

The Living World

1st PUC Biology The Living World Question and Answer:

Question 1.

Why are living organisms Classified?

Answer:

Classifying living organisms is essential for studying them systematically. It helps group organisms based on easily observable characteristics, making it more convenient to understand and research the diversity of life.

Question 2:

Why are the classification systems changing now and then?

Answer:

Classification systems change as new organisms are discovered through ongoing research and technological advancements. To accommodate these new findings, existing classifications must be regularly updated and refined.

Question 3:

What different criteria would you choose to classify people that you meet often?

Answer:

We could classify people based on physical appearance, skin colour, profession, relationship, gender, and geographic location.

Here are the rewritten versions of your questions and answers:

Question 4:

What do we learn from identifying individuals and populations?

Answer:

Identifying individuals and populations provides insights into their lifestyle, geographic location, culture, social and economic status, language, food habits, beliefs, and how they influence others or different populations.

Question 5:

The scientific name of Mango is given below. Identify the correctly written name:

(a) Mangifera Indica

(b) *Mangifera Indies**

Answer:

(a) *Mangifera indica**

(*Note: The genus name is capitalized, while the species name is written in lowercase and italicized.*)

Question 6:

Define a taxon. Give some examples of taxa at different hierarchical levels.

Answer:

A *taxon* is a category or rank in the biological classification system used to group organisms based on shared characteristics. Each taxon represents a specific level in the classification hierarchy. Examples of taxa at different hierarchical levels include:

- Kingdom: Animalia
- Phylum: Chordata
- Class: Mammalia
- Order: Carnivora
- Family: Felidae
- Genus: Panthera
- Species: Panthera leo (lion)

Question 7:

Can you identify the correct sequence of taxonomical categories?

(a) Species → Order → Phylum → Kingdom

(b) Genus → Species → Order → Kingdom

(c) Species → Genus → Order → Phylum

Answer:

Based on the taxonomical hierarchy, both (a) and (c) provide the correct sequences.

Question 8:

Define and explain the following terms:

- Phylum
- Class
- Family
- Order
- Genus

Answer:

(i) Phylum:

Phylum is the classification rank below the kingdom, based on broad structural characteristics of animals or plants. For example, chordates are placed in the phylum *Chordata* because they possess a notochord and a dorsal hollow nerve cord.

(ii) Class:

Class is the rank that comes after phylum, grouping related orders. It focuses on more specific traits. For instance, the class *Mammalia* includes the orders *Primates* (e.g., monkeys, gorillas) and *Carnivora* (e.g., tigers, cats, dogs), which are all mammals characterized by having mammary glands and hair.

(iii) Family:

Family is a category that groups related genera with fewer similarities than genus and species. It is based on both vegetative and reproductive traits in plants and other significant traits in animals. For example, the genera *Solanum*, *Petunia*, and *Datura* belong to the family *Solanaceae*. In animals, the genera *Panthera* and *Felis* are classified under the family *Felidae*.

(iv) Order:

Order is a higher rank than family, classified based on a broader set of characteristics. While families and genera focus on specific traits, orders are based on a more general similarity. For example, the animal families *Canidae* and *Felidae* are grouped into the order *Carnivora*, and the plant families *Convolvulaceae* and *Solanaceae* are part of the order *Polemoniales*.

(v) Genus:

The genus is a rank that groups closely related species with several shared characteristics. It is broader than species but more specific than family. For example, the species potato and brinjal belong to the genus

Solanum. Similarly, the lion, tiger, and leopard belong to the genus *Panthera*, while domestic cats belong to a different genus, *Felis*.

Question 9:

How does a key aid in the identification and classification of an organism?

Answer:

A key is a tool that helps in identifying and classifying organisms by presenting contrasting pairs of characteristics, known as a couplet. The user chooses between two opposite options, leading to the acceptance of one and the rejection of the other. Each statement in a key is referred to as a lead. Separate taxonomic keys are used for different taxonomic categories such as family, genus, and species, to assist in accurate identification.

Question 10:

Illustrate the taxonomical hierarchy with suitable examples of a plant and an animal.

Answer:

Plant Example:

- Plant: Mango
- Kingdom: Plantae
- Phylum: Angiospermae
- Class: Dicotyledonae
- Order: Sapindales
- Family: Anacardiaceae
- Genus: *Mangifera*
- Species: *Indica*

Animal Example:

- Animal: Human
- Kingdom: Animalia
- Phylum: Chordata
- Class: Mammalia
- Order: Primates
- Family: Hominidae
- Genus: *Homo*
- Species: *sapiens*

1st PUC Biology The Living World One Mark Questions

Question 1:

Name the basic unit of classification.

