

Class IX Biology Chapter 7 : Diversity In Living Organisms NCERT Solutions

1. Why do we classify organisms?

Ans. By classification of organisms we keep them in different class, order, family and genus on the basis of their characters. Thus we can easily study them and also it helps in classifying new found organisms.

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

Ans. We can see the following variations in the life forms around us.

1. Size: Organisms vary greatly in size-from microscopic bacteria to elephants,whales and large trees.

2. Colour: The colour of various animals is quite different. Some worms are even colourless or transparent. Various types of pigments are found in plants.

3. Life span: Life span of different organisms also varies greatly. E.g. a mosquito lives only for a few days while a turtle can live for around 200 years. Some pine trees live for thousands of years.

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Q1. What 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?

Ans. The more basic characteristic for classifying organisms is the kind of cells they are made of. It is because different organisms may share same habitat but may have entirely different form and structure. The kind of cells they possess will tell various things about them whether they are eukaryotes or prokaryotes, whether they have the ability in making a multicellular organism, etc.

Q2. What is the primary characteristic on which the first division of organisms is made? (1 mark)

Ans. The primary characteristic on which the first division of organisms is made is the nature of the cell – prokaryotic or eukaryotic cell.

Q3. On what basis are plants and animals put into different categories?

Ans. Plants and animals are put into different categories on the following basis:

- Mode of Nutrition:

☐ Plants are autotrophs i.e. they are able to make their own food. ☐ Animals are hetrotrophs i.e. they cannot make their own food. They depend on plants directly or indirectly for their food.

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Q1. Which organisms are called primitive and how are they different from the socalled advanced organisms?

Ans. Primitive organisms are those which have ancient body designs and have

not changed much. They have simpler body design and are also called lower organisms.

On the other hand, the organisms that have acquired more complex structure and body design relatively recently are called advanced organisms. They have complex body design and are called higher organisms.

Q2. Will advanced organisms be the same as complex organisms? Why?Ans. Yes. (1 mark)

It is because the 'advanced' organisms also were like the primitive ones once. They have acquired their complexity relatively recently.

There is a possibility these advanced or 'younger' organisms acquire more complex structures during evolutionary time to compete and survive in the changing environment.

Example: Many advanced organisms are multicellular and have attained division of labour.

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Q1. What is the criterion for classification of organisms as belonging to kingdom monera or protista?

Ans. Kingdom Monera

☐ Organisms are unicellular and prokaryotic. Kingdom Protista

☐ Organisms are unicellular and eukaryotic.

Q2. In which kingdom will you place an organism which is single celled, eukaryotic and photosynthetic? (1 mark)

Ans. Kingdom Protista

Q3. 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. Species will have smallest number of organisms with a maximum of characteristics in common and Kingdom will have largest number of organisms.

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Q1. Which division among plants has simplest organisms?

Ans. Division Thallophyta (1 mark)

Q2. How are Pteridophytes different from Phanerogams?

Pteridophytes

- They have naked embryos.
- Reproductive organs are hidden or inconspicuous. • Pteridophytes have special tissue for conduction of water but it is not much developed. Phanerogams

- Embryo is present in seed. Seed also contains stored food.
- Reproductive organs are well developed (in gymnosperms cone and in angiosperms flower bear male and female organs).
- Phanerogams have well developed vascular tissue

Q13. How do gymnosperms and angiosperms differ from each other?

Ans. Differences between gymnosperms and angiosperms

Gymnosperms

1. The plants bear naked seeds.
2. They produce cones formed of sporophytes. The sporophytes carry the male and female sex organs.
3. Ovules are not enclosed in ovary.
4. Plants of this group are usually evergreen, perennial and woody.

Angiosperms

1. Seeds are enclosed in fruits.
2. Reproductive organs are flowers.
3. Ovules are enclosed in ovary.
4. Plants of this group may be annual, biennial or perennial. They may be woody or non-woody.

Q1. How do poriferan animals differ from coelenterate animals?

Poriferan Animals

1. These organisms have minute pores called ostia all over the body and a large opening called osculum at the top for the exit of water.
2. Body is made up of a single layer of cells.
3. Canal system for circulating water through the body present
4. External skeleton present. The body design involves very little differentiation and division into tissues
5. These are non-motile animals and are attached to some solid support.
6. Tentacles are absent.

Coelenterate Animals

1. These organisms have a single pore
2. Body is made of two layers of cells, one making the outer lining and the other the inner lining of the body.
3. No water canal system present in the body
4. Skeleton absent. More body design differentiation is shown by these animals
5. They are motile animals. Some species of this group live in colonies while others have a solitary life-span.
6. Tentacles are present

Q2. How do annelid animals differ from arthropods?

Ans.

Annelids

1. They have true body cavity called 'coelom'.
2. Body bears lateral appendages for locomotion in the form of setae and Parapodia
- .3. Organ differentiation occurs in a segmental fashion, with the segments lined up one after the other from head to tail.
4. They breathe through body surface.
5. They do not possess chitinous exoskeleton.
6. They have closed type of circulatory system

Arthropods

1. The body cavity is blood filled and called "haemocoel".
2. Jointed legs are there for locomotion.
3. These animals are also segmented but lack complete metameric segmentation.
4. They possess different organs for breathing, like gills, trachea, book lungs, etc
5. Chitinous exoskeleton present
6. Open type of circulatory system present.

Q3. What are the differences between amphibians and reptiles?

Ans. Amphibians

1. They can live both on land and in water.
2. They breathe either through gills or lungs.
- 2.Body is not covered with scales
3. Their eggs don't have any tough and hardcovering around them.
- 4.They lay eggs in water
5. fertilization takesplace in water

Reptiles

1. They live either in land or water.
2. They breathe through lungs only.
3. They have scales on their body.
4. The eggs have a hard covering
5. Water is not necessary for fertilization

Q4. What are the differences between animals belonging to the aves group and those in the mammalian group?

Ans. Aves

1. The body is covered with feathers.
2. Forelimbs are modified into wings
3. They lay eggs.
4. No mammary glands to feed their

Mammalia

1. The body is covered with hair
- .2. They don't have wings.
3. Most of them give birth to young ones.
4. They have mammary glands for young ones.
5. Bones have air cavities. the production of milk for the nourishment of the young ones.
5. Bones are solid, hard and filled with bone marrow.

EXERCISE Page No. 97

Q1. What are the advantages of classifying organisms?

Ans. Following advantages of classifying organisms are:

1. It makes us aware of and gives us information regarding the diversity of plants and animals
- .2. It makes the study of different kinds of organisms much easier.
3. It tells us about the inter-relationship among the various organisms
- .4. It helps us understanding the evolution of organisms
- .5. It helps in the development of other life sciences easy.
6. It helps environmentalists to develop new methods of conservation of plants and animals

Q2. How would you choose between two characteristics to be used for developing a hierarchy in classification?

Ans. Steps:

1. The characteristic which is more basic should be considered first.
2. choose those characteristics which are dependent on the previous one and would decide the variety in the next level for developing a hierarchy in classification
3. In case of classification of animals, the characteristics used to classify in a hierarchy are:
 - a) Prokaryotic or eukaryotic cell
 - b) Unicellular or multicellular cell type
 - c) Autotrophic or heterotrophic

Q3. Explain the basis for grouping organisms into five kingdoms.

Ans. The basis for grouping organisms into five kingdoms is:

1. Nature of the cells, i.e. either prokaryotic or eukaryotic cells.
2. Number of cells, i.e. unicellular (a cell living singly) or multicellular (complex organisms).
3. Presence or absence of cell wall.

4. Mode of nutrition, i.e. whether they prepare their own food or get their food from outside.

Q4. What are the major divisions in the Plantae? What is the basis for these divisions?

Ans. The major divisions in kingdom plantae are:

1. Thallophyta 2. Bryophyta 3. Pteridophyta 4. Gymnosperms

5. Angiosperms The following points constitute the basis of these divisions:

1. Whether the plant body has well differentiated, distinct components.

2. whether the differentiated plant body has special tissues for the transport of water and other substances.

3. The ability to bear seeds.

4. Whether the seeds are enclosed within fruits.

Q5. How are the criteria for deciding divisions in plants different from the criteria for deciding the sub-groups among the animals?

Ans. The characteristics used to classify plants is different from animals because the basic design are different, based on the need to make their own food (plants) or acquire food (animals).

The criteria for dividing the plants include:

1. Differentiation of the plant body. 2. Distinct vascular (conduction) tissues.

3. Seed producing ability.

4. Are the seeds enclosed within fruits?

But the animals can't be divided into groups on these criteria.

It is because the basic designs of animals are very different from plants. They are divided on the basis of their body structure.