

DIVERSITY QUESTIONS FROM TEXTBOOK

Q1. What are the advantages of classifying organisms?

Ans. 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.

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

Ans. 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:

Presence of vertebral column in human beings can be taken under vertebrat.

Presence of four limbs makes them members of Tetrapoda.

Presence of mammary glands keeps them under mammalia.

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

Ans. 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

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

Ans. Major Divisions of Kingdom Plantae:

Division	Basis for 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

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

Ans. 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 stnictural 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.

Q6. Explain how animals in Vertebrata are classified into further subgroups.

Ans. 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) Arnphibia: 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.

NATURAL RESOURCE QUESTIONS FROM TEXTBOOK

Q1. Why is the atmosphere essential for life?

Ans. Atmosphere is very important for sustaining life:

- (1) It contains various gases like O₂, CO₂, N₂ which are required for various life processes by plants and animals.
- (2) CO₂ gas is used by plants to prepare food by the process called photosynthesis.
- (3) Oxygen is required for burning, combustion and respiration.
- (4) Ozone layer is acting as a protective layer, which avoids/prevents U.V rays to enter the earth's atmosphere.
- (5) CO₂ dissolved in water forms carbonates which is required by animals to form shells.

Q2. Why is water essential for life?

Ans. (1) About 70% weight of human being is due to water.

- (2) All cellular processes take place in water as medium.
- (3) All reactions take place within our body and within the cells occur between substances that are dissolved in water.
- (4) Transportation of substances from one form to another takes place due to water.
- (5) Terrestrial life-forms require fresh water for the transportation of substances and also to get rid of high amounts of wastes.

Q3. How are living organisms dependent on the soil? Are organisms that live in water totally independent of soil as a resource?

Ans. All living organisms are directly or indirectly dependent on soil. Plants obtain water and minerals from the soil and prepare food for themselves and animals. Other organisms that live in water are not totally independent of soil because the microbes growing on the soil in water are the primary producers in the soil which start the food chain and even other microbes that live in soil help in the decomposition of dead plants and animals in water to return the nutrients, elements back to the water.

Q4. You have seen weather reports on television and in newspapers. How do you think we are able to predict the weather?

Ans. Historical data on weather is stored in computers. These help in creating a model for weather pattern. Based on temperature humidity and wind speed of a given time frame; these data help meteorologists forecast the weather.

Q5. We know that many human activities lead to increasing levels of pollution of the air, water-bodies and soil. Do you think that isolating these activities to specific and limited areas would help in reducing pollutions?

Ans. If the human activities which leads to increasing level of air, water and soil pollution is spread in wider area then the pollutants will spread more, but yes, if it is limited and confined to a place then the soil and water pollution can be controlled to some extent and air pollution can also be minimised.

Q6. Write a note on how forests influence the quality of our air, soil and water resources.

Ans. Role of forest **Air:**

- (a) It helps in purifying the air by absorbing pollutants
- (b) It adds oxygen to the air and takes carbon-dioxide gas during photosynthesis. Therefore greenhouse effect is controlled.
- (c) Transpiration helps in the formation of clouds, maintains the temperature of surrounding area and gives cooling effect.

Soil:

- (a) Plants in forest hold the soil thereby preventing soil erosion
- (b) It holds the soil which helps in the increasing the underground water level.
- (c) Adds nutrients to the soil as lot of vegetation present in forest gets decomposed.

Water:

Forest helps in bringing rain and increasing the level of water in underground levels.

Improvement in Food Questions from NCERT Textbook

1. Explain any one method of crop production which ensures high yield.

Ans. One method used for crop production which ensures high yield is plant breeding. It is the science involved in improving the varieties of crops by breeding plants. The plants from different areas/places is picked up with desired traits and then hybridisation or cross-breeding of these varieties is done to obtain a plant/ crop of desired characteristic.

The high yielding crop variety shows the following characteristics: High yield, early maturation, less water for irrigation, better quality seeds are produced, less fertilizers required, adapts itself to the environmental conditions.

2. Why are manure and fertilizers used in fields?

Ans. They are used to ensure good vegetative growth (leaves, branches and flowers), giving rise to healthy plants, that results in high crop production.

3. What are the advantages of inter-cropping and crop rotation?

Ans. Advantages of using inter-cropping:

- (i) It helps to maintain soil fertility.
- (ii) It increases productivity per unit area.
- (iii) Save labour and time.
- (iv) Both crops can be easily harvested and processed separately.

Advantages of using crop rotation:

- (i) It improves the soil fertility.
- (ii) It avoids depletion of a particular nutrient from soil.
- (iii) It minimise pest infestation and diseases.
- (iv) It helps in weed control.
- (v) It prevents change in the chemical nature of the soil.