Answer:

The basic unit of classification is *species*.

Question 2:

Define a species.

Answer:

A species is the most fundamental level of classification, consisting of organisms that can interbreed and produce fertile offspring.

Question 3:

Who is considered the father of taxonomy?

Answer:

Carolus Linnaeus is regarded as the father of taxonomy.

Question 4:

What is a taxon?

Answer:

A taxon is any group or category used in classification.

Question 5:

What is the scientific name of coconut?

Answer:

The scientific name of coconut is *Cocos nucifera*.

Question 6:

What is a key?

Answer:

A key is an analytical tool used for the identification of plants and animals, based on their similarities and differences.

Here's the revised version of your questions and answers:

Question 7:

Name the scientific method of naming a species developed by Carolus Linnaeus.

Answer:

The scientific method of naming a species used by Carolus Linnaeus is called *binomial nomenclature*.

Question 8:

Who discovered that viruses are crystallizable?

Answer:

Stanley discovered that viruses are crystallizable.

Question 9:

What is a capsid?

Answer:

The outer protein coat of a virus is called a *capsid*.

Question 7:

Name the scientific method of naming a species developed by Carolus Linnaeus.

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What is a capsid?

Answer:

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Question 10:

What are DNA viruses and RNA viruses?

Answer:

Viruses that possess DNA as their genetic material are referred to as *DNA viruses*, while those that contain RNA as their genetic material are called *RNA viruses*.

Question 11:

Which virus causes brain fever?

Answer:

The virus that causes brain fever is the *Japanese Encephalitis virus*.

Question 12:

Mention the Nucleic acid of HIV.

Answer:

The nucleic acid of HIV is *single-stranded RNA*.

Question 13:

Which is the nucleic acid is found in bacteriophages?

Answer:

Bacteriophages contain *double-stranded DNA*.

Question 14:

What are methanogenic bacteria?

Answer:

Methanogenic bacteria are those that produce methane as a metabolic byproduct.

Question 15:

Give an example of a symbiotic bacteria.

Answer:

An example of a symbiotic bacteria is *Rhizobium leguminosarum*.

Question 16:

What are autotrophs?

Answer:

Autotrophs are organisms that synthesize their own food using inorganic substances, typically through processes like photosynthesis or chemosynthesis.

Question 17:

Who discovered bacteria?

Answer:

Anton von Leeuwenhoek is credited with the discovery of bacteria.

Question 18:

Give an example of nitrifying bacteria.

Answer:

An example of nitrifying bacteria is *Nitrosomonas*.

Question 19:

What are antibiotics?

Answer:

Antibiotics are chemical substances produced by microorganisms that inhibit the growth of other microorganisms.

Question 20:

Name the bacteria that cause typhoid and tuberculosis.

Answer:

Typhoid is caused by *Salmonella typhi*, while tuberculosis (TB) is caused by *Mycobacterium tuberculosis*.

Question 21:

What is the characteristic blue pigment of Nostoc?

Answer:

The characteristic blue pigment of Nostoc is *phycocyanin*.

Question 22:

What are planktons?

Answer:

Plankton are microscopic, free-floating organisms in water, which can be either plants (phytoplankton) or animals (zooplankton).

Question 23:

Why are protists classified as eukaryotes?

Answer:

Protists are classified as eukaryotes because their cells contain a true nucleus, which is enclosed by a nuclear membrane.

Question 24:

What is isogamy and anisogamy?

Answer:

Isogamy refers to the fusion of similar gametes, while anisogamy refers to the fusion of dissimilar gametes.

Question 25:

What is an algal bloom?

Answer:

An algal bloom is a rapid and excessive growth of algae in a water body, often leading to a dense concentration of algal cells.

Question 26:

What pigment gives diatoms their golden-brown colour?

Answer:

The pigment that gives diatoms their golden-brown colour is called *diatomin*.

Question 27:

Which organism is commonly referred to as 'pond silk'?

Answer:

The organism commonly known as 'pond silk' is *Spirogyra*.

Question 28:

What are saprobes?

Answer:

Saprobes are organisms that feed on dead organic matter to obtain their nutrients.

Question 29:

What is mycelium?

Answer:

Mycelium is the vegetative part of a fungus, consisting of a network of hyphae.

Question 30:

What is the first discovered antibiotic?

Answer:

The first discovered antibiotic is *penicillin*.

Question 31:

What are hyphae?

Answer:

Hyphae are long, filamentous structures that can be branched or unbranched and may be septate (having cross-walls) or non-septate (lacking cross-walls). They make up the mycelium of fungi.

