

# SCIENCE

## Chapter 2: Microorganisms: Friend and Foe



## Important Questions

### Multiple Choice Questions-

#### Question 1.

The host for malaria causing protozoan is:

- (a) anopheles mosquito
- (b) the cow
- (c) the earthworm
- (d) the tapeworm

#### Question 2.

The bread or dosa dough rises because of the action of:

- (a) heat
- (b) grinding
- (c) growth of yeast cells
- (d) none of these

#### Question 3.

Malaria is spread by:

- (a) plasmodium
- (b) female anopheles mosquito
- (c) male anopheles mosquito
- (d) none of these

#### Question 4.

Protozoan shaped like a slipper is:

- (a) amoeba
- (b) paramecium
- (c) euglena
- (d) entamoeba

#### Question 5.



The bacterium that turns milk into curd is:

- (a) lactobacillus
- (b) acetobacter
- (c) rhizobium
- (d) none of these

**Question 6.**

The bacteria was first observed by:

- (a) Louis Pasteur
- (b) Antony Von Leuwen Hook
- (c) Robert Hooke
- (d) Robert Koch

**Question 7.**

Virus reproduce:

- (a) only outside the cells of the host organisms
- (b) only inside the cells of the host organisms
- (c) both inside and outside the cells of the host organisms
- (d) none of these

**Question 8.**

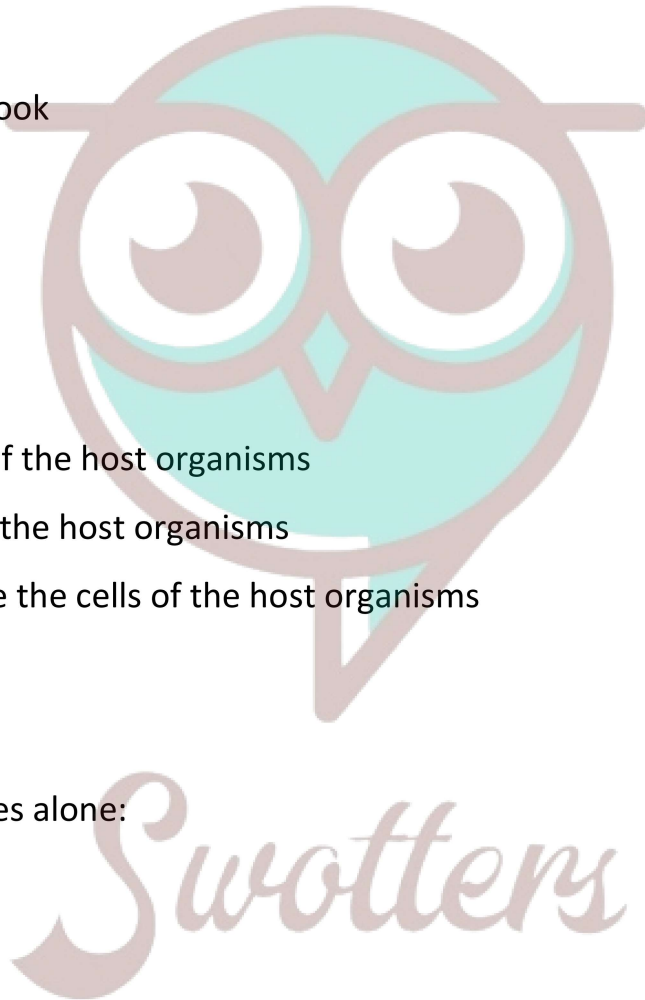
Which of the following lives alone:

- (a) amoeba
- (b) fungi
- (c) bacteria
- (d) all of these

**Question 9.**

The process of conversion of sugar into alcohol is known as:

- (a) pasteurisation
- (b) fermentation
- (c) decomposition



(d) none of these

**Question 10.**

In Pasteurisation the milk is heated to about:

(a) 100°C

(b) 50°C

(c) 70°C

(d) 110°C

**Question 12.**

The bacterium living in the root nodules of leguminous plants is:

(a) lactobacillus

(b) acetobactor

(c) rhizobium

(d) none of these

**Question 13.**

Atmospheric nitrogen is used for the synthesis of:

(a) plant proteins

(b) animal proteins

(c) plant carbohydrates

(d) none of these

**Question 14.**

The percentage of nitrogen in the atmosphere:

(a) increases during day time

(b) decreases during day time

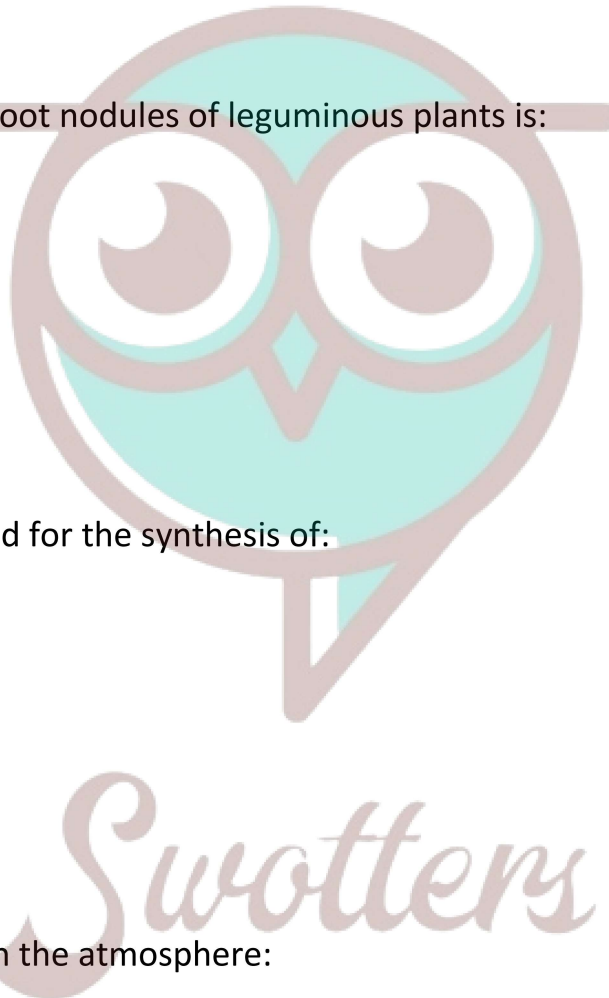
(c) remains more or less constant

(d) can't say

**Question 15.**

Which of the following is a preservative:

(a) sodium benzoate



- (b) common salt
- (c) vinegar
- (d) all of these

**Question 16.**

Hepatitis-A is transmitted through:

- (a) water
- (b) air
- (c) food
- (d) contact

**Question 17.**

Communicable diseases are spread from an infected person to a healthy person through:

- (a) air
- (b) water
- (c) food
- (d) all of these

**Question 18.**

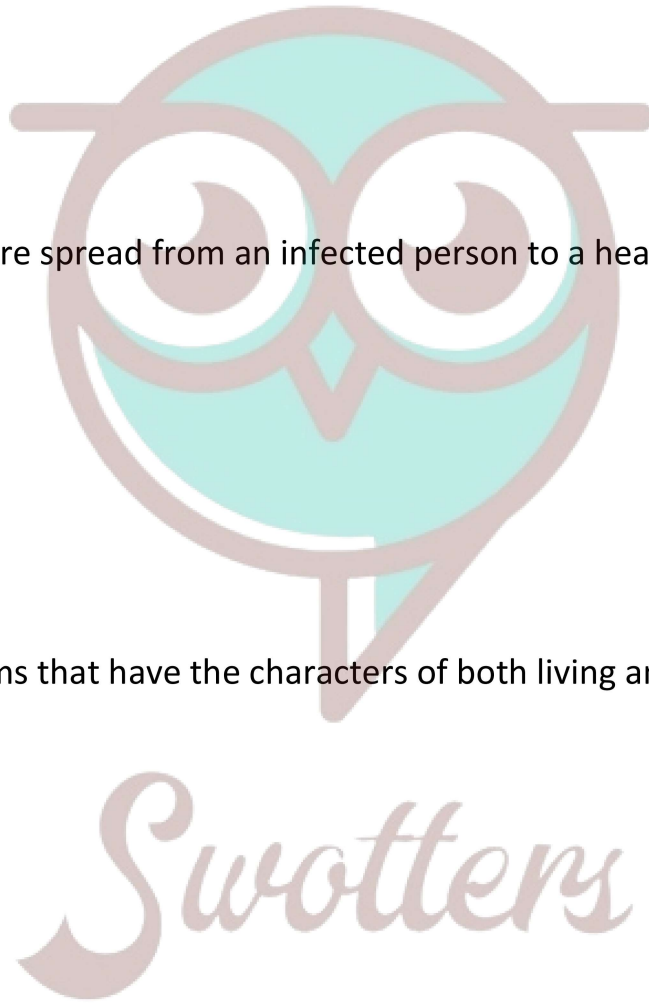
A group of micro organisms that have the characters of both living and non-living are:

- (a) bacteria
- (b) protozoa
- (c) virus
- (d) fungi

**Question 19.**

is the process by which alcohol and  $\text{CO}_2$  are produced by yeast cells.

