucleus in their cell are called prokaryotes.

OR

Organisms containing incipient nucleus (Nucleoid) in their cells are called prokaryotes.

8) Give one example for prokaryote ?

Ans: Bacteria, Nostoc (cyanobacteria/ B.G. Algae)

9) What are Eukaryotes ?

Ans: Organisms which have well organized nuclei (True nuclear) are called Eukaryotes.

10) Give an example for Eukaryotes ?

Ans: Amoeba, mango, Man.

11) What are Unicellular organisms ?

Ans: One called or Single called organisms are called unicellular organisms.

12) Give an example for unicellular organisms ?

Ans: Chlamydomonas, Amoeba, Euglena.

13) What are Multi cellular organisms ?

Ans: Organisms whose body is made up of many numbers of cells are called multi cellular organisms.

14) Give an example for multi cellular organisms.

Ans: Spirogyra, Mango, Man.

[15) Name the five kingdoms of living organisms ?

Ans: (1) Kingdom monera, (2) Kindom Protista, (3) Kindom – Fungi (mycota) (4) Kindom – plautae (metaphyta). (5) Kindom – Animalia (metazoan).]

15) Who proposed five kingdom classification ?

Ans: R.H. Whittaker (1969)

16) What are Monerans ?

Ans: Prokaryotic cell natured organisms are called monerans.

17) Name the kingdom which includes monerans ?

Ans: Kingdom Monera.

18) Give an example for kingdom morera.

Ans: Bacteria, Nostoc, Mycoplasma.

19) Name the kingdom which includes Bacteria.

Ans: Kindom Monera. .

20) What are autotrophic bacteria ?

Ans: The bacteria which synthesize their own food from triorganic substrates are called autotrophic bacteria.

21) Give an example for autotrophic bacteria.

Ans: Nostoc, Anabaena.

22) What are heterotrophic bacteria ?

Ans: The bacteria which do not synthesize their own food but depend on other organisms or dead organic matter are called heterotrophic bacteria.

23) Why archaea bacteria can also live in extreme conditions?

Ans: Archaea Bacteria are having different cell walls structure responding survival in extreme conditions.

24) What are halophiles ?

Ans: The archaea bacteria which live in extreme salty areas are called halophiles.

25) What are thermoacidophiles ?

Ans: The archaea bacteria which live in hot springs are called thermoacidophiles.

26) What are methanogens ?

Ans: The archaea bacteria which live in marshy areas are called methanogens.

27) Where does methanogens live ?

Ans: In the gut of several ruminant animals (cows & buffaloes)

28) Name the gas produced by methanogens.

Ans: Methane (biogas)

29) Name the gas produced by dung of cows & buffaloes with the help of methanogens ?

Ans: Methane.

30) What are Eubacteria ?

Ans: True bacteria with rigid cell wall are called Eubacteria.

31) What are cyano bacteria ?

Ans: Blue, green, orange are called cyano bacteria.

32) Give an example for cyanobacteria.

Ans: Nostoc.

33) What are heterocysts ?

Ans: The colourless specialized cells of nostoc filament meant for fixing atmospheric nitrogen are called heterocysts.

34) What are chemosynthetic autotrophic bacteria ?

Ans: The bacteria which oxidize inorganic substances like nitrate, Nitrites & ammonia to release energy in the form of ATP are called chemosynthetic bacteria.

35) What are mycoplasmas ?

Ans: The smallest living organisms without cell walls & survive without oxygen are called mycoplasmas.

36) Name the kingdom which includes single celled eukaryotes?

Ans: Kingdom Protista.

37) What are protists ?

Ans: Single celled eukaryotes are called protists.

38) Name the 2 methods of protist's reproduction.

(1) Asexual reproduction (cell fission)

(2) Sexual reproduction (Zygote formation)

39) What are planktons ?

Ans: The microscopic organisms which float on water are called planktons.

40) Name the chemical component of cell wall of chrysophytes (Diatoms)

Ans: Chitin

41) The walls of chrysophytes (diatoms) are indestructible. Why ?

Ans: Because of the presence of chitin in their walls.

42) What is diatomaceous earth ?

Ans: Accumulation of cell wall deposition of dead diatoms.

43) Which are chief producers of oceans ?

Ans: Diatoms.

44) Give an example for red dinoflagellates ?

Ans: Gonyaulax

45) Which organisms make the sea water red ?

Ans: Dinoflagellates.

46) What are dinoflagellates ?

Ans : Marine, Photosynthetic organisms with 2 flagella are called dinoflagellates.

47) What are euglenoids ?

Ans: The fresh water organisms found in stagnant water with protein rich pellicle in their cell wall are called euglenoids.

48) Give an example for euglenoids.

Ans: Euglena (photosynthetic protozoan)

49) What are slime moulds ?

Ans: Saprophytic protists are called Slime moulds.

50) What are plasmodium ?

Ans: Aggregation of slime moulds under suitable conditions are called plasmodium, which may grow and spread over several feet. During unfavorable can they differentiate & follows fruiting bodies.

