

CHAPTER 13

WASTEWATER STORY

2-mark questions:

1.What is sewage? Explain why it is harmful to discharge untreated sewage into rivers or seas.

Answer:

Wastewater released by houses is called sewage. Untreated sewage should not be discharged into the sea because sewage consists of pollutants and harmful microorganisms, which will contaminate water, causing disease in people using contaminated water.

2. Why should oils and fats not be released in the drain? Explain.

Answer:

Oils and fats should not be released into the drain because drains get blocked by cooking oil and fats.

3. What is sludge? Explain how it is treated.

Solution:

Solids like faces settle at the bottom while treating sewage, and this material is called sludge. Sludge can be treated as follows:

Sludge is removed using a skimmer and then transferred to a tank where it is decomposed by anaerobic bacteria to produce biogas.

4. Untreated human excreta is a health hazard. Explain.

Solution:

Untreated human excreta are a health hazard because it consists of various disease-causing microorganisms and pollutants that will contaminate the soil and water resource from where people draw water for drinking and domestic purposes. When people use water contaminated with human excreta, they get diseases like Cholera, Typhoid, Dysentery and Hepatitis.

5. Name two chemicals used to disinfect water.

Solution:

Chlorine and Ozone are used to disinfect water.

6. Explain the function of bar screens in a wastewater treatment plant.

Solution:

Bar screens remove large objects like rags, sticks, cans, plastic packets and napkins.

7. Explain the relationship between sanitation and disease.

Solution:

Sanitation and disease are interrelated as lack of sanitation leads to illness, and good sanitation practices prevent diseases.

8. Outline your role as an active citizen in relation to sanitation.

Solution:

Every citizen has a role to play in maintaining proper sanitisation. Following are the things we should follow to play an active role.

- Ensure that our surroundings are kept clean.
- The sewage system in the house should be properly managed
- Report to the concerned authorities immediately in case of leakages in sewage pipes.

5-mark questions:

1. Explain the importance of wastewater treatment and its impact on public health.

Answer:

Wastewater treatment is crucial for maintaining public health and environmental sustainability. When untreated sewage is discharged into water bodies, it contaminates the water with harmful substances, leading to the spread of waterborne diseases. Proper wastewater treatment removes pollutants, including organic and inorganic matter, pathogens, and chemicals, making the water safe for reuse or discharge. By preventing the contamination of water sources, wastewater treatment plays a vital role in safeguarding public health and ensuring a sustainable water supply.

2. Describe the processes involved in a typical wastewater treatment plant and explain how they contribute to water purification.

Answer:

In a wastewater treatment plant, the processes include screening, grit and sand removal, primary sedimentation, aeration, secondary sedimentation, and disinfection. Initially, large objects are screened out, and grit and sand are settled. The primary sedimentation allows the settling of solids. Aeration introduces oxygen to promote the growth of aerobic bacteria, which further break down organic matter. Secondary sedimentation separates the remaining sludge. Disinfection, often using chlorine, ensures the removal of any remaining pathogens. These processes collectively reduce contaminants, making the water suitable for discharge into the environment.

3. Discuss the challenges associated with open drain systems and propose measures to address these challenges for better sanitation.

Answer:

Open drain systems pose significant challenges, including the breeding of disease-causing organisms, unpleasant odors, and unhygienic conditions. To address these challenges, communities can adopt various measures. Firstly, covering open drains can prevent the breeding of flies and mosquitoes. Secondly, public awareness campaigns should educate people about responsible waste disposal to prevent clogging and pollution. Additionally, municipal authorities can invest in proper sewage disposal systems and treatment plants to ensure the safe and efficient management of wastewater. Implementing these measures will contribute to improved sanitation and public health.

4. Explore the role of individual citizens in promoting better wastewater management and sanitation practices. Discuss the potential impact of community involvement on overall environmental health.

Answer:

Individual citizens play a crucial role in promoting better wastewater management and sanitation practices. Firstly, responsible disposal of household waste and the avoidance of throwing pollutants down drains contribute to reducing the load on wastewater treatment systems. Active participation in community cleanliness drives helps in preventing littering and clogging of drains. Moreover, citizens can advocate for the implementation of proper sewage disposal systems and wastewater treatment plants in their localities. Community involvement has a significant impact on overall environmental health.

1. Fill in the blanks:

(a) Cleaning of water is a process of removing

_____.

(b) Wastewater released by houses is called _____.

(c) Dried _____ is used as manure.

