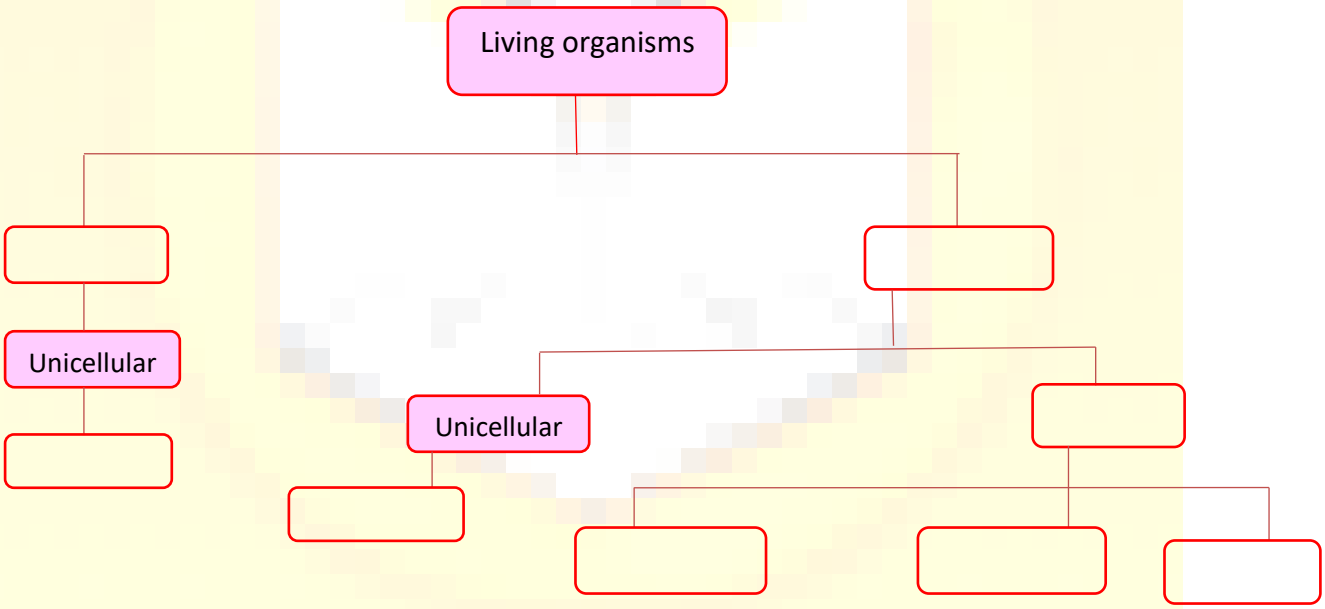
1. LIVING WORLD AND CLASSIFICATION OF MICROBES

Q 1) Use Whittaker method to classify bacteria, protozoa, fungi, algae, prokaryotic, eukaryotic, microbes.

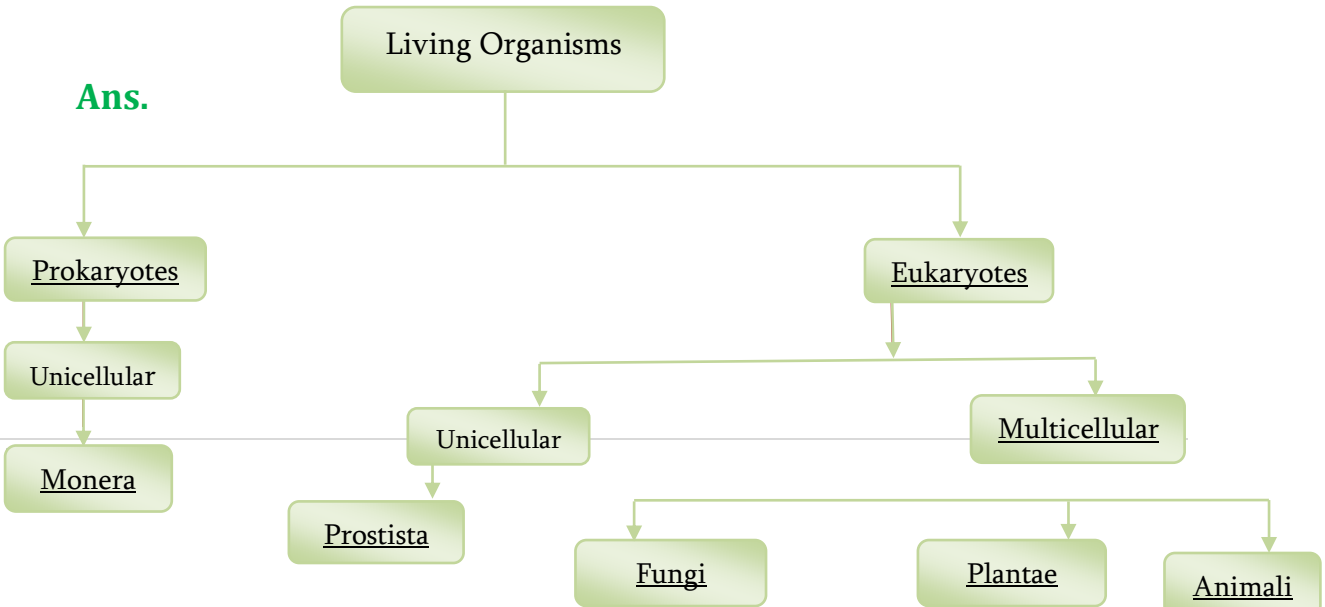
Ans.

