

# JSUNIL TUTORIAL PANJABI COLONY 01

## NCERT Science Class 8 Chapter 2 - Microorganisms: Friends and Foe

Q.1: Fill in the blanks:

- Microorganisms can be seen with the help of a \_\_\_\_\_.
- Blue green algae fix \_\_\_\_\_ directly from air to enhance fertility of soil.
- Alcohol is produced with the help of \_\_\_\_\_.
- Cholera is caused by \_\_\_\_\_.

Ans: (a) microscope (b) atmospheric oxygen (c) yeast (d) bacteria.

Q.2: Tick the correct answer:

Ans: (a) ii (b) ii (c) i (d) ii (e) iii (f) iii.

Q.3: Match the organisms in column I with their actions in column II:

Column I	Column II
(i) Bacteria	a) Nitrogen fixation
(ii) Rhizobium	b) Setting of curd
(iii) Lactobacillus	c) Baking of bread
(iv) Yeast	d) Causes Malaria
(v) A protozoan	e) Causing Cholera
(vi) A virus	f) Causing AIDS
	g) Producing antibodies

Ans: (i) e (ii) a (iii) b (iv) c (v) d (vi) f.

Q.4: Can microorganisms be seen with the naked eye? If not, how can they be seen?

Ans: No, microorganisms can not be seen with naked eyes. They are so small that they can not be seen with naked eyes. A microscope is required to see these organisms.

Q.5: What are the major groups of microorganisms?

Ans: Microorganisms are mainly divided into five groups - Bacteria, Fungi, Protozoa, Algae and Virus.

Q.6: Name the microorganisms which can fix atmospheric nitrogen in the soil.

Ans: Certain type of bacteria and blue green algae fix atmospheric nitrogen. For example Bacteria like- Rhizobium, Azotobacter and blue green algae like- Anabaena, Nostoc.

Q.7: Write ten lines on the usefulness of microorganisms in our lives.

Ans: Microorganisms are very useful to us. Some of their usefulness is as follows:

- They are used in the preparation of curd, bread and cake. Lactobacillus promotes the formation of curd and Yeast in the baking industry.
- Commercially microorganisms are used for the large scale production of alcohol, wine and vinegar.
- Yeast is used for commercial production of alcohol and wine while, Acetobacter bacteria cause conversion of alcohol to vinegar.

4. In medical industry antibiotics are made from microorganisms like - some fungi and bacteria.
5. Microorganisms are also used to prepare vaccines for various diseases.
6. Microorganisms (bacteria) help us in cleaning of our environment as they decompose the dead bodies of plants and animals and other organic wastes.
7. In agriculture, microorganisms are used to increase soil fertility by fixing nitrogen.
8. Some bacteria like - Rhizobium and some blue green algae are able to fix nitrogen from the atmosphere to enrich soil and thus increase its fertility.
9. It is due to the activities of microorganisms because of which we are able to prepare manure by decomposing organic wastes and dead bodies of plants and animals.
10. In food industry, they are used as preservatives for food items. Further, some fungi are eaten raw as food such as, Mushrooms.

Q.8: Write a short paragraph on the harms caused by microorganisms.

Ans: Microorganisms can be very harmful to us, as they cause a number of human and animal diseases. Diseases in humans like common cold, tuberculosis, measles, chicken pox, polio, cholera, typhoid, hepatitis-B, malaria etc. all are caused by microorganisms. Some serious diseases like- Anthrax is a dangerous human and cattle disease caused by a bacterium. Microbes grow on food products and render them unfit for consumption. Consumption of such food causes food poisoning. Microbes also spoil clothes and leather products. Microorganisms cause diseases of plants like - blights in potatoes, sugarcane, oranges then, rust of wheat citrus, canker etc. They also reduce the crop yield.

Q.9: What are antibiotics? What precautions must be taken while taking antibiotics?

Ans: Medicines taken to kill or stop the growth of harmful or disease causing microbes in human body are called antibiotics. Antibiotics are very useful as only antibiotics can save us from many microbial infections and diseases. Antibiotics are made from fungi and bacteria. Alexander Fleming discovered the first antibiotic called Penicillin in 1929. Now-a-days a number of antibiotics are used to cure a variety of human, animal and plant diseases. Streptomycin, Erythromycin, Tetracycline etc are some commonly used antibiotics.

Precautions for taking antibiotics: Antibiotics should only be taken when advised by a qualified physician. Moreover it should only be taken when needed otherwise; they become less effective for future use. Also antibiotics taken unnecessarily may kill the beneficial bacteria in the body.

### **EXTRASCORE**

#### **Short type Questions with their Answers**

Q.1: Where are Microorganisms found?

Ans: Microorganisms are found everywhere. In air, water and in the bodies of plants and animals. They can live in all kinds of environment ranging from ice-cold climate to hot springs and deserts to marshy lands.

Q.2: Which common diseases do viruses cause?

Ans: Viruses cause diseases like common cold, flu and most of the coughs.

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Q.3: Name diseases caused by protozoa?

Ans: *Dysentery and Malaria are caused by protozoa.*

Q.4: Name any two algae.

Ans: *Chlamydomonas and Spirogyra.*

Q.5: Name any two protozoa.

Ans: *Amoeba and Paramecium.*

Q.6: Name any two fungi.

Ans: *Rhizopus (bread mould) and Penicillium.*

Q.7: Name unicellular microbes.

Ans: *Bacteria, Protozoa and some Algae.*

Q.8: Name multi-cellular microbes.

Ans: *Algae and Fungi.*

Q.9: Which bacterium is responsible for the curdling of milk?

