Q. 2. Name the bacteria which turn milk into curd.
Ans. Lactobacillus.

Think and Answer

Q. 1. What is the scientific name for bread mould ?
Ans. Scientific name of bread mould : Rhizopus.
Q. 2. In which season most of the things in our house get contaminated with fungus ?
Ans. In moist hot weather (temperature ranging between 25°C to 38°C) most of the things in our house get contaminated with fungus.

Think and Answer

Q.1. What gives green colour to algae ?
Ans. The green colour of algae is due to the presence of chlorophyll.
Q. 2. Where is Spirogyra found ?
Ans. Spirogyra is a green colour algae that grows in ponds.

TEXTBOOK EXERCISES (SOLVED)

(A) Fill in the Blanks

1. .... can be seen with the help of microscope.
2. .... is the bacterium that helps in the formation of curd.
3. Fungi like........... cause food poisoning.
4. During pasteurization, milk is heated about .... to .... and then suddenly chilled and stored.

Ans. 1. Micro-organisms, 2. Lactobacillus, 3. Aspergillus and bread mould. 4. 70°C, 100°C.

(B) Write True (T) or False (F)

1. All living organisms can be seen with naked eye.
2. Anton van Leeuwenhoek was the first person to observe and describe single celled organism.
3. Penicillin is produced from *Penicillium notatum.*
4. Micro-organisms which are helpful to plants and animals are called as pathogens.

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

(C) Match Column 'A' with Column 'B'

Coulmn 'A'	Coulmn 'B'
1. Streptococus	(a) Algae
2. Penicillium	(b) Virus
3. Chlamydomonas	(c) Bacteria
4. HIV	(d) Fungi

Ans.

Coulmn 'A'	Coulmn 'B'
1. Streptococus	(c) Bacteria
2. Penicillium	(d) Fungi
3. Chlamydomonas	(a) Algae
4. HIV	(b) Virus

(D) CHOOSE THE CORRECT ANSWER

1. Which one of the following is not a bacterial disease ?

(*a*) Typhoid (*b*) Tetanus

(*c*) Cholera (*d*) Malaria.

Ans. (*d*) Malaria.

2. Which one of following be cannot definitely called living or non-living ?

(*a*) Virus (*b*) Algae

(*c*) Bacteria (*d*) Fungi.

Ans. (*a*) Virus.

3. Which one of these can make its own food ?

(*a*) Algae (*b*) Bread mould

(*c*) Diatom (*d*) Amoeba.

Ans. (*a*) Algae.

4. Which one of these diseases is prevented by vaccination ?

(*a*) Malaria (*b*) Polio

(*c*) Ring worm (*d*) Cholera.

Ans. (*b*) Polio.

(E) VERY SHORT ANSWER TYPE QUESTIONS

Q. 1. Name the major groups of micro-organisms.

Ans. The four main groups of micro-organisms are :

(*i*) Bacteria

(*ii*) Fungi

(*iii*) Algae

(*iv*) Protozoa

(*v*) Virus

Q. 2. What is food poisoning ?

Ans. Food Poisoning : Due to the presence of harmful organisms or micro organisms in the food, the food becomes poisonous. They produce toxic substance in the food which makes the food rancid. Bacteria such as Clostridium and Staphylococci and fungi such as Aspergillus cause food spoilage.

Q. 3. Name three diseases caused by fungi in plants.

Ans. Fungal diseases in plants : (*i*) Wheat and rice smut (*ii*) Wheat blight (Rust) (*iii*) Sugarcane rust / Red Rot.

Q. 4. Name two diseases caused by bacteria in cattle.

Ans. Diseases caused by bacteria in cattle : (*i*) Anthrax (in cows and buffaloes) (*ii*) Tuberculosis (in dairy cattle and Poultry).

(F) SHORT ANSWER TYPE QUESTIONS

Q. 1. What are viruses, name three diseases caused by viruses ?

Ans. Viruses : Some scientists consider viruses to be non-living and some scientists consider them to be on the dividing line between living and non-living. Viruses can be kept in the laboratory in the form of spores (crystals) and when the spores are introduced into the body of a healthy plant, they cause disease. They are very small in size (0.15 micron to 0.20 micron). Example : (*i*) Tobacco Mosaic Virus (T.M.V.) (*ii*) Corona Virus (*iii*) Influenza Virus.

