

CHAPTER 7
DIVERSITY IN LIVING ORGANISMS

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1. Why do we classify organisms?

Ans: By classifying organisms, it is easier and more convenient to study their characteristics. Similarities exhibited by various entities allow us to categorise different entities into a class and hence study the group as a whole.

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

Ans: (a) **Variation in size:** This variation can be observed at microscopic bacteria to the blue whale and red wood trees of California.

(b) **Variation in lifespan:** The insects like fruit flies live for few hours while some trees like pine live for several years.

(c) **Variation in body colours:** Some living things are colourless, such as worms, whereas birds, insects, and flowers are colourful.

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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?**

Ans: The most basic characteristic for classifying organisms should be established on the kind of cells they are made of. This is because the habitat can have species with different characteristics living harmoniously whereas the organisms with similar cell arrangement will exhibit equivalent characteristics.

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

Ans: The primary characteristic on which the broad division of organisms is made is the nature of cells. It is broadly classified as prokaryotic cells and eukaryotic cells which furthermore is classified into subclasses.

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

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

(i) The most fundamental consideration of classification is the presence or absence of a cell wall.

(ii) The next important criterion is the mode of nutrition.

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

Ans: Primitive organisms are the organisms that exhibit a very simple and basic cell arrangement, mechanism and structure and no division of labour is observed. Advanced organisms, on the other hand, are the organisms that have millions of cells that are grouped into various organs performing different functions.

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

Ans: Yes, Complex organisms are the same as the advanced organisms. The consequence of advancement leads to multiple cell arrangements that operate uniquely.

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

Ans: One of the most significant differences in classification is the development of the nucleus. The ones with no nuclear membrane are defined to be Monera while the ones that have well-defined nucleus membrane are protista.

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

Ans: Kingdom Protista

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

Ans: In the hierarchy of classification, the organisms belonging to the Kingdom Monera will have the smallest number of organisms with maximum characteristics in common. And the organisms belonging to the kingdom Animalia will have the largest number of organisms.

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1. Which division among plants has the simplest organisms?

Ans: Thallophyta has the simplest organisms among plants.

2. How are pteridophytes different from the phanerogams?

Ans: **Pteridophytes:**

- (i) They possess a naked embryo.
- (ii) They exhibit unclear reproductive organ.

Phanerogams:

- (i) They possess a covered embryo.
- (ii) They exhibit well-defined reproductive organ.

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

Ans: In gymnosperms, the seeds are naked while in angiosperms the seeds are covered.

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1. How do poriferan animals differ from coelenterate animals?

Ans: **Porifera:**

- (i) Division of labour is noticed.
- (ii) Cellular level of organisation is exhibited.
- (iii) Coelom is absent.

Coelenterata

- (i) Division of labour is observed.
- (ii) Tissue level of organisation is exhibited.
- (iii) Coelom is present.

2. How do annelid animals differ from arthropods?

Ans: **Annelida:**

- (i) The entire body is segmented into rings.
- (ii) Skeleton is absent.

Arthropoda:

- (i) Segmentation of body into head, abdomen and the thorax region.
- (ii) Exoskeleton is present.

3. What are the differences between amphibians and reptiles?

Ans: Amphibians:

- (i) Amphibians have smooth, moist and highly porous skin.
- (ii) They are oviparous
- (iii) Fertilization is external.
- (iv) They can breathe through gills as well as lungs.

Reptiles:

- (i) Reptiles have dry, hard and scaly skin.
- (ii) They are oviparous as well as viviparous.
- (iii) Fertilization is internal.
- (iv) They breathe through lungs.

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

Ans: Aves:

- (i) Body is covered externally with feathers.
- (ii) They lay eggs (oviparous)
- (iii) Mammary glands are absent
- (iv) Bones are hollow.
- (v) Forelimbs are modified into wings for flying.

Mammals:

- (i) Body is covered with hairs.
- (ii) They give birth to young ones (viviparous).
- (iii) Mammary glands are present to feed their young ones.
- (iv) Bones are solid.
- (v) Forelimbs are used for multiple activities.