Ans: *Lactobacillus.*

Q.10: Which bacterium is used to produce alcohol?

Ans: *Yeast.*

Q.11: What do you mean by 'Fermentation'? Who discovered the process of 'Fermentation'?

Ans: *Conversion of sugar into alcohol using yeast is called 'Fermentation'. Louis Pasteur discovered this process.*

Q.12: Which microorganism is not affected by antibiotics?

Ans: *Viruses.*

Q.13: Name certain diseases which can be prevented by vaccination?

Ans: *Cholera, tuberculosis, smallpox, hepatitis, polio, etc.*

Q.14: Name microorganisms which can fix atmospheric nitrogen.

Ans: *Bacteria and Blue Green Algae.*

Q.15: Name one free living bacteria and one blue green algae who fix nitrogen using oxygen from atmosphere.

Ans: *Azotobacter, Anabaena.*

Q.16: What are 'Pathogens'?

Ans: *Disease causing microorganisms are called 'Pathogens'.*

Q.17: What are communicable diseases?

Ans: *Microbial diseases that can spread from an infected person to a healthy person through air, water, food or physical contact are called communicable diseases. For example, cholera, common cold, chicken pox etc.*

Q.18: Name an insect which is a common carrier of microbial diseases.

Ans: House flies.

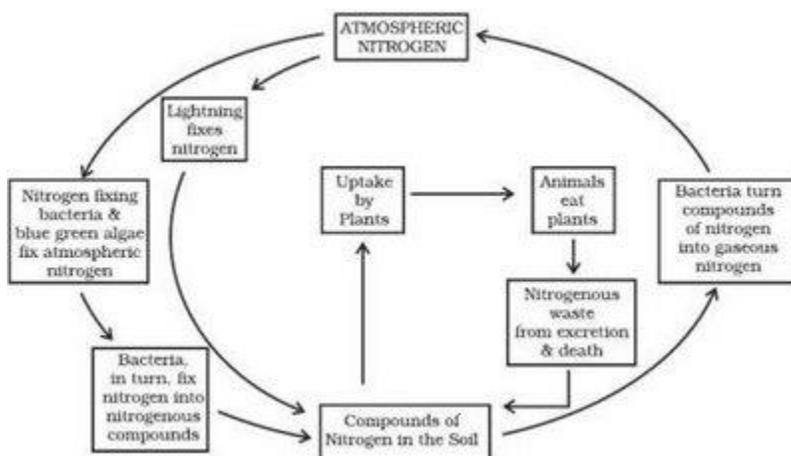
Q.19: Which microorganism causes diseases like measles, chicken pox, polio, hepatitis-B, etc?

Ans: Virus.

Q.20: What are preservatives? Name two common preservatives.

Ans: Chemicals used to check the growth of microorganisms in food stuffs are called preservatives. Two common preservatives are salt and edible oil.

### Long type Questions with their Answers



Q.1: Write a short note on 'Nitrogen Fixation'.

Ans: It is a combination of natural and industrial processes by virtue of which the free atmospheric nitrogen is converted into nitrogen compounds such as - ammonia, nitrates or nitrites that is essential for plant growth and is also used in chemical industries.

Nitrogen is fixed as nitric oxide by lightening and ultraviolet rays. But more significantly nitrogen is fixed as ammonia, nitrites and nitrates by soil microorganisms like - bacterium *Rhizobium*. *Rhizobium* lives in the root nodules of leguminous plants (pulses, peas and beans) with which it has a symbiotic relationship. Due to nitrogen fixation the fertility of soil is increased.

Q.2: Explain the 'Nitrogen Cycle'.

Ans:

### **Nitrogen Cycle**

It is a natural cyclic process in the course of which atmospheric nitrogen enters the soil and becomes part of living organisms, before returning to the atmosphere. Nitrogen, an essential part of the amino acids, proteins and nucleic acids is a basic element of life. Although 78% by volume of the atmosphere is nitrogen gas, but this gaseous nitrogen must be converted to some usable forms before it can be consumed by living organisms. This is accomplished through the nitrogen cycle. Certain bacteria and blue green algae present in the soil fix nitrogen from atmosphere and convert it into inorganic nitrogen compounds. Such compounds are directly taken up by plants through their root system. The nitrogen then passes through the food chain from plants to herbivores to carnivores. When plants

and animals die, bacteria and fungi present in the soil convert the nitrogenous waste into nitrogenous compounds to be used by plants again. Certain other bacteria convert some part of these nitrogenous wastes to free nitrogen through 'Denitrification', which goes back into the atmosphere. (Fig above)

As a result, the percentage of nitrogen in the atmosphere remains more or less constant.

Q.3: What are the major groups of the microorganisms?

Ans: Major groups of microorganisms are -

**Bacteria:** A single-celled, often parasitic microorganism without distinct nuclei or organized cell structures / Various species are responsible for decay, fermentation, nitrogen fixation, and many plant and animal diseases.

**Fungi:** They are long thread-like unicellular as well as multi-cellular microorganisms /

**Algae:** Aquatic, photosynthetic microorganisms / In simple terms they are called sea weeds e.g. Blue Green Algae.

**Protozoan:** They are unicellular organisms having size ranging from 2 - 200 microns / For example -amoeba, paramecium.

**Virus:** Viruses are smallest microscopic organisms. They may be rod - shaped, polygonal, spherical or even cubical. There are four types of viruses -

1. Plant viruses
2. Insect viruses
3. Bacterial viruses and
4. Mammalian viruses.