Q. 2. Define vaccination, name three diseases which can be prevented through vaccination.

Ans. Vaccination : When pathogens enter our body, our body produces antibodies to fight against them. These antibodies kill the micro-organisms.

The method by which a substance made from microbes or dead microbes (vaccine or drops) is introduced into the body, which creates resistance to a particular disease, is called vaccination.

Diseases which can be prevented by vaccinations :

Polio, Measles, Chickenpox.

(G) LONG ANSWER TYPE QUESTIONS

Q. 1. How micro-organisms help in the following :

1. Food industry	**2. Sewage disposal**
3. Recycling of matter	**4. Making of medicine**
5. Retting of fibers	**6. Tanning of leather**

Ans. 1. Micro-organisms which help in Food Industry :

(*i*) Lactobacillus bacterium helps in making curd from milk.

(*ii*) Bacteria and fungi help in making cheese.

(*iii*) Yeast is a fungus that breaks down the sugar present in the fruit juice and convert it into alcohol. This process is called fermentation. Similarly, when yeast cells are mixed with wheat flour, carbon dioxide gas is formed, which works to swell the flour/dough to make double roti, pastry, idli.

2. Micro-organisms which help in Sewage Disposal : Bacteria help in decomposition of organic matter present in sewage, as a result of which the environment remains clean.

3. Micro-organisms which help in Recycling of Matter : Certain organisms and fungi act as decomposers and decompose dead plants and animals and release nutrients—nitrogen and phosphorus into the soil.

4. Micro-organisms which help in making of medicines : Some micro-organisms are present in the digestive tract of many animals like cows which help in digestion and absorption. Micro-organisms are also used to prepare antibiotics. Antibiotics are chemicals that inhibit the growth of harmful micro-organisms by affecting biological processes. Penicillium medicine is prepared from *Penicillium notatum*. Streptomycin, tetracycline and erythromycin are some other antibiotics that are produced from fungi and bacteria. Antibiotics should be taken only on the advice of a doctor. They should be used only when needed. If you take the wrong dose, it will become ineffective for you when needed in future.

5. Micro-organisms which help in Retting of Fibers : Jute plants are tied in bundles and kept in water. Bacteria destroy the stem and tissues and separate the supporting fibers. This process is called retting. Linen thread is prepared from these fibers.

6. Micro-organisms which help in Tanning of Leather : During the process of leather tanning, bacteria interact with the skin of animals to make it soft and flexible. This process is very complicated and long. In this way, the organisms help in tanning the leather.

Q. 2. Describe various methods to preserve food.

Ans. Micro-organisms oxidize the food material which result in the decomposition of the food, the food becomes rotten and gives a bad odour. This food is no longer edible due to rotting. To prevent the micro-organisms from rotting the food and to preserve the food for a long time, different methods of food preservation used are :

1. Dehydration and Sun-Drying : Reducing the water content of fruits and vegetables is called dehydration. This reduces the amount of water in fruits and vegetables and thus they can be stored for some longer time. Sun drying of fruits and vegetables is a very old method of preservation.

2. Preservation of food with sugar and salt : Sugar and salt absorb water from micro-organisms and foodstuff, it stops the growth of micro-organisms. Meat, fish and dried vegetables are covered with pickles, ketchup or salt. Jams, jellies and squash are preserved by putting sugar in them.

3. Heating and cooling : Food items are boiled before being processed while many other items are kept in refrigerators or cold stores for super-cooling, this is done because low temperatures inhibit the growth of micro-organisms. By this method, milk, cheese, meat, fish, fruits, vegetables are preserved by storing them at a temperature below 0°C.

4. Use of chemicals : Certain food items can be preserved for a long time by using chemicals that protect the food from rotting. Chemicals like Benzoic acid, Potassium metabisulphate etc. are used for the preservation of food.

5. Airless packing : This is a method in which air is removed from the packets in which food is to be stored and the packets are sealed. This method is used to preserve dry fruits.