EXERCISES

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1. What are the advantages of classifying organisms?

Ans: The advantages of classifying organisms are as follows:-

- (i) Classification facilitates the identification of organisms.
- (ii) When organisms are classified, their common features can easily be studied.
- (iii) It helps to establish the relationship among various groups of organisms.
- (iv) The study of scientific experiment is simplified.
- (v) It helps in understanding the evolution of organisms.

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

Ans: The basis of the start of the hierarchy will be formed by the Gross character while the basis of steps further will be taken care of by the fine character.

For instance,

- a. Human beings are categorised under vertebrates as they possess the vertebral column.
- b. Presence of four limbs makes them members of tetrapoda.
- c. Presence of mammary glands keeps them under mammalia.

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

Ans: The following factors form the basis of grouping organisms into five kingdoms:-

- (i) The number of cells present forms the first criteria.
- (ii) Next is the arrangement and the layers of cell present.
- (iii) Another important factor for classification is the presence or absence of cell wall.
- (iv) Classification of complex organisms is also based on the mode of nutrition.
- (v) Level of organisation in organisms is also taken into consideration for classification.

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

Ans: **Division**

Basis of division

- (i) Thallophyta or Algae
- (ii) Bryophyta
- (iii) Pteridophyta
- (iv) Gymnosperm
- (v) Angiosperm

- Thallus like body.
- Body is divided into leaf and stem.
- Body is divided into root, stem and leaf.
- Seed bearing, naked seeds.
- Seed bearing covered seeds.

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

Ans: Plants are classified based on basic body structure, absence or presence of seeds. While animals are classified based on the layers of cells, presence or absence of coelom etc.

6. Explain how animals in vertebrata are classified into further subgroups.

Ans: Vertebrata can be classified into two subclasses namely-pisces and tetrapod.

Pisces:

Organisms belonging to pisces subclass have a streamlined body with tails and fins which help them in their movement.

Tetrapod:

The tetrapod animals are classified as:-

- (i) **Amphibia:** Amphibians are adapted to live in water and on land. They have soft and moist skin.
- (ii) **Reptilia:** These are crawling animals. Skin is hard to withstand any temperature.
- (iii) **Aves:** Forelimbs are modified into wings for flight. Body is covered with feathers. They are oviparous.
- (iv) **Mammalia:** Skin is covered with hair and mammary glands are present to nurture young ones. Most of the mammalia are viviparous.

CHAPTER 13 WHY DO WE FALL ILL

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1. State any two conditions essential for good health.

Ans: Two conditions essential for good health are:-

- (i) Proper nutrition and a balanced diet.
- (ii) Good social environment.

2. State any two conditions essential for being free of disease.

Ans: Two conditions essential for being free of disease are:-

- (i) Personal hygiene and clean environment.
- (ii) Eating balanced diet and nutritious food.

3. Are the answers to the above questions necessarily the same or different? Why?

Ans: The answers to the above questions are different because a person may be free of disease but not be good mentally, socially and economically.

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1. List any three reasons why you would think you are sick and ought to seek a doctor. If only one of these symptoms were present, would you still go to the doctor? Why or Why not?

Ans: Common symptoms which indicate sickness are:-

- (a) Headache/Fever
- (b) Cough
- (c) Dysentery

If anyone of these symptoms is present, we usually do not visit a doctor. This is because such symptoms do not have much effect on our general health and ability to do work. However, if a person is experiencing these symptoms for a long period of time, then he/she needs to visit a doctor for proper treatment.

2. In which of the following case do you think the long term effects on your health are likely to be most unpleasant? a. If you get jaundice. b. If you get lice. c. If you get acne. Why?

Ans: Jaundice will be the most unpleasant. Jaundice is a chronic disease that last for a long period of time. Jaundice does not spread rapidly, but it develops slowly over a period of time.

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1. Why we are normally advised to take bland and nourishing food when we are sick?

Ans: When we are sick the normal body functions get disturbed. In such situation food that is easily digestible and contains adequate nutrients are required for the speedy recovery. Thus, bland and nourishing food is given during sickness.

