

# Class 8 Solutions Science Chapter 2 Microorganisms: Friend and Foe

## Exercises

### Q1. Fill in the blanks:

(a) Microorganisms can be seen with the help of a microscope.

**Microscope:** A microscope is a scientific instrument used to magnify objects that are too small to be seen with the naked eye.



### Microscope

(b) Blue-green algae fix nitrogen directly from the air to enhance the fertility of the soil.



**Blue-green algae**

(c) Alcohol is produced with the help of yeast.

(d) Cholera is caused by bacteria.

**Q2. Tick the correct answer:**

**(a) Yeast is used in the production of**

- (i) Sugar**
- (ii) Alcohol**
- (iii) Hydrochloric acid**
- (iv) Oxygen**

**Ans: (ii) Alcohol**

Yeast is used in the production of alcohol.

Yeast can convert sugars into alcohol through a process called fermentation.

This property of yeast is utilized in industries like brewing and winemaking.



**Yeast** causes dough to rise

**(b) The following is an antibiotic**

- (i) Sodium bicarbonate**
- (ii) Streptomycin**
- (iii) Alcohol**
- (iv) Yeast**

**Ans: (ii) Streptomycin**

**(c) Carrier of malaria-causing protozoan is**

- (i) Female Anopheles mosquito**
- (ii) Cockroach**
- (iii) Housefly**
- (iv) Butterfly**

**Ans: (i) Female Anopheles Mosquito**



**Mosquito**

**(d) The most common carrier of communicable diseases is**

(i) Ant

(ii) Housefly

(iii) Dragonfly

(iv) Spider

Ans: (ii) Housefly

(e) The bread or idli dough rises because of

(i) Heat

(ii) Grinding

(iii) Growth of yeast cells

(iv) Kneading

Ans: (iii) Growth of yeast cells

(f) The process of conversion of sugar into alcohol is called

(i) Nitrogen fixation

(ii) Molding

(iii) Fermentation

(iv) Infection

Ans: (iii) Fermentation

**Q3. Match the organisms in Column I with their action in Column II.**

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

Ans:

Column A	Column B
(i) Bacteria	(e) Causing Cholera
(ii) Rhizobium	(a) Fixing Nitrogen
(iii) Lactobacillus	(b) Setting of curd

(iv) Yeast	(c) Baking of bread
(v) A protozoan	(d) Causing Malaria
(vi) A Virus	(f) Causing AIDS

### **(i) Bacteria - (e) Causing Cholera**

Bacteria are tiny organisms that can cause diseases. Cholera is a severe illness that is caused by a specific bacterium called *Vibrio cholerae*.

### **(ii) Rhizobium - (a) Fixing Nitrogen**

Rhizobium is a helpful type of bacteria that lives in the roots of certain plants. It has a special ability to take nitrogen from the air and convert it into a form that plants can use.



**Rhizobium**

### **(iii) Lactobacillus - (b) Setting of curd**

Lactobacillus is a type of bacteria used in the process of making curd. When we add curd starter containing lactobacillus to milk, it helps in fermenting the milk. This fermentation process turns the milk into curd by converting the milk sugar into lactic acid.

### **(iv) Yeast - (c) Baking of bread**

Yeast is a type of microorganism that is used in baking bread. When we add yeast to the dough, it produces tiny bubbles of gas called carbon dioxide through a process called fermentation. These bubbles make the dough rise and become fluffy when we bake it.

### **(v) A protozoan - (d) Causing Malaria**

A protozoan is a type of tiny organism. Some protozoans can cause diseases. Malaria is a disease that is caused by a protozoan parasite.

### **(vi) A Virus - (f) Causing AIDS**

A virus is a tiny organism that can cause diseases. The Human Immunodeficiency Virus (HIV) is a virus that can weaken a person's immune system. It can lead to a disease called Acquired Immunodeficiency Syndrome (AIDS), which makes it harder for the body to fight off infections and diseases.

### **(g) Producing antibodies**

This option does not have a corresponding organism in Column A. Antibodies are special substances produced by our immune system to fight against infections.