4. What is genetic manipulation? How is it useful in agricultural practices?

Ans. Genetic manipulation is a process of incorporating desirable (genes) characters into crop varieties by hybridisation. Hybridisation involves crossing between genetically dissimilar plants. This is done for production of varieties with desirable characteristics like profuse branching in fodder crops, high yielding varieties in maize, wheat, etc. Genetic manipulation is useful in developing varieties which shows: • Increased yield • Better quality • Shorter and early maturity period • Better adaptability to adverse environmental conditions • Desirable characteristics

5. How do storage grain losses occur?

Ans. The factors responsible for loss of grains during storage are:

- (i) Abiotic factors like moisture (present in foodgrains), humidity (of air) and temperature.
- (ii) Biotic factors like insects, rodents, birds, mites and bacteria.

6. How do good animal husbandry practices benefit farmers?

Ans. Good animal husbandry practices are beneficial to the farmers in the following ways:

- (i) Improvement of breeds of the domesticated animals.
- (ii) Increasing the yield of foodstuffs such as milk, eggs and meat.
- (iii) Proper management of domestic animals in terms of shelter, feeding, care and protection against diseases. Which ultimately helps the farmers to improve their economic condition.

7. What are the benefits of cattle farming?

Ans. Cattle farming is beneficial in the following ways: (i) Milk production is increased by high yielding animals (ii) Good quality of meat, fibre and skin can be obtained.

(iii) Good breed of draught animals can be obtained.

8. For increasing production, what is common in poultry, fisheries and bee-keeping?

Ans. Through cross breeding, the production of poultry, fisheries and bee-keeping can be increased.

9. How do you differentiate between capture fishing, mariculture, and aquaculture?

Ans. Capture fishing: It is the fishing in which fishes are captured from natural resources like pond, sea water and estuaries. **Mariculture:** It is the culture of fish in marine water. Varieties like prawns oysters, bhetki and mullets are cultured for fishing. **Aquaculture:** It is done both in fresh water and in marine water.

Why do we fall ill QUESTIONS FROM NCERT TEXTBOOK

Q.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 off most of the above illnesses.

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

Ans. The illness was 2-3 times, common-cold, occurred in a year.

(a) One change I would make in my habits in order to avoid the above illness is that I would take proper diet rich in vitamin C and would avoid too cold food.

(b) The surroundings should be neat, and clean,

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

Ans. A doctor/nurse/health worker when exposed to sick people they keep their nose and mouth covered, take care of hygiene, wash hands with soap before drinking water or eating food. They use mask, gloves, etc to avoid the direct contact with the person suffering from infectious diseases.

Q.4. A baby is not able to tell his/her caretakers that she/he is sick. What would help us to find out (a) that the baby is sick?

(a) what is the sickness?

Ans. (a) The symptoms like body temperature, fever, cough, cold, loose-motions, non-stop crying improper or no food intake etc. would help up to find that the baby is sick.

(b) The symptoms could help us to find out the sickness of the body,

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

(a) When she is recovering from malaria.

(c) When she has recovered from malaria and taking care of someone suffering from chickenpox.

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

Ans. (c) When she is on a four-day fast after recovering from malaria and is taking care of someone suffering from chicken-pox. As the person is not taking proper that which is required for her proper health and healing of body. Her chances of getting chicken-pox also high as her body's has lowered.

Q.6. Under which of following conditions are you most likely to fall sick?

(a) When you are taking examinations.

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

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

Ans. (c) When your friend is suffering from measles, as it is an infectious disease.

FUNDAMENTAL UNIT OF LIFE CELL QUESTIONS FROM NCERT TEXTBOOK

1. Make a comparison and write down ways in which plant cells are different from animal cells.

Answer

- | | |
|------------------------------------|---------------------------------------|
| • Animal cell | • Plant cell |
| • Has a cell wall. | • Has cell wall made up of cellulose. |
| • It does not contain chloroplast. | • It contains chloroplast. |
| • It has centrosome. | • It does not has centrosome. |

- Vacuoles are smaller in size.
- Lysosomes are larger in number.
- Prominent Golgi bodies are present.
- Vacuoles are larger in size.
- Lysosomes are absent or very few in number
- Subunits of Golgi bodies are present.

2. How is a prokaryotic cell different from a eukaryotic cell?

Answer

- | | |
|---|---|
| <ul style="list-style-type: none"> • Prokaryotic cell • Most prokaryotes are unicellular. • Size of the cell - (0.5- 5 μ). • It contains a single chromosome. • Nucleolus is absent. • Membrane-bound cell organelles such as plastids, mitochondria, endoplasmic reticulum, Golgi apparatus, etc. are absent. • Cell division occurs through binary fission | <ul style="list-style-type: none"> • Eukaryotic cell • Most eukaryotes are multi-cellular. • Size of the cell - (50- 100 μ). • It contains more than one chromosome. • Nucleolus is present. • Cell organelles such as mitochondria, plastids, endoplasmic reticulum, Golgi apparatus, lysosomes, etc. are present. • Cell division occurs by mitosis. |
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3. What would happen if the plasma membrane ruptures or breaks down?

