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Topics Covered:

- Characteristics of Living Organisms
- Concept & Uses of Classification Systems
- Features of Organisms

/ Mark 30

1. Define the term *species*. [1]

2. Explain why the binomial naming system is important in biology. [2]

3. Describe the characteristics of living organisms. [7]

4. Explain how DNA is used in classification. [2]

5. Compare the characteristics of plants and animals.

[4]

6. Explain why viruses are not classified as living organisms.

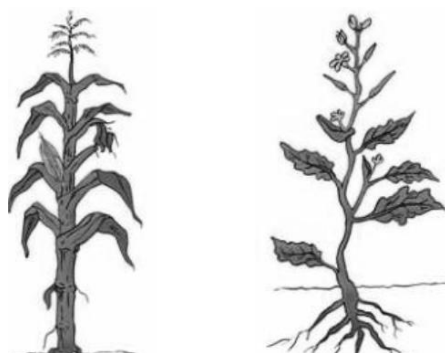
[2]

7. Describe the features of arthropods and give two examples.

[3]

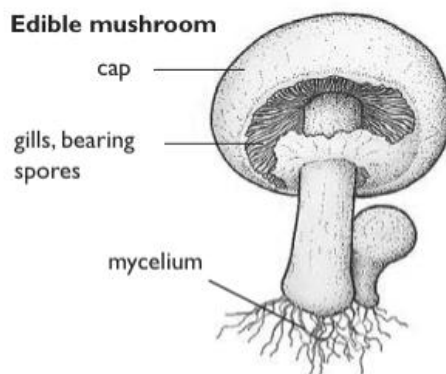
8. Explain the difference between monocotyledonous and dicotyledonous plants.

[3]



9. Describe the characteristics of fungi and give one example.

[3]



10. Explain how a dichotomous key is used to identify organisms.

[2]

Answers:

1. A species is a group of organisms that can interbreed to produce fertile offspring.
2. The binomial naming system provides a universal way to name organisms using two names (genus and species), which avoids confusion caused by common names and allows scientists worldwide to communicate clearly about specific organisms.

3. The characteristics of living organisms are:

- 1) **Movement** – ability to change position.
- 2) **Respiration** – release of energy from food.
- 3) **Sensitivity** – ability to detect and respond to changes in the environment.
- 4) **Growth** – permanent increase in size.
- 5) **Reproduction** – ability to produce offspring.
- 6) **Excretion** – removal of waste products.
- 7) **Nutrition** – taking in materials for energy, growth, and development.

4. DNA is used to compare the genetic material of different organisms. Organisms with similar DNA sequences are more closely related and share a more recent common ancestor. This helps scientists classify organisms more accurately.

5. Answers:

Plants:

- Multicellular.
- Have cell walls made of cellulose.
- Contain chloroplasts for photosynthesis.
- Store carbohydrates as starch.

Animals:

- Multicellular.
- No cell walls or chloroplasts.
- Feed on organic substances.
- Store carbohydrates as glycogen.

6. Viruses are not classified as living organisms because they cannot carry out the seven characteristics of life on their own. They need a host cell to reproduce and do not have cells, cytoplasm, or organelles.

7. Features of arthropods:

- Jointed legs.
- Exoskeleton made of chitin.
- Body divided into segments.
- **Examples:** Insects (e.g., locust), crustaceans (e.g., crab), arachnids (e.g., spider), myriapods (e.g., centipede).

8. Monocotyledonous plants:

- Have one cotyledon in their seeds.
- Parallel leaf veins.
- Fibrous root system.

Dicotyledonous plants:

- Have two cotyledons in their seeds.
- Network of branching leaf veins.
- Tap root system.

9. Characteristics of fungi:

- Multicellular (except yeast).
- Have cell walls made of chitin.
- Do not have chlorophyll or carry out photosynthesis.
- Feed by saprophytic or parasitic nutrition.
- **Example:** Mushroom, bread mould, yeast.

10. A dichotomous key is a tool used to identify organisms by providing a series of paired statements or questions. Each pair describes contrasting features, and the user chooses the statement that matches the organism. This process continues until the organism is identified.