Question 32:

What is mycelium?

Answer:

Mycelium is the body of a fungus, consisting of a network of thread-like structures known as hyphae.

Question 33:

Mention one harmful effect of fungi.

Answer:

Fungi can cause diseases in various organisms, including plants (e.g., *Koleroga*), animals (e.g., athlete's foot), and humans (e.g., *Aspergillosis*).

Question 34:

Why are deuteromycetes referred to as 'imperfect fungi'?

Answer:

Deuteromycetes are called 'imperfect fungi' because only their asexual reproductive stages are known, and their sexual reproduction has not been observed.

Question 35:

What is a slippered animalcule?

Answer:

The term "slippered animalcule" refers to *Paramecium*.

Question 36:

State the occurrence and function of cilia.

Answer:

Cilia are found in the phylum Protozoa and serve as locomotor organs, helping organisms move through their environment.

Question 37:

What are the locomotor organelles of the class Rhizopoda/Sarcodina?

Answer:

The locomotor organelles of the class Rhizopoda/Sarcodina are *pseudopodia* (false feet).

Question 38:

Who proposed the five-kingdom classification?

Answer:

The five-kingdom classification was proposed by *R. H. Whittaker*.

Question 39:

Who is known as the father of biology?

Answer:

Aristotle is known as the father of biology.

Question 40:

Differentiate between aplanospores and conidia.

Answer:

Aplanospores are formed endogenously, within the sporangia, while conidia are formed exogenously, outside the sporangia.

Question 41:

What are the two kingdoms in the two-kingdom classification?

Answer:

The two kingdoms in the two-kingdom classification are *Animalia* (animals) and *Plantae* (plants).

Question 42:

What are the two types of locomotion in Monera?

Answer:

The two types of locomotion in Monera are *flagella* and *gliding*.

Question 43:

What do the terms amphitrichous and lophotrichous mean?

Answer:

- Amphitrichous: Refers to a cell that has one flagellum at each of its two ends.
- Lophotrichous: Refers to a cell that has a tuft of flagella at one or both ends.

Question 44:

What are phytoplankton?

Answer:

Phytoplankton are microscopic, autotrophic organisms that float passively on the surface of water.

Question 45:

In what form is food stored in Euglena?

Answer:

Food in Euglena is stored in the form of *starch*.

Question 46:

What maintains the cell shape of Euglena and Paramecium?

Answer:

The cell shape of Euglena and Paramecium is maintained by the *pellicle*.

Question 47:

Write the scientific name of a heterothallic fungus.

Answer:

The scientific name of a heterothallic fungus is *Rhizopus stolonifera*.

Question 48:

What is a zygospore?

Answer:

A zygospore is a reproductive structure formed by the fusion of gametes in certain fungi.

Question 49:

What is the method of sexual reproduction in Basidiomycetes?

Answer:

The method of sexual reproduction in Basidiomycetes is called *somatogamy*.

Question 50:

Name the two phases in the life cycle of a plant.

Answer:

The two phases in the life cycle of a plant are the *sporophyte* and the *gametophyte*.

Question 51:

In what form is carbohydrate stored in animal cells?

Answer:

Carbohydrates are stored in animal cells in the form of *glycogen*.

1st PUC Biology The Living World Two Marks Questions

Question 1:

Write a note on bacteriophages.

Answer:

Bacteriophages, commonly known as phages, are viruses that specifically infect bacteria. They were discovered by Frederick Twort. Bacteriophages typically have a tadpole shape and contain DNA as their genetic material. They are categorized into two main groups: T-even phages and T-odd phages, based on their structural characteristics and infection mechanisms.

Question 2:

Write the differences between virus and viroid.

Answer:**1. Structure:**

- Virus: Consists of an outer protein coat called a capsid and inner nucleic acid (either DNA or RNA).
- Viroid: Composed solely of RNA without any protein coat.

2. Disease Hosts:

- Virus: Can cause diseases in both animals and plants.
- Viroid: Primarily causes diseases in plants only.

3. Genetic Material:

- Virus: Some viruses contain DNA as their genetic material, while others contain RNA.
- Viroid: Contains only RNA as its genetic material.

Question 3:

What is symbiosis? Give an example of symbiotic bacteria.

Answer:

Symbiosis refers to the mutual relationship between two different organisms, where both benefit from living together. An example of symbiotic bacteria is *Rhizobium*.

Question 4:

Write the names of different shapes of bacteria. (Gulbarga 2005)

Answer:

The different shapes of bacteria are Cocci, Bacilli, and Spirillum.

