

Board – ICSE

Class – 9

Topic – Five Kingdom Classification

1. Why do we classify organisms?

Ans: There are more than a million kinds of living things exhibiting an infinite variety in form, structure and living places. It is not possible to know everything about all the organisms. We can study just a few representatives and get the idea about that group. Classification makes The study of such a wide variety of organisms easy. It is also important to understand the interrelationship among different groups of organisms. Classification serves as a basis for the development of other biological sciences as well.

2. Which do you think is a more basic characteristic for classifying organisms?

(i)The place where they live

(ii)The kind of cells they are made of. Why?

Ans: The kind of cells they are made of should be the basic characteristic for classifying organisms. Classification should be based on fundamental characteristics and the cell is the fundamental unit of all living forms. An eukaryotic cell has membrane-bound organelles, including a nucleus, which allow cellular processes to be carried out efficiently in isolation from each other. Therefore, organisms which do not have a clearly demarcated nucleus and other organelles would need to have their biochemical pathways organized in very different ways. This would have an effect on every aspect of cell design. Further, nucleated cells would have the capacity to participate in making a multicellular organism because they can take up specialized function. Therefore, this is a basic characteristic of classification.

3. On what bases are plants and animals put into different categories?

Ans: Plants and animals are put into different categories on the basis of whether they can produce their own food or not. Being able to produce one's own food versus having to get food from outside would make very different body designs necessary. In this way, plants and animals have been categorized into different groups.

4. Which organisms are called primitive and how are they different from so called advanced organisms?

Ans. Organisms which possess simple body organisation are called primitive organisms. They differ from so-called advanced organisms as all the activities of life are performed by a

single cell. i.e. they do not possess different organs or organ systems for performing various functions as found in advanced organisms.

5. Will advanced organisms be the same as complex organisms? Why?

Ans: Yes. As there is a possibility that complexity in design of an organism will increase over evolutionary time, it can be said that the younger organisms or advanced organisms are more complex in comparison to older one.

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

Ans: The organisms belonging to kingdom Monera are classified on the basis of following criteria:

- These organisms do not have a defined nucleus or organelles, nor do any of them show Multicellular body designs.
- Some of them have cell walls, some not.
- Mode of nutrition may be autotrophic or heterotrophic. The organisms belonging to kingdom Protista are classified on the basis of following criteria:
- The organisms are unicellular, eukaryotic organisms i.e. well defined nucleus and other cell organelles are present.
- Some of these organisms have hair like cilia or whip-like flagella for movement.
- Mode of nutrition may be autotrophic or heterotrophic.

8. In which kingdom will you place an organism which is single celled, eukaryotic and photosynthetic?

Ans: The organism, which is single celled, eukaryotic and photosynthetic, belongs to the kingdom Protista.

9. 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?

Ans: In the hierarchy of classification, the category “species” has the smallest number of organisms with a maximum of characteristics in common. On the other side, the category “kingdom” has the largest number of organisms as it is at the top level of the hierarchy.

10. Which division among plants has the simplest organisms?

Ans: The plants belonging to the division thallophyta do not have well-differentiated body organization.

11. How are pteridophytes different from phanerogams?

Ans: Pteridophytes and phanerogams differ mainly in their reproductive organs. The reproductive organs of pteridophytes are not very well developed, and they are therefore called cryptogams or those with hidden reproductive organs. On the other hand, plant with well differentiated reproductive organs that ultimately make seeds are called phanerogams.

12. How do gymnosperms and angiosperms differ from each other?

Ans:

Gymnosperms	Angiosperms
(a) Naked seeded plants- seeds are not enclosed within the fruit.	(a) Seed bearing plants, i.e. seeds are enclosed inside the fruit formed.
(b) Occupy an intermediate position between the pteridophytes and the angiosperms.	(b) Dominant group of land plants and most common flowering plants.

13. How do Porifera animals differ from coelenterate animals?

Ans: Poriferan animals differ from coelenterate animals in the following ways

Poriferan animals	Coelenterate animals
(a) Poriferans are 'pore-bearing' animals, i.e., the body has many pores all over.	(a) Coelenterata means hollow gut- the body cavity with a single opening to the outside coelenteron.
(b) They have cellular level of body organisation.	(b) They have tissue level of body organisation with a distinct division of labor.
(c) Characteristics canal system is present.	(c) Gastrovascular cavity or coelenteron is the main feature.

14. How do annelids differ from arthropods?

Ans: Annelids differ from arthropods in the following ways:

Annelids	Arthropods
(a) The body is composed of rings or segment-showing metamerism.	(a) Metameric segmentation is absent.
(b) Body is soft, no hard skeleton.	(b) Body is covered with hard exoskeleton made up of chitin
(c) True body cavity is present.	(c) Body cavity is filled with blood, known as haemocoel.
(d) Blood vascular system is of closed type.	(d) Blood vascular system is open type.

15. What are the differences between amphibians and reptiles?

Ans: The differences between amphibians and reptiles are as follows

Amphibians	Reptiles
(a) Amphibious in nature, i.e. found in water and on land both. (b) Skin is smooth or rough but without scale. (c) Head and trunk are distinct. (d) Heart is three chambered	(a) Truly terrestrial animals (b) Skin is with scales. (c) Body is distinctly divisible into head, neck and trunk (d) Heart is incompletely four-chambered

16. What are the differences between animals belonging to the Aves group and those in the Mammalia group?

Ans. Differences between animals belonging to the Aves group and those in the Mammalia group as follows:

Aves	Mammalia
(a) Feathered animals- body is covered with a feathery exoskeleton. (b) The body is divisible into the head, neck, trunk and tail. (c) Endoskeleton is light, bones have air cavities. (d) Respiration occurs through large sacs (e) They are oviparous i.e., egg laying.	(a) Skin is covered with hair. (b) The body is divided into the head, thorax and abdomen. (c) Exoskeleton is strong, bones have no air cavities. (d) Respiration occurs through minute air-sacs (e) They are viviparous i.e. give birth to young ones.

17. How would you choose between two characteristics to be used for developing a hierarchy in classification?

Ans: The characteristics to be used for developing a hierarchy in classification may be the cell structure, mode and source of nutrition and body organisation of the organisms.

18. Explain the basis for grouping organisms into five kingdoms.

Ans: The basis for grouping organisms into five kingdoms is their cell structure, mode and source of nutrition and body organisation.

19. What are the major divisions in the Plantae? What is the basis for these divisions?

Ans: Major divisions in the Plantae and the basis on which they have been classified can be Shown by the following flow chart