(d) Drains get blocked by _____ and

_____.

Solution:

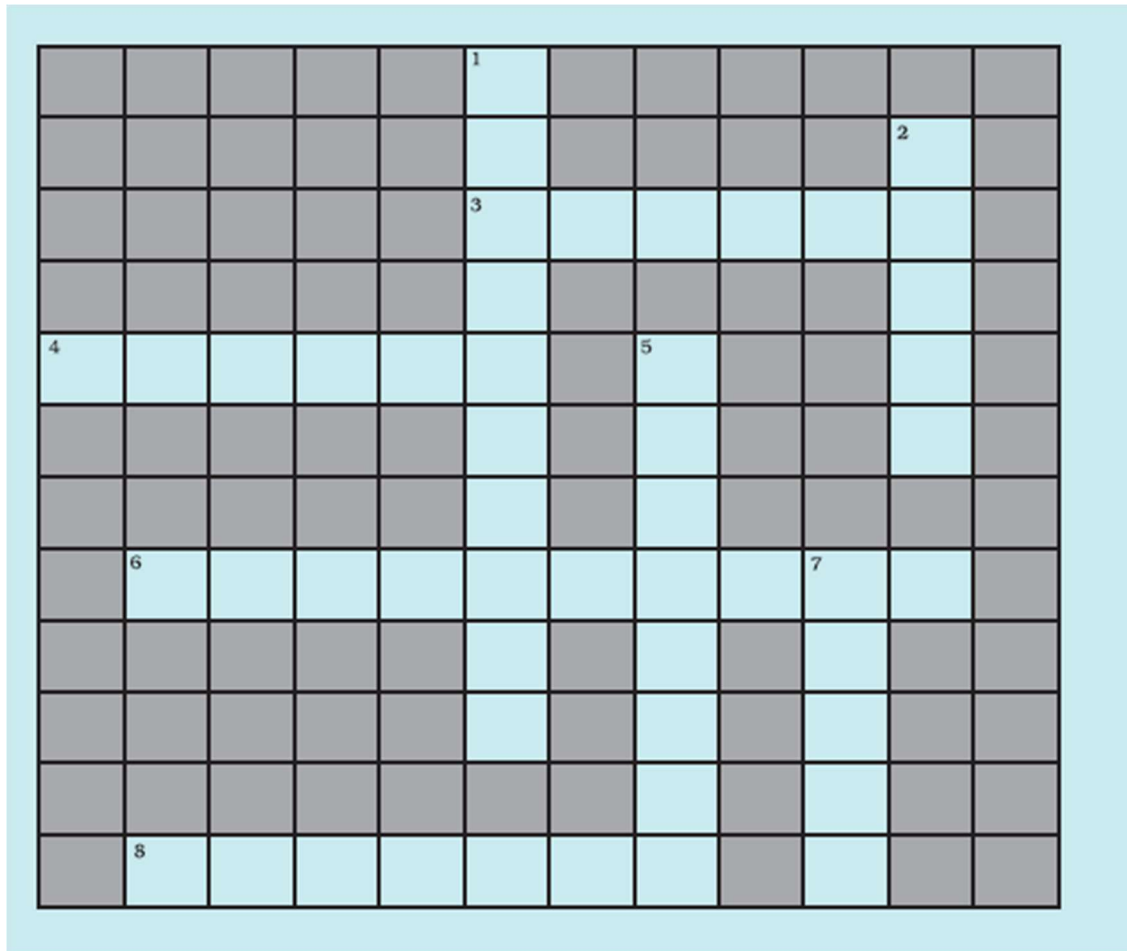
(a) Cleaning of water is a process of removing **pollutants**.

(b) Wastewater released by houses is called **sewage**.

(c) Dried **sludge** is used as manure.

(d) Drains get blocked by **cooking oil** and **fats**.

11. Here is a crossword puzzle: good luck!

**Across**

- 3. Liquid waste products**
- 4. Solid waste extracted in sewage treatment**
- 6. A word related to hygiene**
- 8. Waste matter discharged from human body**

Down

- 1. Used water**
- 2. A pipe carrying sewage**

5. Micro-organisms which causes cholera

7. A chemical to disinfect water

Answer:

Across

3. Sewage

4. Sludge

6. Sanitation

8. Excreta

Down

1. Wastewater

2. Sewer

5. Bacteria

7. Ozone



12. Study the following statements about ozone:

- (a) It is essential for breathing of living organisms.**
- (b) It is used to disinfect water.**
- (c) It absorbs ultraviolet rays.**
- (d) Its proportion in air is about 3%. Which of these statements are correct?**

(i) (a), (b) and (c)

(ii) (b) and (c)

(iii) (a) and (d)

(iv) All four

Answer:

The answer is (ii) (b) and (c)

Summary:

The text discusses the importance of wastewater management and sanitation practices. It emphasizes the generation of wastewater in homes and industries, referring to it as sewage. The narrative highlights the need for treating wastewater to remove pollutants before its release, commonly known as sewage treatment. The process involves various stages, including the removal of large objects, settling of solids, and the use of aerobic bacteria to consume unwanted matter.

The text underlines the significance of individual and community efforts in maintaining sanitation. It stresses the adverse effects of untreated sewage on water and soil pollution, leading to waterborne diseases. The role of citizens in adopting better housekeeping practices, such as responsible waste disposal, is emphasized.

Furthermore, the narrative delves into the connection between sanitation and disease, particularly in areas lacking proper sewage facilities. The discussion extends to alternative sewage disposal arrangements, like septic tanks and chemical toilets, as well as the importance of sanitation in public places. The text concludes with a call for collective action and individual responsibility to ensure a cleaner and healthier environment.