Question 5:

Give a reason for the following: Bacteria are called natural scavengers. (D. Kannada 2006)

Answer:

Bacteria are referred to as natural scavengers because they decompose organic debris, helping to clean the earth's surface.

Question 6:

Write any two differences between Archaea and Eubacteria.

Answer:

- The cell wall of eubacteria contains peptidoglycan, whereas the cell wall of archaea is made up of proteins, glycoproteins, or polysaccharides.
- The plasma membrane of archaea consists of long, branched lipid chains, while in eubacteria, the plasma membrane is composed of long-chain fatty acids attached to glycerol.

Question 7:

Explain Heterocyst.

Answer:

A heterocyst is a large, oval or barrel-shaped, thick-walled cell found within a trichome. Each trichome contains a single heterocyst, which can be terminal or intercalary in position. Terminal heterocysts have one polar nodule and one polar pore, while intercalary heterocysts have two polar nodules and two polar pores. Heterocysts contain the enzyme nitrogenase, which plays a crucial role in nitrogen fixation.

Question 8:

Explain the role of blue-green algae in soil fertility.

Answer:

Blue-green algae, such as *Nostoc* and *Anabaena*, fix atmospheric nitrogen, contributing to soil fertility. The heterocysts in these algae contain the nitrogenase enzyme, which aids in nitrogen fixation. Nitrogen-fixing blue-green algae are commonly used in rice fields to enhance soil fertility.

Question 9:

List any four divisions of the Kingdom Protista based on morphology.

Answer:

The four divisions of the Kingdom Protista based on morphology are:

- Pyrophyta
- Chrysophyta
- Euglenophyta
- Protozoa

Question 10:

List any four characteristics of Protista. (Belgaum 2004)

Answer:

- Protists are unicellular eukaryotes, meaning they have a true nucleus and cytoplasmic organelles such as mitochondria and the Golgi apparatus.
- They exhibit various modes of nutrition; some are photoautotrophs, while others are heterotrophic. Heterotrophs can be saprophytic or parasitic, and some protists have animal-like holozoic nutrition.
- Some protists have locomotory organelles like pseudopodia, flagella, or cilia for movement.
- Protists reproduce both asexually and sexually.

Question 11:

Write any two distinguishing characteristics of Fungi.

Answer:

- Fungi are non-chlorophyllous and non-photosynthetic organisms, often living as saprobes.
- The fungal body, called mycelium, is made up of branched or unbranched, septate or aseptate filaments known as hyphae.

Question 12:

Mention any two divisions of Fungi and give one example for each.

Answer:

- Division: Zygomycota
Example: *Rhizopus*

- Division: Ascomycota
Example: *Yeast*

Question 13:

Write two important features of the Kingdom Mycota. (Bangalore South 05)

Answer:

- Kingdom Mycota consists of non-chlorophyllous, heterotrophic organisms.
- The fungal body, known as mycelium, is composed of numerous hyphae.

Question 14:

Give four characteristics of Protozoa. (Dharwar, Bangalore South 04, Udupi 08, D. Kannada 2009)

Answer:

The characteristics of Protozoa are:

- They are unicellular, microscopic organisms with a protoplasmic grade of organization.
- Protozoa may be uninucleate or binucleate. In binucleate forms, one nucleus is larger (macronucleus), and the other is smaller (micronucleus).
- Locomotion occurs through pseudopodia, cilia, or flagella.
- Nutrition can be holophytic, holozoic, saprophytic, or parasitic.

Question 15:

Write the general characteristics of the Kingdom Monera. (8 characters)
OR

List any four characteristics of the Kingdom Monera. (Hassan 2005)

Answer:

- Monerans are prokaryotes, meaning they lack a true nucleus.
- The nuclear membrane is absent.
- The cell wall of monerans is composed of murein.
- Cytoplasmic organelles such as mitochondria, Golgi bodies, and endoplasmic reticulum are absent.
- Ribosomes are of the 70S type.
- The genetic material is double-stranded DNA in the form of a circular loop, known as a nucleoid, and is not associated with histone proteins.

- Photosynthetic monerans have pigments located inside lamellae, but not within chloroplasts.
- Nutrition is either autotrophic or heterotrophic, and cell division does not involve mitosis or meiosis.

Question 16:

Name the five kingdoms of life.

OR

Name the five kingdoms in the classification of organisms. (Gulbarga B. North 2004)

Answer:

- Kingdom Monera
- Kingdom Protista
- Kingdom Mycota
- Kingdom Metaphyta
- Kingdom Metazoa

Question 17:

Give two characteristics of the Kingdom Monera.

