

St. Andrews Scots Sr. Sec. School

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Session: 2024-2025 – Answer Key

Class: VIII

Subject: Science

Chapter: Microorganisms

Define these terms:

1. Undifferentiated cells – Cells or tissues which do not have specialized structures or functions is called undifferentiated cells. Eg. Zygote
2. Acellular microbe – Acellular microbes are the smallest microbes with no typical cell structure and no enzymatic energy-production system. They consist of nucleic acid and a protein coat. Eg. Virus
3. Phytoplankton – Phytoplankton are microscopic organisms that are found on the surface of sea or Lake. Eg. Cyanobacteria, diatoms
4. Pathogens – Disease-causing microorganisms are called pathogens. Eg. Bacteria, fungi
5. Free-living organism – An organism that is not dependent on other organism for survival is known as free-living organism. Eg. Anabaena, clostridium

CHECK POINT 1

1. Microbiology
2. Saprophytic fungi
3. Algae
4. Viruses

CHECK POINT 2

1. BCG
2. Pathogens
3. Female Anopheles
4. Mildew
5. Water

CHECK POINT 3

1. (T) 2. (T) 3. (F) 4. (T)

PRACTICE TIME

A. Tick (✓) the correct answer:

1. (c) 2. (b) 3. (d) 4. (c) 5. (b)

B. Correct and Rewrite the following statements:

1. Viruses reproduce inside the living organisms only.
2. Ringworm is a fungal disease.
3. Tuberculosis is transmitted by air.
4. Malaria spreads by the bite of female Anopheles mosquito.
5. Rhizobium is a nitrogen-fixing bacterium that lives in the root nodules of legumes.

C. Very Short Answer Type Questions:

1. Bacterium Lactobacillus
2. Yeast
3. Clostridium botulinum
4. Virus
5. Mucor

D. Short Answer Type Questions:

1. Bacteria, Fungi, Algae, Protozoa and Viruses. Bacteria and Protozoa have only one-celled individuals.



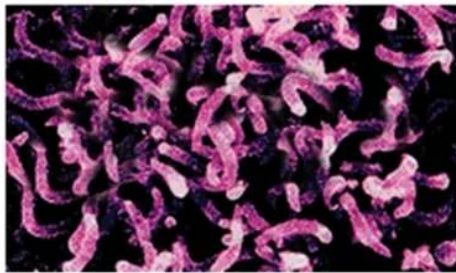
Red, Brown and Green Alga



Fungi



Protozoa

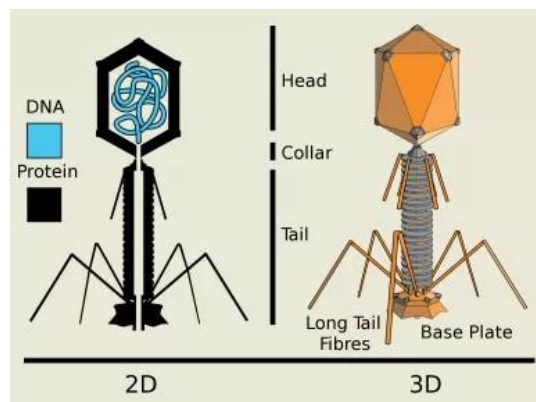


Spiral bacteria



Rod shaped bacteria

2. Because they behave as living beings inside the living cells and as non-living things outside the living cells.



Virus

3. Certain microbes grow and produce toxic substances on the cooked food kept for long or stored making it poisonous. Consumption of such food causes vomiting, diarrhoea and headache. This is called food poisoning.

4. Diseases caused by microorganisms through air, water, food or physical contact are called communicable diseases. Pneumonia, common cold, malaria and polio are some communicable diseases.

E. Long Answer Type Questions:

1. (a) Microorganisms decompose dead plants and animals, and convert their organic compounds into simple inorganic substances. These substances get mixed with soil and

improve its fertility. Thus, microorganisms prevent accumulation of waste and dead organic matter and hence, they help to clean our environment.

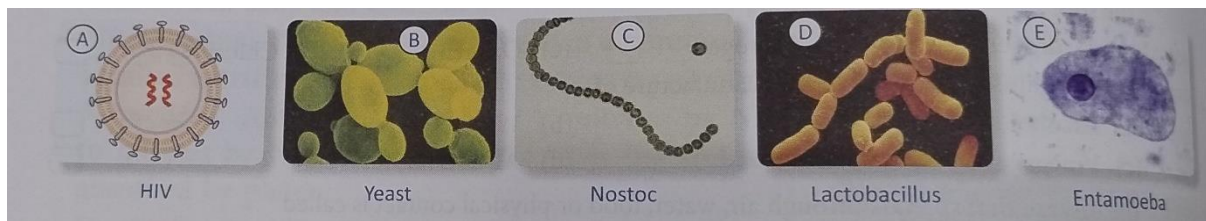
(b) Microorganisms such as cyanobacteria and Rhizobium fix free nitrogen from air into nitrogenous compounds. This enriches the soil with nitrates which are used by plants.