Q. 3. Draw shapes for various types of bacteria.

Ans. Diagrams of different types of bacteria based on shape :

(*a*) **Rod shape :** Bacillus, (*b*) **Coil shape :** Spirilla, (*c*) **Comma shape :** Vibrio, (*d*) **Spheroid :** Coccus.

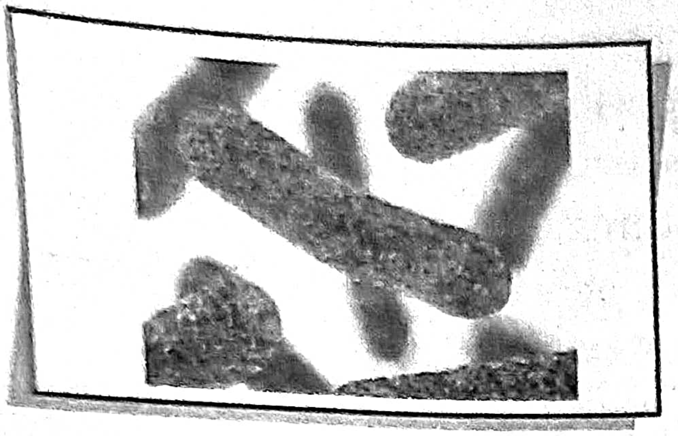

Fig. Rod Shape

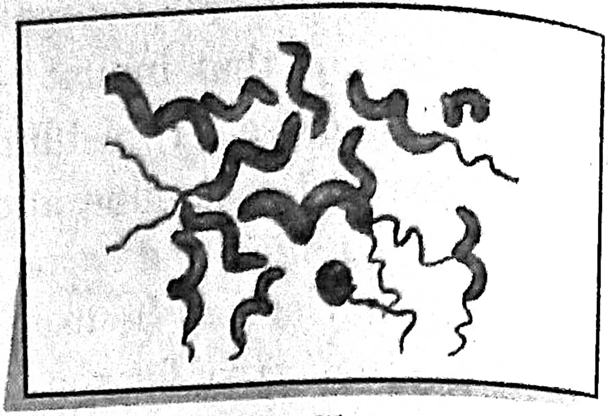

Fig. Coil Shape

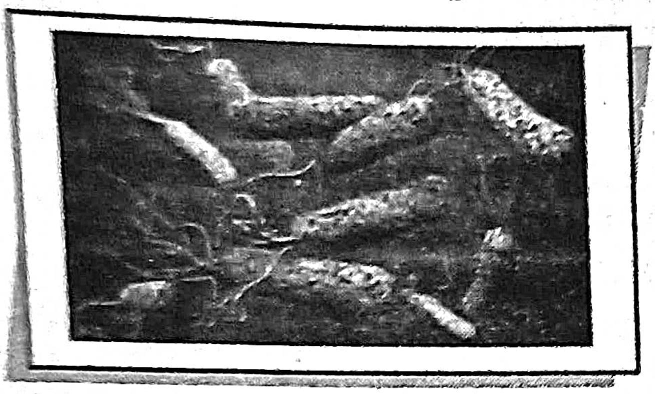

Fig. Comma Shape

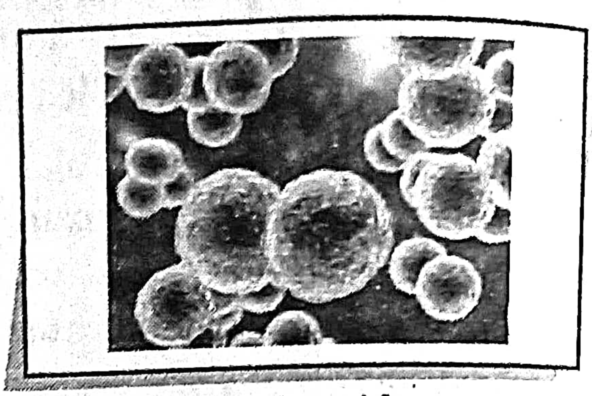

Fig. Spheroid

Fig. Different types of Bacteria