Answer:

- All monerans are prokaryotes, meaning they lack a true nucleus.
- They do not have mitochondria, endoplasmic reticulum, or Golgi bodies, but they do contain 70S ribosomes.

Question 18:

Give two characteristics of the Kingdom Mycota.

Answer:

- Members of Mycota, known as fungi, are non-chlorophyllous saprophytes.
- The fungal body is composed of a structure called mycelium.

Question 19:

Give two characteristics of the Kingdom Protista.

Answer:

- Protists are unicellular or colonial eukaryotic organisms without tissue differentiation.
- Cytoplasmic organelles such as mitochondria and endoplasmic reticulum are present.

Question 20:

Give two characteristics of the Kingdom Metaphyta.

Answer:

- Members of this kingdom are plants, and they are multicellular eukaryotes with tissue and organ-level construction.
- They store starch as their reserve food material.

Question 21:

Give two characteristics of the Kingdom Metazoa.

Answer:

- Members of this kingdom are animals, and they are multicellular eukaryotes with tissue and organ-level construction.
- They are heterotrophic and capable of locomotion.

Question 22:

Differentiate between oxygenic and anoxygenic photosynthesis.

Answer:

Oxygenic Photosynthesis	Anoxygenic Photosynthesis
(a) A type of photosynthesis in which oxygen is released as a by-product.	(a) A type of photosynthesis in which oxygen is not released as a by-product.
(b) Performed by higher organisms such as plants.	(b) Performed by primitive organisms like bacteria.

Question 23:

What are the characteristic features of Euglenoids?

Answer:

- Euglenoids are freshwater organisms typically found in stagnant water.
- Instead of a cell wall, they possess a protein-rich layer called a pellicle, which makes their body flexible.
- They have two flagella: one short and one long.
- While they are photosynthetic in the presence of sunlight, they can act as heterotrophs by preying on smaller organisms when deprived of sunlight.
- The pigments in euglenoids are similar to those found in higher plants.
- Example: *Euglena*.

Question 24.

How are ascomycetes different from Basidiomycetes?

Answer:

Ascomycetes	Basidiomycetes
(a) The fruiting body is called an ascocarp.	(a) The fruiting body is called a basidiocarp.
(b) Each ascus contains 8 ascospores.	(b) Each basidium produces 4 basidiospores exogenously.
(c) The dikaryotic phase may or may not be present in the life cycle.	(c) They show an extended dikaryotic phase in the life cycle.
(d) Asexual spores are present.	(d) Asexual spores are absent.

1st PUC Biology The Living World Five Marks Questions

Question 1.

Write a short note on Binomial Nomenclature and guidelines for Binomial nomenclature.

Answer:

Binomial Nomenclature was introduced by Carolus Linnaeus. In this system, every organism is given a scientific name consisting of two parts. The first part represents the genus (generic name), and the second part represents the species (specific epithet). For example, in *Homo sapiens*, "Homo" is the generic name, and "sapiens" is the specific epithet.

Guidelines for Binomial Nomenclature:

1. Scientific names are usually in Latin or derived from Latin, regardless of the organism's origin.
2. These names are written in italics (or underlined when handwritten).
3. The first part of the name represents the genus, while the second part represents the species.
4. The genus name starts with a capital letter, and the species name begins with a lowercase letter (unless it is derived from a proper noun, in which case it starts with a capital letter).
5. The name of the author who described the species is abbreviated and added after the species name. Example: *Homo sapiens* Linn.

This system ensures uniformity and avoids confusion in naming organisms across the world.

Question 2.

Mention all the Taxonomic aids and briefly describe them.

Answer:

Taxonomic aids are collections or tools that assist in the identification and classification of species. Some important taxonomic aids include:

- **Herbarium:** A herbarium is a collection of dried, pressed, and preserved plant specimens mounted on sheets. These sheets are organized according to a recognized classification system, serving as a reference for future studies and research.
- **Botanical Gardens:** These are specialized gardens where living plant species are cultivated for research and reference. Each plant in a botanical garden is labelled with its scientific name and family, aiding in plant identification.
- **Museum:** Biological museums store preserved specimens of plants and animals, allowing taxonomists to study various species and compare their characteristics.
- **Zoological Parks:** These parks house wild animals in protected environments under human care. Zoological parks provide an opportunity to observe animals' food habits and behaviours, contributing to taxonomic knowledge.
- **Keys:** A key is a tool used to identify plants and animals based on their similarities and differences. It is a step-by-step process that helps narrow down the species by comparing characteristics.

These aids are essential for the proper identification, study, and classification of living organisms.