- (a) respiration
- (b) digestion
- (c) evaporation
- (d) fermentation

**Question 20.**

Cause of malaria is:

- (a) fungi
- (b) bacteria
- (c) protozoa
- (d) virus

**Question 21.**

The algae commonly used as fertilisers are called:

- (a) chlorellin
- (b) blue-green algae
- (c) spirogyra
- (d) none of these

**Question 22.**

Which of the following drug is an antibiotic?

- (a) alcohol
- (c) streptomycin
- (b) insulin
- (d) none of these

**Question 23.**

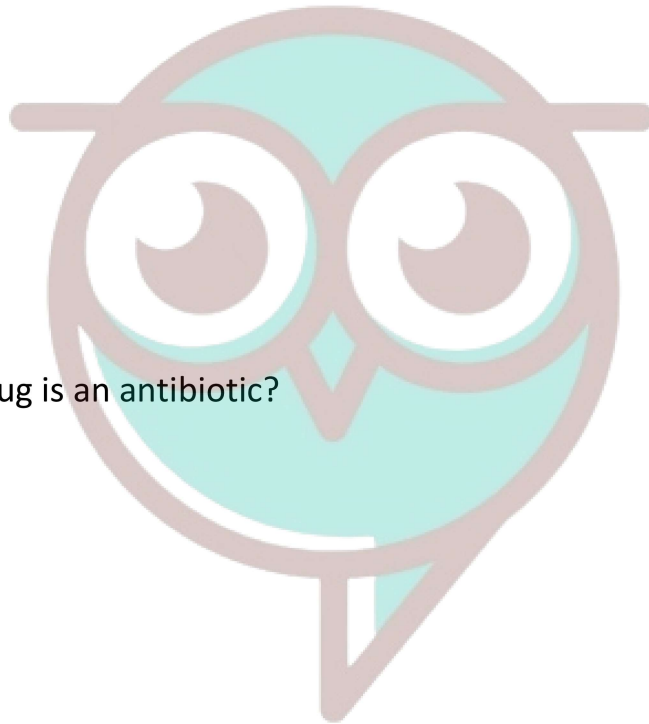
Leprosy is caused by:

- (a) bacteria
- (c) virus
- (b) protozoa
- (d) fungi

**Question 24.**

The cause of whooping cough is

- (a) bacteria
- (c) virus
- (b) fungi



*Swotters*

(d) algae

**Question 25.**

Virus is.

(a) non-living

(c) living as well as non-living

(b) living

(d) none of these

**Question 26.**

Tuberculosis is a disease caused by:

(a) bacterium

(b) protozoan

(c) virus

(d) malnutrition

**Question 27.**

BCG vaccine is used to curb:

(a) cholera

(b) tuberculosis

(c) polio

(d) typhoid

**Question 28.**

Cholera is due to:

(a) virus

(b) fungus

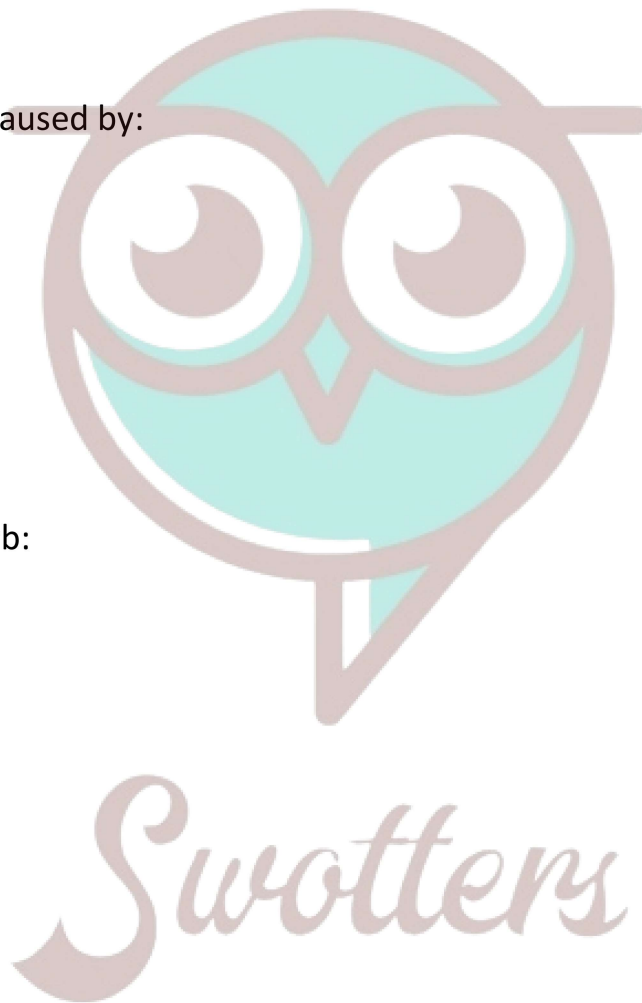
(c) protozoan

(d) bacterium

**Question 29.**

Which of the following is air-borne disease:

(a) typhoid



- (b) tuberculosis
- (c) cholera
- (d) polio

**Question 30.**

Breathing in polluted air causes:

- (a) kidney trouble
- (b) heart problem
- (c) respiratory diseases
- (d) none of these

**Question 31.**

Yeast helps in the production of:

- (a) sugar
- (b) alcohol
- (c) oxygen
- (d) none of these

**Very Short :**

1. Name the five groups of microorganisms.
2. Name any two serious diseases caused by virus.
3. Name any two diseases caused by protozoa.
4. Name any two domestic uses of microorganisms.
5. Which bacteria promotes the formation of curd?
6. Name the bacteria used in making bread, pastries and cakes.
7. Name the commercial use of yeast.
8. Name the scientist who discovered penicillin.
9. Name any two communicable diseases.
10. Name any two carriers of diseases.
11. Name any two food preservatives.
12. Name the nitrogen fixation bacteria.
13. Who discovered pasteurisation?
14. Why milk is boiled before storage and consuming?



**Short Questions :**

1. What are microorganisms?
2. Define virus.
3. Why are viruses different from other microorganisms?
4. Where are microorganisms found?
5. How do microorganisms help in agriculture?
6. What is fermentation?
7. Why is yeast used in the baking industry for making bread, cakes and pastries?
8. What are antibodies?
9. What are communicable diseases?
10. Name the modes of transmission of communicable disease.

**Long Questions :****Question 1.**

Explain why antibiotics do not work against flu or any infection caused by viruses.

**Question 2.**

Mention any three ways through which pathogens are transmitted.

**Question 3.**

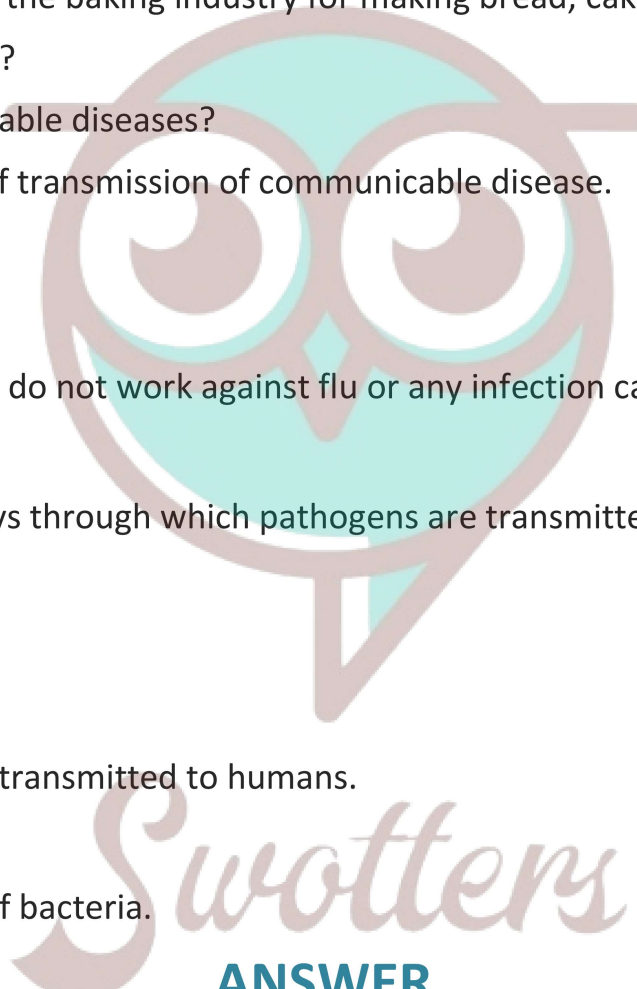
Explain canning.

