

### 3 Microorganisms

#### Answers to Exercises

1. The study of microorganisms is called microbiology.
  2. Some microorganisms survive unfavourable conditions by forming spores. They remain inactive inside the spore and spring to life again when the conditions are favourable.
  3. The Sargasso Sea owes its name to the brown alga *Sargassum*.
  4. Rod-shaped bacteria are called *bacilli*, spherical bacteria are called *cocci*, spiral bacteria are called *spirilla*, and comma-shaped bacteria are called *vibrios*.
  5. The major difference between a bacterial cell and the cells of other organisms is that the bacterial cell does not have a nucleus while the others have a nucleus.
  6. Bacteria reproduce by binary fission, a mode of asexual reproduction in which one cell divides into two.
  7. (i) Bacteria help us make yoghurt, cheese and vinegar.  
(ii) They also help us produce some antibiotics.
  8. Yes, red and brown algae have additional pigments which mask the green colour of chlorophyll.
  9. The protozoan *Euglena* contains chlorophyll and can photosynthesise.
  10. The protozoan *Entamoeba histolytica* causes amoebic dysentery in human beings.
1. Diatoms are a group of algae. They are mostly unicellular and have cell walls made of silica. Shells of dead diatoms deposited on the beds of lakes and seas are used to make glass, porcelain and ceramics. They are also used to make toothpaste, polishes and filters.
  2. (i) A gummy substance called algin, obtained from kelp, is used to thicken ice creams, cosmetics and shaving cream.  
(ii) Agar, a jellylike substance in which microorganisms and tissue are cultured, is made from certain red algae.  
(iii) Certain red algae are eaten in China and Japan.
  3. *Paramecium* is a freshwater protozoan found in ponds and ditches. Its hairlike projections called cilia help it to swim. They also help to direct food and water into the oral groove of this organism.
  4. Termites have protozoans living in their body, which digest the cellulose in the wood eaten by them and convert it into carbohydrates that the termites can use. Bacteria living in our intestines help in the absorption of food and protect us from some diseases.
  5. Moulds are a group of multicellular fungi. They spoil raw as well as cooked food.  
Fungi cause infections of the skin, scalp and nails in human beings. These infections go by the general name 'ringworm'. Athlete's foot, barber's itch and dhobi's itch are also types of fungal infection.
1. Quite often, when sewage and fertilisers drain into water bodies, there is an unnaturally rapid growth of algae. The algae form a thick layer over the surface of the water body, and this is called an algal bloom. The dense layer of algae deprives other organisms of light and oxygen. Besides, when they die, the bacteria acting on them use up more oxygen. Slowly most other organisms living in the water body die.
  2. Yeast is a unicellular fungus which can be dried and stored for a long time. It is used to make bakery products. The carbon dioxide produced by yeast makes bread and buns rise and become fluffy. Idli and dosa are made with a fermented paste of rice and dal. The fermentation of the mixture is caused by the growth of yeast. Moulds are used to flavour processed cheeses. Pencillin and some other antibiotics are made from some moulds. Mushrooms are another type of fungi. Some of them are edible.
  3. Viruses are something in between the living and the nonliving. They are acellular, which means that they do not have any of the substances contained in a cell. They consist of a bit of nuclear material wrapped in a coat of protein. They cannot reproduce unless they enter the cell of a living organism; they do not use energy to grow; they do not respond to stimuli. Yet, when a virus enters the cell of a living organism, it is able to multiply and produce hundreds of viruses within the host cell. The nuclear material of the host cell gets destroyed and the nuclear material of the virus takes over, directing the host cell to produce copies of the virus.
1. mycelium      2. cyanobacteria      3. Protozoans      4. Protozoa      5. alcohol      6. sporangium
  1. (c)            2. (a)            3. (b)            4. (d)            5. (a)