

2. MICROORGANISMS Living Science solution

P. 27 Oral Questions For Formative Assessment

1. No. All microbes are not harmful. some are useful as well. 2. a. Algae b. Viruses
3. They cannot reproduce on their own but are to reproduce by using the energy of the host cells.
4. Algae, in the sense *that* they are capable of producing their own food. 5. In a pond,

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1. That substance is the carbon dioxide_ Carbon dioxide, a gas. as it escapes it causes dough to rise.
2. This is ensured by using dead or weakened microbes. The process is called vaccination.
3. Certain bacteria and protozoa living in animals like cows, goats and sheep help these animals in digesting grass and plants by breaking down cellulose.
4. No. Pasteurization of milk consists of heating milk to a high temperature of around 70 °C for about half a minute and then cooling it quickly,

P. 33 For Formative and Summative Assessment A.1.c 2.d 3.a 4.a 5.d. 6. b 7.c 8.a 9.d 10.c

- B. 1. Microbiology 2. False 3. False 4. Cyst 5. Cocci 6. False 7. False 8. Desirable 9. Antibiotics

10. Bacterium 11. dengue 12, virus 13. True 14. Pasteurization 15. True

- C. 1. An organism that is so small that it can only be seen through a microscope, is called a microorganism
2. Bacteria, Algae, Protozoa, Fungi and Viruses. Among these, Bacteria and Protozoa are unicellular organisms..

3. a. Cocci b. Bacilli c. Spirilla

4. Simple plant like organisms that have cell walls and chlorophyll within the cells are classified under algae. They make their own food by photosynthesis.

Some examples of algae are spirogyra, chlamydomonas and focus.

5. Viruses cannot reproduce by themselves. However, when a virus enters the living cell of an organism, it is able to reproduce. It uses the energy of the host cells for this purpose. After the formation of thousands of viruses, the host cell often dies.

6. Algae are used as food because they are a rich source of vitamins A, C, D and E,

7. Cooling helps in food preservation, It stops microbes growing and reproducing, and hence preserves food.

8. Microorganisms growing art food sometimes produce toxic substances. These make the food poisonous. Consuming such food can cause a serious illness called food poisoning.

9. Pasteurization of milk consists of heating it to a high temperature of 70 °C for about half a minute and then cooling it quickly. This kills most of the bacteria without affecting the flavor,

- C. 1. Mosquitoes act as carriers of germs. For example, when houseflies sit on dirt, germs stick to their bodies. When they sit on food, they transfer the germs to the food.

2. Most micro-organisms are hardy and can be found even in places where no other life forms can exist. They are so hardy because they form a hard outer covering called a cyst around themselves, specifically during unfavorable conditions_ They survive by remaining inactive within the cyst till the conditions are favourable again.

3. Yeast is used to make bread soft and fluffy. The yeast uses sugar for food. the process of breaking down sugar. alcohol is formed and carbon dioxide is given off. This process is known as fermentation. The bubbles of carbon dioxide given off cause the dough to rise. This dough can be used to make bread. When this dough is baked, more bubbles of gas are formed due to heat. As the gas escapes, the bread rises and becomes soft and fluffy. The heat during the baking process also evaporates the alcohol.

4. The process of breaking down of sugar by yeast into alcohol and carbon dioxide is known as fermentation. The process of fermentation of sugar by yeast is used in the manufacture of alcohol and alcoholic drink such as beer and wine. Wine is prepared by fermentation of sugar in grapes and beer by fermentation of sugar in germinating barley.

5. Viruses cause diseases by invading hosts body. They can enter in the following ways:

- a) Through air, e.g. common coid, flu, mumps. measles.
- b) Through direct contact with a sick person, e.g, common cold, flu.
- c) When a virus enters the living cell of an organism, say a human, it is able to reproduce. It uses the energy of the host cells for this purpose. After the formation of thousands of viruses, the host cell often dies. It bursts and the new viruses spread and invade other cells_ As a large number of host cells die, the person falls ill.

6. Vaccines consist of dead or weakened microbes. When these are swallowed or injected into the body of a patient, the body produces antibodies to fight them. The antibodies remain in the body and protect it from any future attack of the disease germs.

7. Salt prevents food spoilage by checking the growth of bacteria_ Safi forces microorganisms wafer by a process called osmosis.

8. Dehydration of food consists of removing water from it. This stops microorganisms from growing as they cannot grow without water, Cereals, pulses, spices and dry fruits are preserved by this method.

9. Microorganisms such as bacteria, fungi and protozoa. act as decomposers.

By decomposing the tissues of dead organisms they break down plant and animal tissues into Simple substances and sent back nutrients to the soil_ Without this piles of dead organisms would cover the earth. Some bacteria decompose sewage and other wastes in water. This is nature's method of keeping the environment free from pollution.

E. 1. Viruses are considered to be on the borderline of living and non-living due to the following reasons:

- (i) They do riot have cell body and other structures like other microbes.
- ii) They cannot reproduce by themselves.

(iii) They are able to reproduce only when they enter in a host cell. Since reproduction is a very important characteristic of life, viruses are regarded as a risk extreme living and non-living.

2. Useful activities of bacteria:

- Lactobacillus* bacteria is used to make curd from milk.
- Some bacteria live in large intestine of humans (e.g. *E. coli*) and produce vitamins
- Bacteria are used in industrial processes such as curing of tea and tanning of leather
- Bacteria are used to make antibiotics, e.g. streptomycin, tetracycline

Harmful activities of bacteria:

- Bacteria cause different diseases in humans like tuberculosis, pneumonia, leprosy, typhoid, cholera, etc.
- Anthrax is a disease that affects humans and cattle caused by a bacterium_
- Citrus canker is a bacterial disease that affects tree of citrus fruits and is spread by air,

3 Communicable diseases spread when germs enter from a diseased person into the body of a healthy person, these germs can spread in the following ways:

- Through air: When a person suffering from common cold or flu sneezes, coughs or spits, germs are released in the air. A healthy person breathing this air can get infected.
- Through food and water
- Through direct contact with a sick person
- Through insects such as mosquitoes, flies and fleas: These are carriers of germs.
- Through cuts and wounds

4. Food can be preserved in the following ways:

- Heating: Heating food to a high temperature kills microbes.
- Pasteurization of milk: This method consists of heating milk to a high temperature of 70°C for about half a minute and then cooling it quickly. This kills most of the bacteria without affecting the flavour.
- Cooling: Cooling food stops microbes from growing and reproducing, and hence preserves food.
- Using chemicals: Salt, sugar, oil and vinegar check the growth of bacteria.
- Drying or dehydration: This method stops microorganisms from growing as they can not grow without water.

HOTS Questions

- (a) Because the higher temperature in summers favours the growth of *Lactobacillus* bacteria.
(b) Because the higher temperature in summers favours the growth of *Lactobacillus* bacteria,
- Nitrogen is used to inhibit growth of bacteria, which keeps the chips fresh for a longer time.
- To prevent contamination of disease-causing microbes of our food we should always wash our hands before handling food and after going to toilet.
- The life span of bacteria is very short and they reproduce very quickly. Because of this thousands of generations pass within a few years. Therefore evolution, such as becoming resistant to antibiotics, occurs in bacteria within our own lifetime.