**Question 4.**

Explain how malaria is transmitted to humans.

**Question 5.**

Explain various types of bacteria.

**MCQ:**

1. Anopheles mosquito

Anopheles mosquito is the host for malaria causing protozoan

2. Growth of yeast cells

Due to growth of yeast cells, the breads or dosa dough rises

3. Female anopheles mosquito

Malaria is spread by female anopheles mosquito.

**4. Paramecium**

Potozoan shaped like a slipper is paramecium.

**5. Lactobacillus**

Lactobacillus turns milk into curd.

**6. Antony Von Leuwen Hook**

The bacteria was first observed by Antony Von Leuwen Hook.

**7. Only inside the cells of the host organisms**

Virus reproduce only inside the cells of the host organisms.

**8. Amoeba**

Amoeba lives alone whereas fungi and bacteria live in colonies.

**9. Fermentation**

Fermentation is the process of conversion of sugar into alcohol.

**10. 70°C**

In pasteurisation the milk is heated to about 70°C for 15 to 30 seconds and then suddenly chilled and stored.

**11. Rhizobium**

The bacterium living in the root nodules of leguminous plants is Rhizobium.

**12. Plant proteins**

Atmospheric nitrogen is used for the synthesis of plant proteins

**13. Remains more or less constant**

The percentage of nitrogen in the atmosphere remains more or less constant.

**14. All of these**

Sodium benzoate, common salt and vinegar are all preservatives.

**15. Water**

Hepatitis-A is transmitted through water.

**16. Water**

Communicable diseases are spread from an infected person to a healthy person through air, water, food and physical contact.

**17. Virus**

Virus have the characters of both living and non-living.

**18. Respiration**

Respiration is the process by which alcohol and Co<sub>2</sub> are produced by yeast cells.

**19. Protozoa**

Protozoa called plasmodium is the cause of malaria.

**20. Blue-green algae**

Blue-green algae are used as fertilisers because they can fix atmospheric nitrogen to usable compounds which help in crop growth and improves the water holding capacity of soil.

**21. Streptomycin**

Streptomycin drug is an antibiotic

**22. Bacteria**

Bacteria causes leprosy.

**23. Bacteria**

Bacteria is cause of whooping cough.

**24. Living as well as non-living**

Virus is living as well as non-living.

**25. Bacterium**

Tuberculosis is caused by bacterium.

**26. Tuberculosis**

BCG vaccine is used to curb tuberculosis.

**27. Bacterium**

Bacterium causes cholera.

**28. Cholera**

Tuberculosis is an air-borne disease.

**29. Respiratory diseases**

Breathing in polluted air causes respiratory diseases.

**30. Alcohol**

Yeast helps in the production of alcohol.

**Very Short-**

1. **Ans:** Five groups of microorganisms are bacteria, fungi, protozoa, algae and virus.
2. **Ans:** Polio and chickenpox are caused by viruses.
3. **Ans:** Dysentery and malaria are caused by protozoa.
4. **Ans:** Two domestic uses of microorganisms are as follows:
  - Setting of curd,

- Fermentation of idlis.
5. **Ans:** Lactobacillus promotes the formation of curd.
  6. **Ans:** Yeast is used in making bread, pastries and cakes.
  7. **Ans:** Yeast is used in the production of alcohol and wine.
  8. **Ans:** Alexander Fleming discovered penicillin.
  9. **Ans:** Cholera and common cold.
  10. **Ans:** Two common carriers of diseases are mosquitoes and houseflies.
  11. **Ans:** Two food preservatives are sugar and vinegar.
  12. **Ans:** Rhizobium is the nitrogen fixation bacteria.
  13. **Ans:** Louis Pasteur.
  14. **Ans:** Milk is boiled to prevent spoilage due to development of microorganisms.