Question 3.

Describe the steps involved in the classification of an organism.

Answer:

Steps Involved in the Classification of an Organism:

1. The organism is thoroughly examined and described based on its morphological and other characteristics.
2. These characteristics are compared to known organisms to identify similarities or differences with any existing groups or taxa.

3. The organism is then assigned to a known taxon that shares similar characteristics.
4. If the organism exhibits unique traits that are not found in any previously described organisms, it is placed in a new group.
5. A new name is assigned if the organism has not been described before, or its correct scientific name is confirmed.

These steps ensure accurate classification and naming in the biological taxonomy system.

Question 4.

Write short notes on keys.

Answer:

Keys:

A key is an analytical tool used to identify plants and animals based on their similarities and differences. It operates through contrasting characters, usually presented in pairs called couplets. Each couplet offers two opposite options, leading to the selection of one, which directs the user to the next step in the identification process. Each choice within the key is known as a lead.

There are two main types of keys:

1. **Indented Keys:** These present a sequence of choices between two or more statements regarding the characteristics of a species.
2. **Bracketed Keys:** In these, pairs of opposing characters are used for identification, with numbers on the right of each statement guiding the user to the next choice in the series.

Keys simplify the process of identifying species by narrowing down the options step-by-step.

Question 5.

Write a note on flora, Manuals and Mono-graph.

Answer:

Monographs, Manuals, and Flora:

1. **Monographs:** A monograph provides a comprehensive account of all available information about a specific family or genus. It compiles detailed data on various aspects of the organisms within that group, offering a thorough resource for taxonomic study.
2. **Manuals:** Manuals compile information related to a specific region or area. They include keys and descriptions of families, genera, and species, aiding in the identification and classification of organisms within that area.

3. **Flora:** A flora contains detailed descriptions of the habitat and distribution of plant species in a particular region. Floras are important for documenting plant biodiversity. Examples of floras in India include *Flora of British India*, *Flora of Simensis*, and *Flora of Delhi*.

These resources are essential for studying plant taxonomy, distribution, and identification.

Question 6.

Write the general characters of the kingdom Monera. (8 characters.)

Answer:

General Characteristics of Kingdom Monera:

1. Monerans are **prokaryotes**, meaning they lack a true nucleus.
2. The **nuclear membrane** is absent.
3. The **cell wall** of monerans is composed of **murein** (peptidoglycan).
4. **Cytoplasmic organelles** such as mitochondria, Golgi bodies, and endoplasmic reticulum are absent.
5. **Ribosomes** are of the **70S type**.
6. The **genetic material** consists of double-stranded DNA in the form of a circular loop, called the **nucleoid**, which is not associated with histone proteins.
7. **Photosynthetic monerans** have pigments, but the pigments are found inside **lamellae**, not chloroplasts.
8. The mode of nutrition can be either **autotrophic** (self-feeding) or **heterotrophic** (feeding on others). Cell division occurs through **binary fission**, without mitosis or meiosis.

These characteristics define the basic structure and function of organisms within the Kingdom of Monera.

Question 7.

Write the general characters of the kingdom Mycota. (8 characters).

Answer:

1. They lack chlorophyll and are primarily saprophytes, with some acting as parasites.
2. Mycelium, The fungal body, comprises branched or unbranched filaments known as hyphae.
3. Their cell walls are made of either fungal cellulose or chitin.
4. Fungi can be unicellular or multicellular eukaryotes.
5. They store glycogen and oil as their reserve food materials.
6. They are typically non-motile.

7. Primitive fungi have haploid mycelia, while more advanced groups display dikaryotic mycelia.
8. Reproduction occurs through both asexual and sexual means, with the asexual phase involving spore formation.

Question 8.

Write the general characters of the kingdom Protista. (8 characters).

Answer:

1. They are unicellular or colonial eukaryotes.
2. They have diverse modes of nutrition, including photosynthesis, absorption, and ingestion.
3. Their cytoplasm contains various cell organelles such as the Golgi complex and mitochondria.
4. Ribosomes are of the 80S type.
5. They possess locomotory structures like flagella, cilia, or pseudopodia.
6. They undergo both mitosis and meiosis for cell division.
7. Reproduction occurs both asexually and sexually.
8. Cyst formation is common, allowing them to survive during drought or other unfavourable conditions.

Question 9.

Write the general characters of the kingdom Metaphyta. (8 characters).