Answer- If ever the plasma membrane ruptures or breakdown then the cell will not be able to exchange material from its surroundings by diffusion. As a result of it the protoplasmic material will disappear and the cell will die.

4. What would happen to the life of a cell if there was no Golgi apparatus?

Answer- Golgi apparatus performs the function of a storage modification and packaging of products. If Golgi apparatus is not there then materials synthesized by cell will not be packaged and transported.

5. Which organelle is known as the powerhouse of the cell? Why?

Answer- Mitochondria are known as the powerhouse of cells because energy required for various chemical activities needed to support life is released by mitochondria in the form of ATP (Adenosine triphosphate) molecules.

6. Where do the lipids and proteins constituting the cell membrane get synthesized?

Answer- Lipids are synthesized in Smooth endoplasmic reticulum and the proteins are synthesized in endoplasmic reticulum.

7. How does an Amoeba obtain its food?

Answer- Amoeba obtains food using temporary finger-like extensions on the cell surface which fuse over the food particle forming a food-vacuole. Complex substances are broken down into simpler ones inside the food vacuole which then diffuse into the cytoplasm. The remaining undigested material is moved to the surface of the cell and thrown out resulting in excretion.

8. What is osmosis?

Answer- Osmosis is the process in which water molecules moves from the region of high concentration to a region of low concentration through a semi permeable membrane.

Tissue Questions From NCERT Textbook

1. Define the term "tissue".

Ans. Group of cells that are similar in structure and perform same function is called a tissue.

2. How many types of elements together make up the xylem tissue? Name them.

Ans. The xylem is made up of vessels, trachieds, xylem fibres and xylem parenchyma.

3. How are simple tissues different from complex tissues in plants?

Ans. Simple tissues are made up of one type of cells which coordinate to perform a common function. Complex tissues are made up of more than one type of cells. All these coordinate to perform a common function.

4. Differentiate between parenchyma, collenchyma and sclerenchyma on the basis of their cell wall

Ans. Parenchyma: The cells have thin cell walls made up of cellulose.

Collenchyma: The cells have cell walls thickened at the corners due to pectin deposition.

Sclerenchyma: Their walls are thickened due to lignin deposition.

5. What are the functions of stomata?

Ans. The outermost layer of the cell is called epidermis and is very porous. These pores are called stomata. These stomata help in transpiration and exchange of gases.

6. Diagrammatically show the difference between the three types of muscle fibres.

Ans. Striated muscles (1) They are connected to bones (Skeletal muscles).

(2) They are voluntary muscles.

(3) The cells are long, cylindrical with many nucleus and are unbranched.

Smooth muscles

(1) They are found in alimentary canal and lungs.

(2) They are involuntary muscles.

(3) They are spindle in shape and have single nucleus.

Cardiac muscles

(1) They are found in heart.

(2) They are involuntary in action.

(3) They are branched and have one nucleus.

7. What is the specific function of the cardiac muscle?

Ans. (1) Cardiac muscles cells are cylindrical, branched and uninucleated.

(2) They are involuntary muscles.

(3) They show rhythmically contraction and relaxation throughout life.

(4) Their rhythmic contraction and relaxation helps in pumping action of heart.

10. Name the following:

(1) Tissue that forms the inner lining of our mouth.

(2) Tissue that connect muscle to bone in humans,

(3) Tissue that transports food in plants.

(4) Tissue that stores fat in our body.

(5) Connective tissue with a fluid matrix:.

(6) Tissue present in the brain.

Ans. (1) Squamous epithelium

(2) Tendons

(3) Phloem

(4) Areolar tissue

(5) Blood

(6) Nervous tissue

11. Identify the type of tissue in the following: Skin, bark of tree, bone, lining of kidney tubule, vascular bundle.

Ans. (a) Skin–Striated squamous epithelium

(b) Bark of tree–Cork, protective tissue

(c) Bone–Connective tissue

(d) Lining of kidney tubule–Cuboidal epithelium tisse

(e) Vascular bundle–Conducting tissue

12. Name the regions in which parenchyma tissue is present.

Ans. In the pith of the roots and stems. When it contains chlorophyll, it is called chlorenchyma, found in green leaves. In aquatic plants, parenchyma contains large air cavities and help them to float. Such type of parenchyma is called aerenchyma.

13. What is the role of epidermis in plants?

Ans. Cells of epidermis forms a continuous layer without intercellular spaces. It protects all the parts of plants.

14. How does the cork act as a protective tissue?

Ans. Cork acts as a protective tissue because its cells are dead and compactly arranged without intercellular spaces. They have deposition of suberin on the walls that make them impervious to gases and water.