### Short Answer-

1. **Ans:** Extremely small living organisms that cannot be seen by naked eye are called microorganisms. They may be unicellular or single-celled or multicellular.
2. **Ans:** Viruses are tiny transferable agents that act as non-living outside host cells and act living inside host cells and show reproduction. Viruses can affect all kinds of organisms including animals, plants and bacteria.
3. **Ans:** Viruses are also tiny but are different from other microorganisms as they show reproduction. They reproduce inside the host cell which may be a bacterium, plant or animal.
4. **Ans:** Microorganisms are found in all kinds of environments, ranging from ice cold climate to hot springs; and deserts to marshy lands. They are also found inside the bodies of animals and humans. Some microorganisms grow on other organisms while others exist freely.
5. **Ans:** Microorganisms increase the soil fertility by combining the air, nitrogenous compounds and minerals. Bacteria like Rhizobium and blue green algae are microorganisms which can fix atmospheric nitrogen in the soil and increase soil fertility, which helps in agriculture.
6. **Ans:** Fermentation is the process in which conversion of sugar into alcohol takes place through the action of enzymes.
7. **Ans:** Yeast reproduces quickly and produces carbon dioxide during respiration. Yeast makes breads, cakes and pastries soft and spongy. This is the basis of using yeast in the baking industry.
8. **Ans:** An antibody is a protein released by the body's immune system in response to the microbes carrying diseases in our body. Antibody provides the strength to fight against the disease-causing microbe. Antibodies protect our body against infectious

diseases.

9. **Ans:** Infectious diseases that can spread from an infected person to a healthy person through mediums like air, water, food or physical contact are known as communicable diseases. Examples of communicable diseases are cholera, common cold, chicken pox and tuberculosis.
10. **Ans:** The modes of transmission of communicable diseases can be direct and indirect. In direct transmission diseases can be spread by direct contact, by droplet infection, sharing infected needles, syringes and razors, infected blood transfusion. In indirect transmission diseases can be spread by infected food, water or air, through carriers like the housefly, mosquitoes, and rats or through dirty hands.

## Long Answer-

### 1. Answer:

Viruses cannot be killed by using antibiotics as their cell pathways are different from that of bacteria. It means taking antibiotics to get rid of flu or any other viral infection is useless, because it does not reduce the strength of the virus, nor does it reduce the duration of the infection. But, however, antibiotic will work if we get attacks of viral infection and bacterial disease at the same time. Even then, it will cure bacterial disease only but not the viral infection.

### 2. Answer:

Three ways because of which pathogens are transmitted are as follows:

- (i) When a person sneezes or coughs, tiny droplets containing a number of disease-causing microorganisms come out of the mouth, and are released in the air. They are transmitted to a healthy person while breathing.
- (ii) By making direct contacts with an infected person, pathogens are transferred to a healthy person.
- (iii) Carriers of pathogens also help in their transmission. For instance, when a fly sits on animal excreta or garbage, harmful disease-causing microbes stick to its legs. And when this fly sits on the food items, pathogens get transferred to them. This contaminated food items cause serious diseases when it is eaten by a healthy person.

### 3. Answer:

Canning is a process used for food preservation. Heat, at a certain temperature and for a limited period of time, is used to kill the harmful microorganisms as well as enzymes. This method also involves the removal of oxygen gas, and to avoid post-process contamination by airtight sealing of food items.

### 4. Answer:

A protozoan called Plasmodium is responsible for malaria. It lives in the liver and blood of the person who has been infected by this disease. A female Anopheles mosquito

when sucks blood from the infected person, Plasmodium along with blood, is taken into its stomach. The Plasmodium, here, multiplies itself and reaches the salivary gland of the mosquito. Now, when this mosquito bites a healthy person, it injects Plasmodium along with saliva to him. The healthy person then gets an attack of malaria. In this way, malaria is transmitted to humans.

#### 5. Answer:

Bacteria are classified on the basis of their shapes into the following categories:

- Rod-shaped bacteria (bacilli): These are aerobic rod-shaped, spore-producing bacteria. They are often occurring in chain-like formations, and they are found primarily in soil; e.g., Lactobacillus.
- Spherical-shaped bacteria (cocci): They are spherical or nearly spherical bacteria; e.g., Streptococcus.
- Curved-shaped bacteria (vibrios): They are curved-shaped bacteria; e.g., Vibrio.
- Spiral-shaped bacteria (spirilla): They are flagellated, aerobic bacteria, having a spirally twisted rod-like form; e.g., Treponema.