2. What are the different means by which infectious diseases are spread?

Ans: The different means by which infectious diseases are spread are:-

(i) Through Air:- Certain disease-causing micro-organisms are expelled in air by coughing, sneezing, talking, etc. These micro-organisms can travel through air and infect the others. Example: - tuberculosis, common cold, pneumonia, etc.

(ii) Through Water:- Sometimes causal micro-organisms get mixed with drinking water and spread water borne diseases. Example:-Cholera.

(iii) Through Sexual Contact:- Sexual act between two people can lead to the transfer of diseases such as syphillis, gonorrhoea, AIDS, etc.

(iv) Through Vectors:- Certain diseases are spread by animals called vectors. Example:-Mosquitoes spread malaria.

3. What precautions can you take in your school to reduce the incidence of infectious diseases?

Ans: **(i)** Staying away from the infected students.

(ii) Covering mouth or nose while coughing or sneezing to prevent the spread of disease.

(iii) Drinking safe water.

(iv) Keeping the school environment clean to prevent multiplication of vectors.

4. What is immunization?

Ans: Immunization is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine.

5. What are the immunization programmes available at the nearest health centre in your locality? Which of these diseases are the major health problems in your area?

Ans: The immunization programmes available at the nearest health centre are DPT (Diphtheria, Pertusis and Tetanus), Polio vaccine, Hepatitis B, MMR (Measles, Mumps and Rubella), jaundice, typhoid, etc. Of all these diseases, jaundice and typhoid are the major health problems.

EXERCISES

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1. How many times did you fall ill in the last one year? What were the illnesses?

(a) Think of one change you could make in your habits in order to avoid any of/most of the above illnesses.

(b) Think of one change you would wish for in your surroundings in order to avoid any of/most of the above illnesses.

Ans:-[hints:-once/twice/thrice]

(a) Always drink purified and clean water.

(b) Making pure drinking water available for the people.

- 2. A doctor/nurse/health-worker is exposed to more sick people than the others in the community. Find out how she/he avoids getting sick herself/himself?**

Ans:-To avoid getting sick, the following precautions are taken by a doctor/nurse/health worker.

- (i) Wearing mask when in contact with a diseased person.
- (ii) Drinking safe water.
- (iii) Eating healthy and nutritious food.
- (iv) Ensuring proper cleanliness and personal hygiene.

- 3. Conduct a survey in your neighbourhood to find out what the three most common diseases are. Suggest three steps that could be taken by your local authorities to bring down the incidence of these diseases.**

Ans: The following three are the most common diseases:-

Cold and cough, loose motions and malaria.

Some preventive measures that can be taken are:-

- (i) Drinking fresh, uncontaminated and clean water.
- (ii) Maintaining personal and community hygiene.
- (iii) Educating people about various preventive measures with the help of posters.

- 4. A baby is not able to tell her/his caretakers that she/he is sick. What would help us to find out?**

- (a) That the baby is sick? (b) What is the sickness?**

Ans:-**(a)** It can be found out by observing the behavioral changes of the child such as:

- * Improper food intake.
- * Constant crying.
- * Mood changes frequently.

(b) The sickness can be determined with the help of symptoms or indications shown by the child.

- 5. Under which of the following conditions is a person most likely to fall sick?**

(a) When she is recovering from malaria.

(b) When she has recovered from malaria and is taking care of someone suffering from chicken pox.

(c) When she is on a four-day fast after recovering from malaria and is taking care of someone suffering from chicken-pox.

Ans:-**(c)** A person is more likely to fall sick when she is on a four day fast after recovering from malaria and is taking care of someone who is suffering from chicken pox. This is because she is fasting during recovery, and her immune system is so weak that it is not able to protect its own body from any foreign infection.

- 6. Under which of the following conditions are you most likely to fall sick?**

(a) When you are taking examinations.

(b) When you have travelled by bus and train for two days.

(c) When your friend is suffering from measles. Why?

Ans:- **(c)** A person is most likely to fall sick when his/her friend is suffering from measles. Measles is a highly contagious disease and can easily be transmitted through air or respiration.

*****The End*****