51) What are pseudopodia ? (false feet)

Ans: Locomotor organs of amoeba are called pseudopodia.

52) Name parasitic protozoa.

Ans: Entamoeba, Plasmodium (Malarial parasite)

53) Give an example for flagellated protozoans.

Ans : Trypanosoma, Euglena.

54) Name parasitic flagellated protozoan.

Ans: Trypanosoma.

55) Name the disease caused by Trypanosoma.

Ans: Sleeping sickness.

56) Which is the locomotor organ of flagellated protozoa (or Trypanosoma or Euglena)

Ans: Flagella.

57) Give one example for ciliated protozoans.

Ans: Paramecium.

58) Which is the locomotor organ of paramecium or ciliated protozoans.

Ans: Cilia.

59) Ciliated protozoans are actively moving organisms, why ?

Ans: Because of the presence of thousands of cilia.

60) Give one example for sporozoan. ?

Ans: Plasmodium

61) Which one is called malarial parasite ?

Ans: Plasmodium.

62) Name the disease caused by plasmodium ?

Ans: Malaria.

63) Name the kingdom which includes eukaryotic heterotrophic organisms?

Ans: Kingdom Mycota (Fungi)

64) Name unicellular Fungi.

Ans: Yeast.

65) Name the fungi used in the preparation of bread and beer ?

Ans: Yeast.

66) Which fungi act as a source of antibiotics ?

Ans: Penicillium.

67) Name the disease caused by puccinia ?

Ans: Wheat rust disease.

68) We should keep fruits & vegetables in refrigerator, why ?

Ans: to prevent food from going bad due to bacterial or fungal infections.

69) What are hyphae ?

Ans: Long slender thread like structure of fungi are called hyphae.

70) Name non filamentous fungi

Ans: Yeast (It is unicellular)

71) What are coenocytic hyphae?

Ans : Continuous tube like hyphae filled with multinucleated hyphae are called coenocytic hyphae.

72) Name the cell wall component of fungi ?

Ans: Chitin and polysaccharides.

73) What are saprophytic fungi ?

Ans: The heterotrophic fungi which absorb soluble organic matter from dead substrates are called saprophytes.

74) What are parasitic fungi ?

Ans: The heterotrophic fungi which absorb food from living plants and animals are called parasitic fungi.

75) What are symbionts ?

Ans: The association of 2 organisms in which both the organisms (partners) are mutually benefited are called symbionts. Ex: Fungi with algae as lichens.

76) Name the organisms of lichens ?

Ans: Fungi & Algae.

77) What are mycorrhiza ?

Ans: Fungi in association with roots are called mycorrhiza.

78) Name A sexual method of reproduction in fungi ?

Ans: By producing spores called conidia or sporangia spores or

79) Name sexual method of reproduction of fungi ?

Ans: By producing Oospores, Osco spores, & basidiospores.

80) What are fruiting bodies ?

Ans: Spores producing structures in fungi are called fruiting bodies.

81) What is plasmogamy ?

Ans: Fusion of protoplasm of 2 motile or non motile gametes.

82) What is Karyogamy ?

Ans: Fusion of 2 nuclei is called karyogamy.

83) What are haploid spores ?

Ans: The spores produced through meiosis is zygote are called haploid spores

84) What is dikaryon ?

Ans: Fungal cell with 2 nuclei is called dikaryon.

85) What is mycelium ?

Ans : The plant body of fungi is called mycelium. It is made up of aggregation of hyphae.

86) What is the nature of mycelium of phycomycetes ?

Ans: Aseptate and Coenocytes

87) Name asexual method of reproduction in phycomycetes ?

Ans: By formation of Zoospores (motile) & by aplanospores (non motile)

88) Name 2 types of spores produced by phycomycetes ?

Ans: (1) Zoospores (motile) (2) Aplanospores (non motile)

90) What is zygospore ?

Ans: The spore formed by the fusion of 2 gametes is called zygospore.

91) What are isogamous gameter ?

Ans: Morphologically similar gametes are called isogamous gametes.

92) Give example for phycomycetes ?

Ans : Rhizopus, (2) Rhizopus (bread mould) (3) Albugo (parasitic fungi on mustard)

93) Name the parasitic fungi on mustard ?

Ans : Albugo

94) Give an example for unicellular Ascomycetes ?

Ans : Yeast (Saccharomyces)

95) Give an example for multicellular Ascomycetes ?

Ans: Penicillium

96) What are conidia ?

Ans : Asexual conidia produced exogenously on the special mycelia called conidiophores.

97) Give an example for Ascomycetes ?

Ans: Aspergillus, Claviceps, Neurospora.

98) What is the importance of Neurospora ?

Ans: It is extensively used in biochemical & genetic work.

99) Name edible ascomycetes ?

Ans : Morels & truffles are edible & are considered as delicacies.

100) Give an example for Basidiomycetes ?