Answer:

1. They are multicellular eukaryotes.
2. Their cell walls are made of cellulose.
3. They are autotrophic, specifically photoautotrophs, using sunlight for nutrition.
4. Chloroplasts containing chlorophyll are present for capturing light.
5. Some plants are avascular, while others possess vascular tissues.
6. Their bodies exhibit tissue and organ-level organisation.
7. Though non-motile, certain parts like leaves, roots, and stems can exhibit growth movements.
8. Starch is stored as their reserve food material.

Question 10.

Write the general characters of the Kingdom Animal. (8 characters).

Answer:

1. They are multicellular eukaryotes.

2. They are heterotrophic, with some being saprophytes and others parasites.
3. Animal cells lack a cell wall.
4. Most animals exhibit locomotion.
5. Their bodies display tissue and organ-level organisation.
6. They respond quickly to stimuli due to a well-developed nervous system.
7. Certain tissues, such as muscular and nervous tissues, are highly developed.
8. Animals reproduce through both asexual and sexual methods.

Question 11.

List the distinguishing characters of the phylum protozoan, and classify the phylum with examples. (B. South, B. North, Dharwar 2004, Udupi 2005)

Answer:

Characteristics:

1. Unicellular and microscopic, with a protoplasmic level of organisation.
2. It can be uninucleated or binucleated (having both macro and micronuclei).
3. Exhibit various modes of nutrition: holophytic (plant-like), holozoic (animal-like), saprophytic, or parasitic.
4. Digestion is intracellular, while respiration and excretion occur through diffusion.
5. Contractile vacuoles help regulate osmoregulation.
6. Locomotion occurs via pseudopodia, cilia, or flagella.
7. Reproduction occurs asexually through binary fission or multiple fission, and sexually through conjugation or fusion of gametes.

Classification:

- Class: Rhizopoda / Sarcodina** – Example: *Amoeba*
- Class: Mastigophora / Flagellata** – Example: *Euglena*
- Class: Ciliata** – Example: *Paramecium*
- Class: Sporozoa** – Example: *Plasmodium*

Question 12:

Explain any two beneficial aspects of Nostoc.

Answer:

1. Nostoc species help improve soil fertility by fixing atmospheric nitrogen. Their heterocysts contain the enzyme nitrogenase, which aids in nitrogen fixation, making them valuable biofertilisers.
2. The colonies of the Nostoc commune are used as food in regions like China and South America. Additionally, *Nostoc* species are oxygenic, similar to other blue-green algae, releasing oxygen during photosynthesis and contributing to the oxygen content of the atmosphere.

Question 13:

Explain any two harmful activities of blue-green algae.

Answer:

1. The excessive growth of blue-green algae in water bodies leads to algal blooms, which make the water unsuitable for domestic use. When these algae die, their organic matter serves as a rich food source for aerobic bacteria. The bacteria decompose the organic matter, consuming large amounts of oxygen, resulting in oxygen depletion that can cause the death of fish.
2. Some cyanobacteria grow on buildings during the rainy season, causing damage to bricks and surface coatings.

Question 14:

List the general characteristics of algae.

Answer:

1. Algae are chlorophyll-containing, photosynthetic, aquatic organisms that are eukaryotic.
2. They can be unicellular, colonial, or multicellular, with the multicellular forms producing branched or unbranched filaments.
3. The cell wall of algae is composed of cellulose.
4. Photosynthetic pigments are present within plastids.
5. Algae reproduce both asexually and sexually.
6. Asexual reproduction occurs through spore formation, while sexual reproduction occurs via isogamy or anisogamy.

Question 15:

Give the general features and classification of Protista with examples.

Answer:

- General Features of Protista:
 1. Protists are unicellular eukaryotes, meaning they have a true nucleus and cytoplasmic organelles such as mitochondria and the Golgi apparatus.
 2. They exhibit diverse modes of nutrition. Some are photoautotrophs, while others are heterotrophs, including saprophytes or parasites. Some protists display animal-like holozoic nutrition.
 3. Many protists have locomotory structures such as pseudopodia, flagella, or cilia.
 4. Protists reproduce both asexually and sexually.

- Classification of Protista:
 1. Division Pyrophyta– Example: Dinoflagellates
 2. Division Chrysophyta – Example: Diatoms
 3. Division Euglenophyta – Example: *Euglena*
 4. Division Protozoa – Example: *Amoeba*

Question 16:

Give an account of the distinguishing characteristics of fungi.