### **Q4. Can microorganisms be seen with the naked eye? If not, how can they be seen?**

**Ans:** The microorganism can not be seen with the naked eye. Microorganisms are too small and are not visible to the unaided eye. Some of these, such as the fungus that grows on bread, can be seen with a magnifying glass. However, most require a microscope for visibility.

### **Q5. What are the major groups of microorganisms?**

**Ans:** Microorganisms are classified into five major groups:

1. Bacteria
2. Fungi
3. Protozoa
4. Algae
5. Viruses

### **Q6. Name the microorganisms which can fix atmospheric nitrogen in the soil.**

**Ans:** Microorganisms that fix atmospheric nitrogen in the soil include bacteria like Rhizobium, Azotobacter, and cyanobacteria (commonly known as blue-green algae). These microbes convert atmospheric nitrogen into compounds that plants can use, thus increasing soil fertility. They are commonly called biological nitrogen fixers.



**Blue-green algae**

### **Q7. Write 10 lines on the usefulness of microorganisms in our lives.**

**Ans:** Microorganisms are quite useful in our lives in many ways :

- **Alcohol and Vinegar Production:** Yeast is used in the large-scale production of alcohol, wine, and acetic acid (vinegar) through fermentation.
- **Curd Formation:** The bacterium **Lactobacillus** helps in converting milk into curd.



## Curd

- 1. Baking Industry:** Yeast is widely used in baking to make bread, pastries, and cakes rise.
- 2. Antibiotics:** Bacteria are used to produce antibiotics like **streptomycin, tetracycline, and erythromycin**, which help fight infections.
- 3. Soil Fertility:** Microorganisms such as **Rhizobium** and blue-green algae fix atmospheric nitrogen, enriching soil fertility.
- 4. Nitrogen Cycle:** Certain bacteria convert nitrogen compounds in the soil into nitrogen gas, which is released back into the atmosphere, maintaining the nitrogen cycle.
- 5. Waste Decomposition:** Microorganisms decompose organic waste and dead matter, helping to clean the environment and recycle nutrients.
- 6. Digestion:** Some microorganisms in our gut aid in the digestion of food.
- 7. Agriculture:** Beneficial bacteria help break down organic matter, enriching the soil for farming.
- 8. Scientific Research:** Microorganisms are used in research for advancements in genetics and biotechnology, contributing to new discoveries and technologies.

**Q8. Write a short paragraph on the harms caused by microorganisms.**

**Ans:** Microorganisms are harmful in many ways.

- Some of the microorganisms cause diseases in human beings, plants and animals. Such disease-causing microorganisms are called **pathogens**.
- **Pathogens** spread a number of Microbial diseases or communicable diseases like cholera, common cold, chickenpox and tuberculosis from an infected person to a healthy person through air, water, food or physical contact.
- Some microorganisms spoil food, clothing and leather. Food poisoning is caused by the consumption of food spoilt by some microorganisms.

**Q9. What are antibiotics? What precautions must be taken while taking antibiotics?**

**Ans:** **Antibiotics** are powerful medications used to treat infections caused by bacteria.

- They work by either killing bacteria or inhibiting their growth and reproduction.
- Antibiotics are effective against bacterial infections such as strep throat, pneumonia, and urinary tract infections, but they do not work against viral infections like the flu or common cold.
- Common examples of antibiotics include **penicillin, amoxicillin, and tetracycline.**



## Antibiotics

### Precautions for taking Antibiotics:

- **Follow Prescription Guidelines:** Always take antibiotics exactly as prescribed by your healthcare provider, including the dosage and duration of treatment.
- **Complete the Course:** Finish the entire course of antibiotics even if you start feeling better before completing it. Stopping early can lead to the bacteria becoming resistant to the antibiotic.
- **Avoid Mixing with Certain Medications:** Inform your doctor about any other medications or supplements you are taking, as some can interact negatively with antibiotics.
- **Be Aware of Side Effects:** Monitor for side effects, such as nausea, diarrhea, or allergic reactions. If you experience severe side effects, contact your healthcare provider.
- **Do Not Share Antibiotics:** Never share your antibiotics with others or use leftover antibiotics from a previous illness, as they may not be appropriate for your current infection.