Bacteria	Kingdom Monera
Protozoa	Kingdom Protista
Algae	If unicellular, Kingdom Protista. If multicellular, Kingdom Plantae
Prokaryotic	Kingdom Monera
Eukaryotic	Any Kingdom other than Monera.
Microbes	Kingdom Monera or Protista.

Q 2) Complete the five kingdom method of classification using – living organism, prokaryotes, eukaryotes, multicellular, unicellular, protista, animals, plants, fungi.



Ans.



Q 3) Find out my partner.

A	B
1. Fungi	a. Chlorella
2. Protozoa	b. Bacteriophage
3. Virus	c. Candida
4. Algae	d. Amoeba
5. Bacteria	e. Prokaryotic

Ans.

A	B
1. Fungi	Candida
2. Protozoa	Amoeba
3. Virus	Bacteriophage
4. Algae	Chlorella
5. Bacteria	Prokaryotic

Q 4) State whether the following statements are true or false explain your statement.

a. Lactobacilli are harmful bacteria.

Ans. False. (Explanation: Lactobacilli are useful bacteria. They are used for curdling the milk as well as used for preparing different milk products.)

b. Cell wall of fungi is made up chitin.

Ans. True. (Explanation: The cell wall of the plants is formed of cellulose and the cell wall of fungi is formed of complex sugar called chitin. Cytoplasm is present inside the fungal cell wall that contains many nuclei.)

c. Organ of locomotion in amoeba is pseudopodia.

Ans. True. (Explanation: Amoeba is a protozoan, primitive organism which has pseudopodia as the organ for locomotion.)

d. Tomato wilt is a viral disease.

Ans. True. (Explanation: Tomato wilt is a viral disease. They are able to infect only plant cells.)

Q 5) Give Answers.

a. State the merits of Whittaker's method of classification.

Ans. Merits of Whittaker's classification:

1) The classification system of Whittaker is completely based on scientific foundation.

2) Prokaryotes are placed separately in a different kingdom. The prokaryotic organisms are different from other organisms; due to this there separate classification is justified.

3) All unicellular eukaryotic organisms belong to one kingdom that is Protista. This has helped to solve the placement of Euglena.

4) Euglena contains chloroplasts like plants but similar to animals it contains flagella and due to this there was conflict about such species during previous classification systems. They were placed in protozoa previously.

5) Fungi are saprophytic and due to this they are placed separately in a unique kingdom.

6) According to five kingdom classification, the cell structure, organization of cell, mode of nutrition, lifestyle and phylogenetic relationship are taken into account.

7) This grouping is useful for practical reasons because the techniques used are simple.

8) The system has been widely accepted and recommended by the institute of Biology.

9) Therefore the system of 5 kingdom classification becomes most authentic system of biological classification.

b) Write the characteristics of viruses.

Ans. 1) Viruses size is extremely minute and their size range from 10 nm to 100 nm. They are on the border line of living and non-living.

2) They are 10 to 100 times smaller than bacteria and are visible only through the electron microscope.

3) Though they are not considered as living, they can make replica of their own.

4) They contain DNA or RNA in the form of genetic material which are covered by a protein coat. They exist in the form of independent particles.

5) They survive only inside the living plant or animals cells and produce their own proteins with the host cells. Many replicas of the infecting virus are formed by proteins.

5) This infection destroys the host cell and the virus replicas get released and become free to re-infect the other adjoining cells of the host.

6) Most of the viruses are pathogenic, which cause diseases in plants and animals. Examples, Polio Virus, Influenza Virus, HIV-AIDS virus, Picorna virus, Tomato Wilt virus etc.

c. Explain the nutrition in fungi.

Ans. Most of the fungi are saprophytic in nature. For their nourishment they depend on dead and decaying matter. They take the organic matter from dead bodies of plants and animals which help fungi to survive. Fungi are non-green, Eukaryotic & heterotrophic organisms. Thus they degrade the organic matter completely.

d. Which living organisms are included in the kingdom Monera?

Ans. 1) All the living organisms which are in kingdom Monera, are unicellular.

2) Their mode of nutrition is either autotrophic or heterotrophic.

3) As they are prokaryotic, they do not have well-formed nucleus. There is absence of nuclear membrane and the cell organelles.

4) Kingdom Monera consists of different types of bacteria and blue-green algae. E.g. Vibrio choleri, Salmonella typhi, Staphylococcus

aureus, Clostridium botulinum, Treponema pallidum, streptococcus pneumonia, Bacteria Clostridium titani, Legionella pneumonia.

Q 6) Who am I?

a. I don't have true nucleus, cell organelles or plasma membrane.

Ans. Microbe from Monera

b. I have nucleus and membrane bound cell organelles.

Ans. Protozoan from Protista / I am one of the Eukaryote

c. I live on decaying organic matter.

Ans. Fungus

d. I reproduce mainly by cell division

Ans. Bacteria and some Protozoa

e. I can produce my replica.

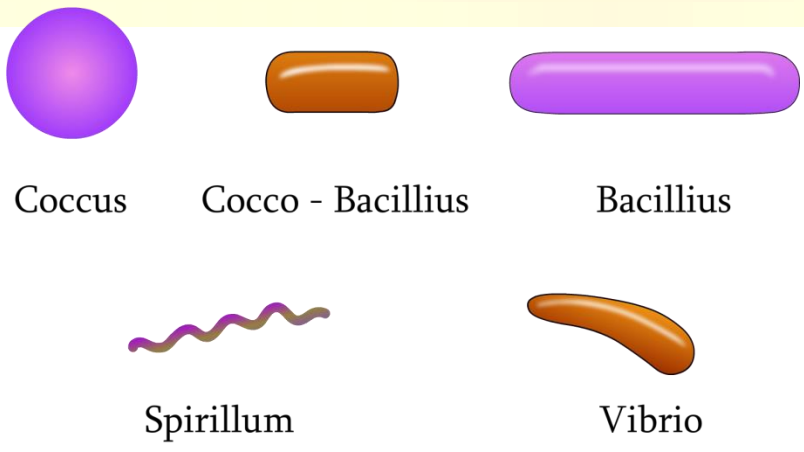
Ans. Virus

f. I am green, but don't have organs.

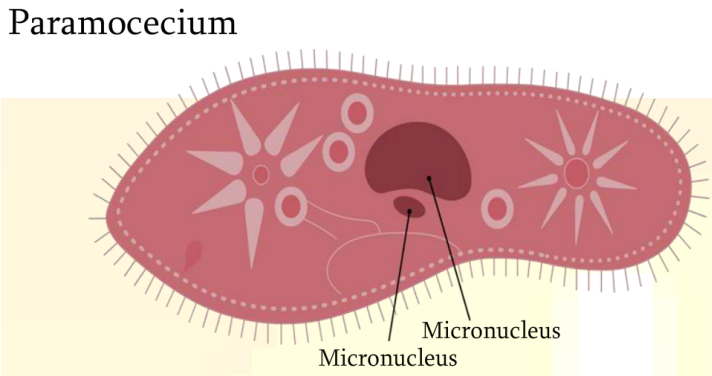
Ans. Algae

Q 7) Draw neat and labelled diagrams.

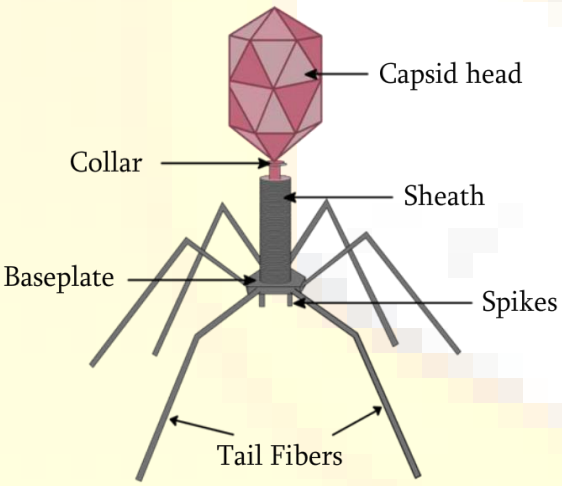
a. Different types of bacteria



b. Paramecium



c. Bacteriophage



Q 8) Arrange the following in ascending order of size Bacteria, Fungi, Viruses, and Algae.

Ans. Virus, Bacteria, Fungi, Algae.

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