Answer:

1. Fungi are non-chlorophyllous and non-photosynthetic, typically functioning as saprophytes.
2. The fungal body, known as the mycelium, is composed of filamentous structures called hyphae.
3. The cell wall is made of fungal cellulose or chitin.
4. Fungal cells are eukaryotic, containing a true nucleus and membrane-bound organelles.
5. Parasitic fungi develop haustoria, specialized structures used to absorb nutrients from their host.
6. The reserve food materials in fungi are glycogen and oil.
7. Fungi reproduce both asexually and sexually. Asexual reproduction occurs through fragmentation, budding, binary fission, or the formation of spores. Sexual reproduction involves plasmogamy, and karyogamy, and may include meiosis.

Question 17:

Describe the methods of asexual reproduction in fungi with examples.

Answer:

1. Zoospores: Fungi living in freshwater produce zoospores, which are motile spores. Examples include *Saprolegnia* and *Pythium*.
2. Sporangiospores: These are non-motile spores produced within sporangia and are dispersed by wind. Examples include *Rhizopus* and *Mucor*.
3. Conidia: Non-motile spores produced exogenously at the tips of conidiophores, also spread by wind. Examples include *Aspergillus* and *Penicillium*.
4. Budding: Yeast-like fungi reproduce by budding under favourable conditions.
5. Fission: In favourable conditions, yeast reproduces by fission, where a single cell divides into two daughter cells.

Question 18:

Describe different types of nutrition in fungi.

Answer:

Fungi are non-autotrophic and rely on heterotrophic modes of nutrition. The different types of nutrition in fungi are:

1. Symbionts: Some fungi, such as mycorrhizae and lichens, live in symbiotic relationships, where both organisms benefit.
2. Parasites: Parasitic fungi depend on other living organisms for food and shelter, often harming their hosts. Example: *Puccinia*.
3. Saprophytes: These fungi feed on dead and decaying organic matter.
4. Predaceous Fungi: *Arthrobotrys* is an example of a predatory fungus that feeds on nematodes.

1st PUC Biology The Living World Three Marks Diagrams:

Draw a neat labelled Diagrams of

Question 1.

Euglena

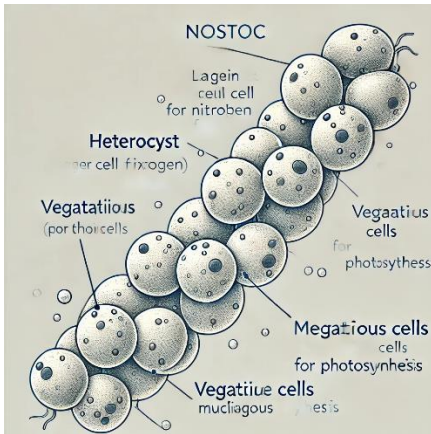
Answer:



Question 2.

Nostoc

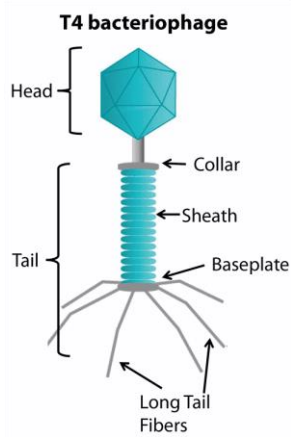
Answer:



Question 3.

Bacteriophage

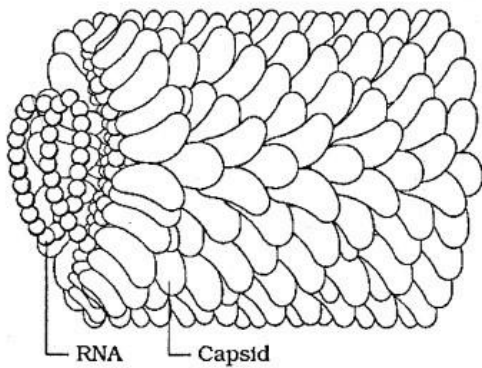
Answer:



Question 4.

TWV

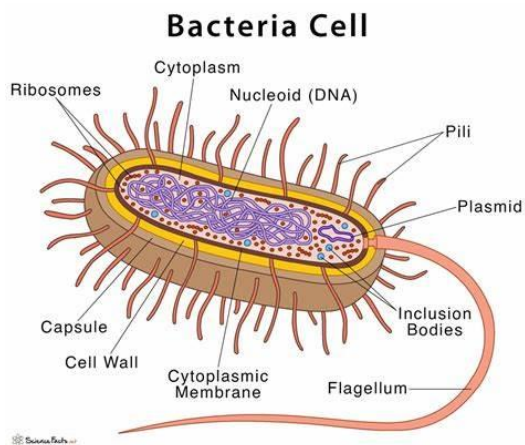
Answer:



Question 5.

Bacterial Cell

Answer:



Question 6.

Bacterias of Different shape

Answer:

