

Chapter 7 Diversity in Living Organisms

Question 1. Why do we classify organisms?

Answer: For easier and convenient study we classify organisms.

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

Answer:

- (a) Small cat and big cow
- (b) Grass and banyan tree
- (c) Black crow and green parrot

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Question 1. 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: Classification based on living place is more basic as there can be wide variations in organisms living in a given place.

Question 2. What is the primary characteristic on which the first division of organisms is made?

Answer: Nature of cell is the primary characteristics on which the first division of organisms is decided. Based on this criterion life forms can be classified into prokaryotes or eukaryotes.

Question 3. On what bases are plants and animal' out into different categories?

Answer: Mode of nutrition and presence or absence of cell walls.

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Question 1. Which organisms are called primitive and how are they different from the so-called - advanced organisms?

Answer: Organisms with simple cellular structure and no division of labour are called primitive.

Advanced organisms, like mammals have millions of cells and there are different organs and organ system for different biological functions.

Question 2. Will advanced organisms be the same as complex organisms? Why? t

Answer: Yes, advanced organisms means greater degree of evolution which leads to more complexity.

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Question 1. What is the criterion for classification of organisms as belonging to kingdom Monera or Protista?

Answer: It is the presence or absence of a well defined nucleus. Monera has no nuclear membrane, while Protista shows well defined nucleus.

Question 2. In which kingdom will you place an organism which is single-celled, eukaryotic and photosynthetic?

Answer: Protista.

Question 3. 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: Organisms belonging to Kingdom Monera will have the small number of organisms with a maximum of characteristics in common. And kingdom Animalia will have the largest number of organisms.

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Question 1. Which division among plants has the simplest organisms?

Answer: Thallophyta or algae.

Question 2. How are pteridophytes different from the phanerogams?

Answer: Pteridophytes have naked embryo and inconspicuous reproductive organ whereas – phanerogams have well-differentiated reproductive organs and covered embryo.

Question 3. How do gymnosperms and angiosperms differ from each other?

Answer: Seeds are naked in Gymnosperms and are covered in angiosperms.

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Question 1. How do poriferan animals differ from coelenterate animals?

Answer:

- Animals from Porifera show cellular level of organisation, while those from Coelenterata show tissue level of organisation.
- In Porifera there is no division of labour, while in Coelenterata some division of labour is seen.
- Porifera do not have coelom, while coelenterata have coelom.

Question 2. How do annelid animals differ from arthropods?

Answer:

Arthropoda	Annelida
Exoskeleton present. Body is segmented into head, thorax and abdomen. Sexes can be separate or can be on the same animal.	No skeleton. Body is segmented into rings. Hermaphrodite.

Question 3. What are the differences between amphibians and reptiles?

Answer:

Amphibia	Reptilia
<ol style="list-style-type: none"> 1. Adapted to live in water and land, can breathe by skin in water. 2. Skin is moist and soft. 3. Respiration is either through gills or lungs. 4. Can jump. 5. Development is indirect through tadpole stage. 	<p>Can live in water but need to come to surface to breathe in oxygen.</p> <p>Skin is hardened.</p> <p>Respiration is through lungs.</p> <p>Move by crawling.</p> <p>Development is direct with no intermediate stage in life cycle</p>

Question 4. What are the differences between animals belonging to the Aves group and those in the mammalia group?

Answer:

Aves	Mammalia
<ol style="list-style-type: none"> 1. Body is covered with feathers. 2. Beak is present, teeth absent. 3. Forelimbs modified for flying. 4. Hollow bones for flying. 5. Streamlined body. 	<p>Body is covered with hairs.</p> <p>Teeth present, beak absent.</p> <p>Forelimbs modified for various activities.</p> <p>No hollow bones.</p> <p>Body is not streamlined, except in whales.</p>

Question 1. What are the advantages of classifying organisms?

Answer: Advantages of classification:

- Better categorization of living beings based on common characters.
- Easier study for scientific research.
- Better understanding of human's relation and dependency on other organisms.
- Helps in cross breeding and genetic engineering for commercial purposes.

Question 2. How would you choose between two characteristics to be used for developing a hierarchy in classification?

Answer: Gross Character will "form-the basis of start of the hierarchy and fine character - will -form "the basis of further steps of single the hierarchy.

Example:

1. Presence of vertebral column in human beings can be taken under vertebrata.
2. Presence of four limbs makes them members of Tetrapoda.
3. Presence of mammary glands keeps them under mammalia.

Question 3. Explain the basis for grouping organisms into five kingdoms.

Answer: Basis Of Classification:

- (a) Number of cells
- (b) Layer of cells
- (c) Presence or absence of cell wall
- (d) Mode of nutrition
- (e) Level Of organization

Question 4. What are the major divisions in the Plantae? What is the basis for these divisions?

Answer: Major Divisions of Kingdom plantae:

Division	Basis of Classification
Thallophyta or Algae	Thallus like body
Bryophyta	Body is divided into leaf and stem
Pteridophyta	Body is divided into root, stem and leaf
Gymnosperm	Seed bearing, naked seeds
Angiosperm	Seed bearings covered seeds

Question 5. How are the criteria for deciding divisions in plants different from the criteria for deciding the subgroups among animals?

Answer: In plants body basic structure is a major criteria based on which Thallophytes are different from Bryophytes. Apart from this absence or presence of seeds is another important criteria. Gymnosperms and angiosperms are further segregated based on if seeds are covered or not. It is clear that it is the morphological character which makes the basis for classification of plants.

In animals classification is based on more minute structural variations. So in place of morphology, cytology forms the basis. Animals are classified based on layers of cells, presence or absence of coelom. Further higher the hierarchy animals are classified based on presence or absence of smaller features, like presence or absence of four legs.

Question 6. Explain how animals in Vertebrata are classified into further subgroups.

Answer: Vertebrata is divided into two superclasses, viz. Pisces and Tetrapoda. Animals of Pisces have streamlined body with fins and tails to assist in swimming. Animals of Tetrapoda have four limbs for locomotion.

Tetrapoda is further classified into following classes:

- (a) **Amphibia:** Are adapted to live in water and on land. Can breathe oxygen through skin when under water.
- (b) **Reptilia:** These are crawling animals. Skin is hard to withstand extreme temperatures.
- (c) **Aves:** Forelimbs are modified into wings to assist in flying. Beaks are present. Body is covered with feathers.
- (d) **Mammalia:** Mammary glands present to nurture young ones. Skin is covered with hair. Most of the animals are viviparous.