2. Communicable diseases such as common cold, typhoid, chickenpox, etc. are spread by microorganisms through air we breathe, water we drink, food we eat and by direct contact with a sick person.

3. Conversion of atmospheric nitrogen into nitrogenous compounds by some biological agent is called biological nitrogen fixation. Microbes associated with nitrogen fixation are Rhizobium, Azotobacter, Clostridium, Anabaena and Nostoc.

4. Louis Pasteur discovered the occurrence of microorganisms in air. He also discovered the process of pasteurisation. This process is used to make the milk bacteria-free. The pasteurised milk does not spoil for a longer time.

5. Look at the images of microbes and assign their group. Write their importance.



A – Viruses. They are regarded as connecting link between living and non living things. (HIV causes AIDS in human beings.)

B – Fungi. It is used for commercial production of alcohol and wine, and in baking industry.

C – Bacteria. It fixes atmospheric nitrogen.

D – Bacteria. It converts milk into curd.

E – Protozoa. It causes amoebic dysentery.

F. Hots Questions:

1. Salt or sugar added to the food kills bacteria by draining out water from the bacterial cells. This prevents the spoilage of food.

2. It is because cut and uncovered fruits sold on the roadside may be contaminated with pathogens which can cause diarrhoea, dysentery and cholera.

3. COVID-19 disease is caused by SARS-CoV-2 virus. It attacks our lungs, respiratory system and other parts of our body.

Extra Question

Nitrogen Cycle

The cyclic process of nitrogen being fixed, used by plants and animals and later returned to atmosphere is known as nitrogen cycle. Nitrogen is one of the essential constituents of all

living organisms as part of proteins, chlorophyll, nucleic acids and vitamins, available 78% in our environment.

The main steps of nitrogen cycle are as follows:

(a) Nitrogen fixation: Methods of nitrogen fixation are atmospheric, biological and industrial.

Atmospheric nitrogen fixation - During rain when lightning strikes, nitrogen and oxygen in atmosphere combine due to electric discharge and form oxides of nitrogen. These oxides dissolve in rainwater forming nitric acid which comes down to the earth and reacts with alkaline salts in the soil forming nitrates.

Biological nitrogen fixation – Some bacteria like Azotobacter, Rhizobium, Nostoc are nitrogen -fixing microorganisms. They can convert atmospheric nitrogen into nitrogen compounds.

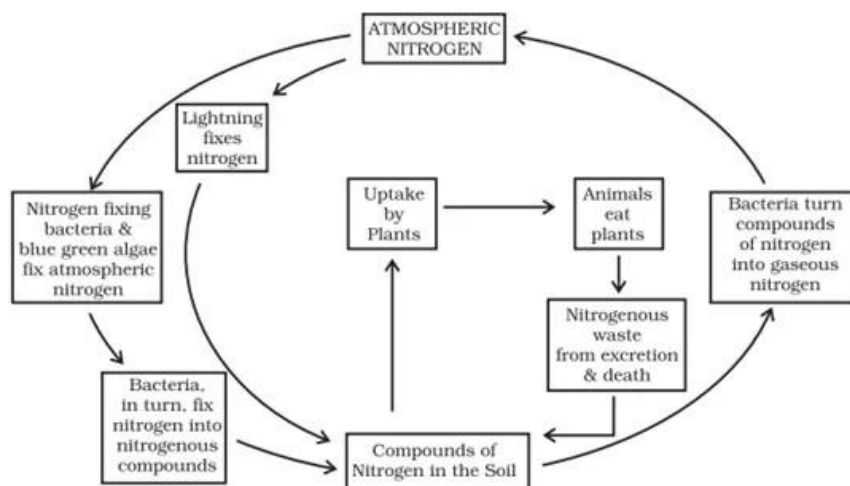
Industrial nitrogen fixation – Chemical fertilisers like urea and ammonium sulphate are manufactured at commercial level by utilising atmospheric nitrogen.

(b) Nitrogen assimilation: Nitrogen compounds absorbed by plants are used in the synthesis of amino acids, proteins, etc. Animals eat plant food and synthesise animal proteins.

(c) Ammonification: Soil bacteria and fungi break down proteins and other nitrogen compounds from the waste, dead and decaying plants and animals into ammonium salts and ammonia.

(d) Nitrification: The soil bacteria Nitrosomonas and Nitrobacter convert ammonia and ammonium salts into nitrates which are absorbed by plants.

(e) Denitrification: The nitrates in the soil are converted into free molecular nitrogen by Pseudomonas, a denitrifying bacterium. This molecular nitrogen is released into the atmosphere. In this way, nitrogen cycle is completed in nature.



Nitrogen Cycle