Ans: Mushrooms (2) bracket fungi (puff balls)

101) Name the most common vegetative method of reproduction in basidiomycetes.

Ans: Fragmentation.

102) What are basidiocarps ?

Ans: Fruiting bodies of basidiomycetes are called basidiocarps.

103) How many basidiospores are produced per basidium ?

Ans : Four Basidiospores.

104) Give an example for basidiomycetes ?

Ans: Agaricus (mushroom) (2) Ustilago (smut) (3) Puccinia (rust fungus)

105) Deuteromycetes are called imperfect fungi, why ?

Ans: Because in deuteromycetes we know only a sexual or vegetative phase of reproduction.

106) What are conidia ?

Ans: Asexual spores of deuteromycetes are called conidia.

107) What is the nature of mycelium in basidiomycetes and deuteromycetes?

Ans: Separate and branched.

108) Write the importance of deuteromycetes.

Ans: (1) helps in decomposition of litter. (2) helps in mineral cycling.

109) Give an example for deuteromycetes.

Ans: (1) alternaria (2) colletotricheism (3) Trichoderma.

110) Give an example for insectivorous plants or parasitic plants.

Ans: Bladderwort (2) Venus fly trap (3) Cuscuta.

111) What is the cell wall component of plants.

Ans : Cellulose.

112) What are the 2 distinct phases of life cycles of plants.

Ans: (1) Haploid gametophytic generation. (2) Diploid sporophytic generation.

113) What is alternation of generation ?

Ans: The alternate occurrence of both haploid and diploid sporophytic generation in the life cycle of plants is called alternation of generation.

114) Name the kingdom which includes heterotrophic eukaryotic multicellular organisms which lack cell walls?

Ans: Kingdom animalia.

115) Which is the reserve food materials of animals ?

Ans: Glycogen or fat

116) What is the mode of nutrition in animals ?

Ans: Holozoic (by ingestion of food)

117) Name the major type of reproduction ?

Ans: By copulation of male and female followed by embryological development.

118) Name the organisms which are not included in five kingdom?

Ans: classification of whittaker.

119) What is meant by virus ?

Ans: Virus means venom or poisonous fluid.

120) Who coined the term virus ?

Ans: Louis parteur

121) Who discovered mosaic diseases of tobacco ?

Ans: D.J. Ivanowsky

122) Who called viruses as “contagium virus fluidum ?

Ans : M.W. Beijerinck.

123) Viruses are called “contagium vivum fluidum” why ?

Ans: Because the extract of the infested plants of tobacco could cause infection in healthy plants.

124) Who filtered viruses for the first time ?

Ans: W.M. Stanley.

125) What is the component of crystals of viruses ?

Ans: Largely proteins (a/c to W.M. Stanley)

126) Name the genetic material of viruses ?

Ans : Either DNA or RNA never both.

127) What is the type of genetic material in plant viruses ?

Ans: Single stranded R.N.A

128) What is the type of genetic material in animal viruses ?

Ans: Either single or double stranded RNA or double stranded.

129) What are bacteriophages ? (double stranded DNA viruses)

Ans: The viruses that infect the bacteria are called bacteriophages.

130) What is the type of genetic material in bacteriophages ?

Ans: Double stranded D.N.A.

131) What is capsid ?

Ans: The protein coat viruses is called capsid.

132) What are capsomeres ?

Ans: Sub units of protein coat capsid are called capsomeres.

133) Give an example for obligate parasites ?

Ans: Viruses.

134) Why viruses are called obligate parasites ?

Ans: Because viruses can live inside or outside the body of host cell.

135) Name any two diseases.

Ans: (1) Mumps (2) Small pox (3) Herpes (4) Influenza (4) AIDS.

136) What are viroids ?

Ans: Infections R.N.A particles smaller than viruses protein coat are viroids.

137) Who discovered viroids ?

Ans: T.O. Diener

138) Name the disease caused by viroids ?

Ans : Potato spindle tuber disease.

139) What are lichens ?

Ans: Symbiotic associations (mutually useful association) b/n algae and fungi are called lichens.

140) What is phycobiont ?

Ans: The algal component of lichen is called phycobiont. It is autotrophic.

141) What is mycobiont ?

Ans: The fungal component of lichen is called mycobiont. It is heterotrophic.

142) Name autotrophic and heterotrophic component of lichens ?

Ans: Algal component is autotrophic

Fungal component is heterotrophic.

143) What is the role of algae & fungi in lichens ?

Ans: Algae prepare food for fungi & fungi provide shelter and absorb mineral nutrients & water for algae.

144) Which organisms are called pollution indicators ?

Ans: Lichens.

145) Lichens are called pollution indicator, why ?

Ans : Because they do not grow in polluted areas.

146) What are the two components of viruses ?

Ans : (1) Genetic material either DNA or RNA. (2) Protein coat.

TWO MARKS QUESTIONS

1) Name the 5 kingdoms of living organisms ?

Ans: 1) Monera 2) Protista 3) Fungi (mycota) 4) Plantae (Metaphyto) 5) Animalia (Metazoa).

2) Mention the main criteria of R.H. Whittaker's classification ?

Ans: 1) Cell structure 2) Thallus organization 3) Mode of nutrition 4) Reproduction 5) Phlogenetic relationships were considered by Whittaker.

3) Where does bacteria live ?

Ans: Bacteria are live in extreme habitats such as (1) hot springs (2) deep oceans (3) Snow (4) Deserts (5) as parasites on other organisms.

4) Based on the shape classify the bacteria ?

Ans: (1) The coccus (spherical) (2) Vibrium (comma shape) (3) The bacillus (rod shaped) (4) Spirillum (spiral)

5) What are the 2 kinds of autotrophic bacteria ?

Ans: (1) Photosynthetic autotrophic bacteria (2) Chemosynthetic autotrophic bacteria.

6) What are arche bacteria ?

Ans: The special type of bacteria which live in most harsh (adverse) habitats such as extreme salty areas, hot springs & marshy areas are called arche bacteria.

7) List out any 4 properties of cyano bacteria ?

Ans: 1) Cells are prokaryotic in nature.

2) They are unicellular, colonial or filamentous.

3) They are either fresh water or marine water or terrestrial B.G.A

4) The colonies are surrounded by gelatinous mucilaginous sheath.

8) What is the role played by chemosynthetic bacteria ?

Ans: Recycling nutrients like Nitrogen Phosphorus, Iron & Sulphur.

9) Mention the methods of reproduction in bacteria ?

Ans: 1) Fission 2) by spore formation 3) Transduction (by mutual

DNA transfer) (sexual reproduction)

10) Which kind of eukaryotic protists are included in monera ?

Ans: All single celled eukaryotes are placed under protista.

11) Name the different group of organisms included in monera ?

Ans: Chrysophytes, Dinoflagellates, Euglenoids, Slime molds and Protozoans are the group of organisms included in monera.

12) Write the two characteristic features of kingdom protista ?

Ans:

1) All are single celled eukaryotes.

2) It includes plant protists (photosynthetic protozoan) & animal protozoans (protista)

3) Protist members are primarily organic in nature & some are parasitic ?

4) The kingdom protista links with other plants, fungi & animals.

5) Some protistan members have flagella or cilia as locomotory organs.

6) Protists reproduce asexually by binary fission and sexually by a process involving cell fusion & Zygote formation.

13) Mention the two important characters of Chrysophytes ?

Ans: (1) Chrysophytes are the protistan unicellular eukaryotic protists.

(2) This group includes the diatoms & Eukaryotes which are called "golden algae" (Jewels of the plant kingdom).

14) (How do you) Give the outline classification of bacteria.

15) Write the outline classification of kingdom protista.

16) What are parasites ? Name two protozoan parasites you have studied.

Ans: The organisms which depend on the other host organism for their requirement of food are called parasites.

Examples : (1) Plasmodium (2) Trypanosome.

17) Name the flagellated protozoan & ciliated protozoan ?

Ans: (1) flagellated protozoan Ex: Euglena.

(2) ciliated protozoan Ex: Paramecium.

18) What are symbionts ? Give an example

Ans: The close association of two different organisms living together where both are benefited for their equipments are called symbionts.

19) What are the 3 steps involved in the life cycle of fungi ?

Ans: (1) Plasmogamy (2) Karyogamy (3) meiosis in zygote.

20) Name the examples of phycomycetes ?

Ans: (1) Mucor (2) Rhizopus (3) Albugo.

22) Name the fungi belongs to ascomycetes ? which are of them is used in biochemical & genetic work ?

Ans: (1) Aspergillus (2) Claviceps (3) Neurospora.

23) Name the fungi belongs to basidiomycetes ?

Ans: (1) Agaricus (mushroom) (2) Ustilago (Smut) (3) Puccinia (rust fungus)

24) Name the examples of deuteromycetes ?

Ans: (1) Alternaria (2) Colletotrichum (3) Trichoderma.

25) Write briefly about lichens?

Ans: (1) Lichens are symbiotic close association of two different organisms such as algae & fungi.

(2) Algal component of lichen known as phycobiont which is photosynthetic in nature.

(3) Fungal component of living is known as mycobiont which is non photosynthetic, but helps in absorption of minerals, nutrients & water.

(4) Lichens are very good pollution indicators. They do not grow in polluted areas.

FOUR / FIVE MARKS QUESTIONS:

1) What are the importance of heterotrophic bacteria.

Ans: (1) Conversion of milk to curd.

(2) Antibiotic productions.

(3) N₂ fixation in leguminous roots.

(4) Act as pathogen, causing diseases like cholera, typhoid, Tetanus.

(5) Damage crops (citrus canker disease)

(6) Act as 'Scavengers of nature' by decomposing dead & decaying organic matter.

2) Write the characteristic features of the kingdom – Monera – prokaryotes.

Ans: (1) All prokaryotes are single celled eukaryotes.

(2) It includes plant prokaryote (photosynthetic prokaryotes) & animal prokaryotes.

(3) Prokaryote members are primarily autotrophic in nature & some are Parasitic.

(4) The kingdom prokaryota links with other, plants, fungi & animals.

(5) Some prokaryotes members have flagella or cilia as locomotory organs.

(6) Protists reproduce asexually by binary fission & sexually by aprocose involving cell fusion & Zygote formation.

3) Write the important characters of chrysophytes ?

Ans: (1) Chrysophytes use the unicellular, microscopic eukaryotic protists.

(2) This group includes diatoms & desmids which are called "golden algae" (the Jewels of the plant kingdom due to their beautiful designed cell wall or fragmentation)

(3) They are found in fresh water and marine water.

(4) They float passively in water currents (plankton)

(5) Most of chrysophytes (diatoms) are photosynthetic in nature & are the chief producers in the oceans.

(6) The diatoms cell walls have two thin silicones overlapping walls.

(7) Diatomaceous earth (the gritty soil deposited over a period of billions accumulated) of years is useful in polishing, filtration of oils & syrups.

4) Write the characters of Dinoflagellates ?

Ans: (1) Dinoflagellates are mostly found in marine water.

(2) They are photosynthetic in nature.

(3) Depending on the main pigment in their cells, they appear blue, green, brown, yellow or red in colour.

(4) The cell wall has stiff cellulose plates on the outer surface.

(5) Most of dinoflagellates have two flagella.

(6) Due to rapid multiplication, red dinoflagellates like *Gyrodinium aureolum* and the toxins released by these large numbers of dinoflagellates may kill the other marine animals such as fishes.

5) Write the five characters of euglenoids?

Ans: (1) Euglenoids are the unicellular, microscopic protists found in stagnant fresh water.

(2) Cell wall is absent but proteinaceous flexible pellicle is present as a protective layer.

(3) They have two flagella, one is long & other is short.

(4) They are photosynthetic in presence of light.

(5) In the absence of light, they behave like heterotrophs (deprived) by preying on other smaller organisms.

(6) The interesting feature of the euglenoids is the presence of the pigments identical to those present in higher plants.

6) Write the important characters of Slime moulds ?

Ans: (1) Slime moulds are the unicellular saprophytic protists.

(2) Under suitable conditions, aggregation of the slime mould body moves along decaying twigs & learns which may grow & spread several feet called plasmodium.

(3) This plasmodium during unfavorable conditions, differentiates to produce fruiting bodies bearing spores at their tips.

(4) Even under adverse conditions these spores extremely resistant and can survive.

(5) The spores are dispersed by air currents.

7) Write the salient features of protozoan's ?

Ans: (1) All protozoan's are eukaryotic, microscopic, unicellular.

(2) They are heterotrophic, live as predators or parasites (plasmodium & Trypanosome)

(3) They are believed to be primitive relatives of animals.

(4) Protozoan's are grouped in to four major groups, such as

(1) Amoeboid protozoan's (2) Flagellated protozoan's (3) ciliated protozoan's (4) Sporozoan's

8) Write the general character of kingdom Fungi ?

Ans: (1) The fungi are the unique heterotrophic organisms either saprophytic or parasitic or symbiotic.

(2) The fungi are cosmopolitan in distribution and occur in air, water, soil and on plants & animals.

(3) They are unicellular (yeast) or multi cellular, eukaryotic, organisms.

(4) Fungi are filamentous and the body consisting of long, slender thread like structures called hyphae, may be coenocytes hyphane or septate hyphore.

(5) The network of hyphae in fungi is called mycelium.

(6) The cell walls of fungi are composed of chitin and polysachandes.

(7) Reproduction in fungi can takes place by three methods (1) Vegetative (2) Asexual (3) Sexual reproduction.

(8) Fungi are classified into 4 major classes :-

(1) Phycomycetes (2) Ascomycetes (3) Basidiomycetes and (4)Denteromycetes.

9) Write the 4 characters phyconmycetes ?

Ans: (1) Phycomycetes are found in a genetic habitats, moist and damp places where wood is decaying.

(2) Some of are parasites on plants.

(3) A sexual reproduction takes place by zoospores (motile) or by aplanospores (non – motile)

(4) Sexual reproduction takes place by the fusion of gametes to produce the zygospore.

10) Write the characters of Ascomycetes?

Ans: (1) Ascomycetes are commonly called as “Sac – fungi”

(2) These are multicellular namely unicellular (yeast)

(3) They are saprophytic, decomposers, coprophilory (growing in dung) or parasitic.

(4) Mycelium is branched & septate.

(5) The Asexual spores are called conidia, developed on Conidiophores.

(6) The sexual spores are called ascospores, developed in sac like asci, on ascocarps.

(7) Many members are edible (morels & puffballs)

11) Write the important characters of Basidiomycetes ?

Ans: (1) They grow soil, on logs, & tree stumps.

(2) Some are plant parasites (rusts & smuts)

(3) These are commonly known as mushrooms, bracket fungi & puff balls.

(4) The mycelium is branched & septate.

(5) Vegetative reproduction takes place by fragmentation.

(6) Asexual reproduction with sexual spores is absent.

(7) The sex organs absent, but plasmogamy and karyogamy processes are found basidiomycetes.

(8) The fruiting bodies are called basidiocarps.

(9) The basidium produces 4 basidiospores by meiosis.

11) Write the important characters of deuteromycetes ?

Ans: (1) Deuteromycetes are commonly known as imperfect fungi.

(2) The mycelium is branched and septate.

(3) They have only the vegetative or asexual phases.

(4) They reproduce only by asexual spores known as conidia.

(5) Some are saprophytes or decomposers or parasites.

(6) Decomposers are helpful in Mineral recycling.

12) Write the important characters of the kingdom plantae ?

Ans: (1) Kingdom plantae includes all eukaryotic chlorophyll containing organisms called plants.

(2) Prominent chloroplasts are found in the cells.

(3) Cells have cellulosic cell wall.

(4) Except few most plants are autotrophic.

(5) some are heterotrophic, include insectivorous plants. (like venus fly trap & bladder wort) and parasites (Cuscuta).

(6) Life cycle of plants has two distinct phases –

(1) The diploid (2n) saprophytic phase.

(2) The haploid (n) gamatophytic phase.

(7) There is the phenomenon of alternation of generation.

(8) The kingdom plant a includes algae, bryophytes, pteridophytes, gymnosperms & angiosperms.

13) Write the important characters of the kingdom- Animalia ?

Ans; (1) Kingdom Animalia includes heterotrophic, multicellular, eukaryotic organisms.

(2) Cells are not containing cell walls.

(3) Animals directly or indirectly depend on plants for food.

(4) they digest their food in an internal cavity.

(5) Animals store food reserves as glycogen or fat.

(6) The mode of nutrition in animals is holozoic (by ingestion of food)

(7) Higher forms animals show elaborate sensory and neuromotor mechanism.

(8) Most of the animals are capable of locomotion.

(9) The sexual reproduction is by copulation of male & female, followed by embryological development.

14) List the characteristics of Viruses ?

Ans: (1) Viruses are neither living nor non – living.

(2) Viruses for this reason do not find a correct place in classification.

(3) Viruses do not possess cells, hence they are not truly living.

(4) viruses are non cellular organisms.

(5) They are inert crystalline structure outside the living cell.

(6) Once a virus infect a cell, replicate themselves in the host cell and kill the host.

(7) Viruses contain both protein and genetic material either RNA or DNA, never both.

(8) No virus contains both RNA & DNA.

(9) A virus is nucleoprotein and its genetic material is infectious.

(10) Virus that infect plants have single strand of RNA.

- (11) The virus that infect animals have either single or double stranded RNA or double stranded DNA.
- (12) Viruses that infect bacterial cells are called bacteriophages, which have double stranded DNA.
- (13) The protein coat of virus is called capsid, made of small units called Capsomeres, which protect the central nucleic acid.
- (14) The capsid capsomeres are arranged in helical or polyhedral geometric forms.
- (15) In plants TMV causes leaf mosaic disease, leaf curling disease, leaf rolling disease, yellowing and vein clearing disease.
- (16) Viruses cause diseases in human being such as – AIDS, Small pox, Mumps, Herpes, Influenza.

Q.1. Who is said to be Father of Taxonomy?

Answer : Carolus Linnaeus.

Q.2. State the advantage of using scientific names instead of common or popular names?

Answer : To avoid the confusion in name of an organism as different organism are called by the same name in different languages, Linnaeus gave a system in which an organism is given two names generic and specific. The scientific name of common cat is *Felis domestica* and that for tiger is *Felis tigris*. This system of naming organism is called "Binomial system of nomenclature". The scientific names given to the organism is recognized all over the world.

Q.3. Who was the scientist to propose the binomial nomenclature? Give uses of this system?

Answer : Carolus Linnaeus.

Use:- (i) It is understood and followed all over the world.
(ii) They are not changed.
(iii) They are not changed according to language or country.

Q.4. . State the components of a scientific name?

Answer : There are two components of a scientific name.

First one is genus (generic) and second species name (specific).

Q.5. State the conventions followed while writing the scientific names?

Answer : Conventions followed are:-

- (i) The name of the genus begins with capital letter.
- (ii) The name of the species begins with small letter.
- (iii) The scientific names are printed in italics.

(iv) The genus name and the species name are underlined if written by hand.

Q.6. How are two characteristics to be used for developing a hierarchy in classification choose?

Answer : The characteristics dependent on the previous one and would decide the variety in the next level should be chosen for developing a hierarchy in classification.

Q.7. State the basis for grouping organisms into five kingdoms?

Answer : The basis are:-

- (i) Organism made of prokaryotic or eukaryotic cells.
- (ii) Organism are unicellular or multicellular.
- (iii) Cells have cell wall or not.
- (iv) Organism prepare their own food or not.

Q.8. State the major divisions in the Plantae. What is the basis for these division?

Answer : Major division in Plantae are:-

- (i) Thalophyta.
- (ii) Bryophyte.
- (iii) Pteridophyta.
- (iv) Gymnosperms.
- (v) Angiosperms.

Basis for classification are:-

- (i) If the plant body has well differentiated, distinct components.
- (ii) If the differentiated plant body has special tissues for the transport of water and minerals.
- (iii) If the plants bear the seeds.
- (iv) Seeds are enclosed within fruits or not.

Q.9. State the criteria for deciding divisions in plants?

Answer : The criteria depends upon:-

- (i) Differentiation of plant body components.
- (ii) Presence of transport tissues.
- (iii) Ability to produce seeds.
- (iv) Seeds enclosed in fruits.

Q.10. How vertebrata are classified into further subgroups?

Answer : Vertebrata are classified further on the basis of:-

- (i) Simple to complex form.
- (ii) Function of the organism.

For example:-

- (i) fishes have two chambered heart,
- (ii) amphibians and reptiles have three chambered heart,
- (iii) aves and mammals have four chambered heart.

1. In which the reproductive organs are hidden?
 - a. Cryptogamae
 - b. Phanerogamae
 - c. Gymnosperms
 - d. angiosperms
2. Which phylum of animals is also called flatworms?
 - a. Porifera
 - b. Coelenterata
 - c. Platyhelminthes
 - d. Nematoda
3. What is the exclusive marine phylum?
 - a. Echinodermata
 - b. Porifera
 - c. Cnidarians
 - d. Protozoa
4. The mode of nutrition in fungi
 - a. only saprotrophic
 - b. saprotrophic or parasitic
 - c. only parasitic
 - d. none of above
5. What is not possessed by bacteria?
 - a. membrane bound organelles
 - b. nucleus
 - c. nucleolus
 - d. all of these
6. What does Arthropod means?
 - a. bonous legs
 - b. cartilaginous legs
 - c. largest legs
 - d. jointed legs
7. What is not poisoning among these?
 - a. scorpion
 - b. centipede
 - c. spider
 - d. crab
8. The excretory system in annelids is consisted of tubes called?
 - a. flame cells
 - b. metanephridia
 - c. nephridia
 - d. protonephridia

9. Which sub group in plant kingdom produces flowers?
- Angiosperms
 - fungi
 - mosses
 - ferns
10. Choose the vascular plants out of these.
- mosses
 - liverworts
 - hornworts
 - ferns
11. In which organism flame cells form the excretory system?
- flatworms
 - earthworms
 - insects
 - crabs
12. Which of these are found filamentous
- Spirogyra
 - euglena
 - chlamydomonas
 - amoeba
13. What does a bacteria lack?
- endoplasmic reticulum
 - DNA.
 - cell wall
 - cytoplasm
14. What is the mode of nutrition in bacteria?
- autotrophic
 - heterotrophic
 - autotrophic and heterotrophic
 - none of these
15. What is the phylum of Octopus?
- Arthropoda
 - Mollusca
 - Annelida
 - cnidarian

Answers

1. a, 2. C, 3. A, 4. B, 5. D, 6. D, 7. D, 8. C, 9. a, 10. D, 11. A, 12. A, 13. A, 14. C, 15. B

1. Find out incorrect sentence

- (a) Protista includes unicellular eukaryotic organisms
- (b) Whittaker considered cell structure, mode and source of nutrition for classifying the organisms in five kingdoms
- (c) Both Monera and Protista may be autotrophic and heterotrophic
- (d) Monerans have well defined nucleus

2. Which among the following has specialised tissue for conduction of water?

- (i) Thallophyta
- (ii) Bryophyta
- (iii) Pteridophyta
- (iv) Gymnosperms

- (a) (i) and (ii)
- (b) (ii) and (iii)
- (c) (iii) and (iv)
- (d) (i) and (iv)

3. Which among the following produce seeds?

- (a) Thallophyta
- (b) Bryophyta
- (c) Pteridophyta
- (d) Gymnosperms

4. Which one is a true fish?

- (a) Jellyfish
- (b) Starfish
- (c) Dogfish
- (d) Silverfish

5. Which among the following is exclusively marine?

- (a) Porifera
- (b) Echinodermata
- (c) Mollusca
- (d) Pisces

6. Which among the following have open circulatory system?

- (i) Arthropoda
- (ii) Mollusca
- (iii) Annelida
- (iv) Coelenterata

- (a) (i) and (ii)
- (b) (iii) and (iv)
- (c) (i) and (iii)
- (d) (ii) and (iv)

7. In which group of animals, coelom is filled with blood?

- (a) Arthropoda
- (b) Annelida
- (c) Nematoda
- (d) Echinodermata

8. Elephantiasis is caused by

- (a) Wuchereria
- (b) Pinworm
- (c) Planarians
- (d) Liver flukes

9. Which one is the most striking or (common) character of the vertebrates?

- (a) Presence of notochord
- (b) Presence of triploblastic condition
- (c) Presence of gill pouches
- (d) Presence of coelom

10. Which among the following have scales?

- (i) Amphibians
- (ii) Pisces
- (iii) Reptiles
- (iv) Mammals

- (a) (i) and (iii)
- (b) (iii) and (iv)

- (c) (ii) and (iii)
- (d) (i) and (ii)

11. Find out the false statement

- (a) Aves are warm blooded, egg laying and have four chambered heart
- (b) Aves have feather covered body, fore limbs are modified as wing and breathe through lungs
- (c) Most of the mammals are viviparous
- (d) Fishes, amphibians and reptiles are oviparous

12. Pteridophyta do not have

- (a) root
- (b) stem
- (c) flowers
- (d) leaves

13. Identify a member of porifera

- (a) Spongilla
- (b) Euglena
- (c) Penicillium
- (d) Hydra

14. Which is not an aquatic animal?

- (a) Hydra
- (b) Jelly fish
- (c) Corals
- (d) Filaria

15. Amphibians do not have the following

- (a) Three chambered heart
- (b) Gills or lungs
- (c) Scales
- (d) Mucus glands

16. Organisms without nucleus and cell organelles belong to
(i) fungi

- (ii) protista
- (iii) cyano bacteria
- (iv) archae bacteria

- (a) (i) and (ii)
- (b) (iii) and (iv)
- (c) (i) and (iv)
- (d) (ii) and (iii)

17. Which of the following is not a criterion for classification of living organisms?

- (a) Body design of the organism
- (b) Ability to produce one's own food
- (c) Membrane bound nucleus and cell organelles
- (d) Height of the plant

18. The feature that is not a characteristic of protochordata?

- (a) Presence of notochord
- (b) Bilateral symmetry and coelom
- (c) Jointed legs
- (d) Presence of circulatory system

19. The locomotory organs of Echinoderms are

- (a) tube feet
- (b) muscular feet
- (c) jointed legs
- (d) parapodia

20. Corals are

- (a) Poriferans attached to some solid support
- (b) Cnidarians, that are solitary living
- (c) Poriferans present at the sea bed
- (d) Cnidarians that live in colonies

21. Who introduced the system of scientific nomenclature of organisms

- (a) Robert Whittaker
- (b) Carolus Linnaeus

- (c) Robert Hooke
- (d) Ernst Haeckel

22. Two chambered heart occurs in

- (a) crocodiles
- (b) fish
- (c) aves
- (d) amphibians

23. Skeleton is made entirely of cartilage in

- (a) Sharks
- (b) Tuna
- (c) Rohu
- (d) None of these

24. One of the following is not an Annelid

- (a) Nereis
- (b) Earthworm
- (c) Leech
- (d) Urchins

25. The book *Systema Naturae* was written by

- (a) Linnaeus
- (b) Haeckel
- (c) Whittaker
- (d) Robert Brown

26. Karl Von Linne was involved with which branch of science?

- (a) Morphology
- (b) Taxonomy
- (c) Physiology
- (d) Medicine

27. Real organs are absent in

- (a) Mollusca

- (b) Coelenterata
- (c) Arthropoda
- (d) Echinodermata

28. Hard calcium carbonate structures are used as skeleton by

- (a) Echinodermata
- (b) Protochordata
- (c) Arthropoda
- (d) Nematoda

29. Differentiation in segmental fashion occurs in

- (a) Leech
- (b) Starfish
- (c) Snails
- (d) Ascaris

30. In taxonomic hierarchy family comes between

- (a) Class and Order
- (b) Order and Genus
- (c) Genus and Species
- (d) Division and Class

31. 5-Kingdom classification has given by

- (a) Morgan
- (b) R. Whittaker
- (c) Linnaeus
- (d) Haeckel

32. Well defined nucleus is absent in

- (a) blue green algae
- (b) diatoms
- (c) algae
- (d) yeast

33. The 'Origin of Species' is written by

- (a) Linnaeus
- (b) Darwin
- (c) Hackel
- (d) Whittaker

34. Meena and Hari observed an animal in their garden. Hari called it an insect while Meena said it was an earthworm. Choose the character from the following which confirms that it is an insect.

- (a) Bilateral symmetrical body
- (b) Body with jointed legs
- (c) Cylindrical body
- (d) Body with little segmentation

Answers to Multiple Choice Questions

1. (d)	2. (c)	3. (d)	4. (c)	5. (b)
6. (a)	7. (a)	8. (a)	9. (a)	10. (c)
11. (d)	12. (c)	13. (a)	14. (d)	15. (c)
16. (b)	17. (d)	18. (c)	19. (a)	20. (d)
21. (b)	22. (b)	23. (a)	24. (d)	25. (a)
26. (b)	27. (b)	28. (a)	29. (a)	30. (b)
31. (b)	32. (a)	33. (b)	34. (b)	