Class – 7 - Ch – 18 Water Waste Management

C. Name the following.

1. The wastewater that is released from industries

Ans: Industrial effluent

2. The set-up of grids that filter and remove the large ob wastewater

Ans: Screening at grit tank

3. The network of pipes that transport sewage in a city

Ans: Sewage system

4. The openings along sewers that are used to maintain

Ans: Manholes

5. The instrument used to remove scum during sewage

Ans: Skimmer

D. Define the following terms.

4. Chlorination

Ans: The secondary clarified water from the clarifier is treated with chlorine to remove compounds of phosphorus and nitrogen and to kill bacteria. Chlorine acts as a disinfectant. The use of chlorine to kill germs in wastewater is called chlorination.

5. Sanitation

Ans: Sanitation is the hygienic practice of ensuring cleanliness in our surroundings through the management of human waste, the correct treatment and disposal of sewage and by providing clean water

F. Answer the following questions in brief.

4. What happens in the digester of a biogas plant?

Ans: Activated sludge that contains 2% solids and 98% water is passed onto the digester. The organic waste in the sludge is broken down with the help of anaerobic bacteria in the digester. This process is called digestion and as a result of it, biogas is produced.

5. What is sanitation?

Ans: Sanitation is the hygienic practice of ensuring cleanliness in our surroundings through management of human waste, correct treatment and disposal of sewage and by providing clean water. Maintaining proper sanitation can be done by ensuring proper usage of toilets, sewer systems, treatment of wastewater, safe disposal of garbage and implementation of personal hygiene practices.

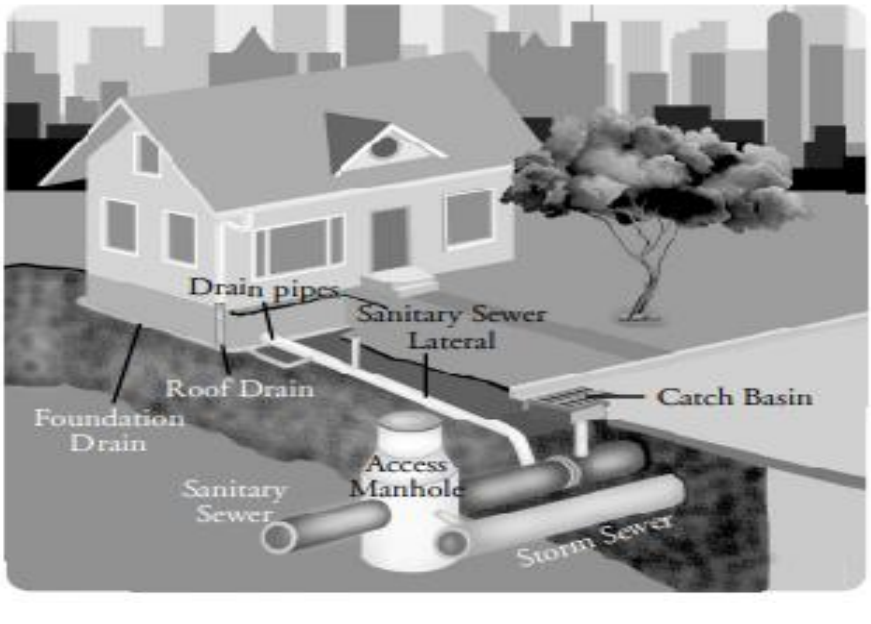
G. Answer the following questions in detail.

1. What is sewage? Explain a few effects of the release of untreated sewage into the surroundings.

Ans: Wastewater from homes in rural and urban areas contains human waste that contaminates water with germs. Other substances present in wastewater are soap, detergent, food wastes, cleaning agents, oil, paints, dyes, plastic, paper, etc

2. Draw a simple diagram of the sewage system in cities.

2.



4. Explain the main steps involved in sewage treatment.

Ans; **a) Primary treatment:** During primary treatment, the sewage flows very slowly through a grit chamber so that sand, pebbles and soil settle down at the bottom. Thus, primary treatment involves a mechanical process. The sewage then flows into the settling tank or sedimentation tank where solid wastes such as faces are allowed to settle. Wastes such as soaps, oils and grease rise to the top of the wastewater. The waste material that settles down at the bottom is called sludge and the floatable material is called scum. The scum is then removed from the top using a skimmer. The sludge at the bottom is removed with a scraper every few days and treated further. The water that is left is called primary clarified water.

b) Secondary treatment: During secondary treatment, sludge and any biological or organic wastes that remain in clarified water are removed by biological processes. Clarified water is transferred into an aeration tank where air is bubbled through it by air blowers. This process is called aeration. Aeration encourages aerobic bacteria to grow and feed on organic contaminants such as food waste and faces. The bacteria produce biogas during the process. The leftover liquid waste is transferred to the clarifier. It is then allowed to remain in tanks so that microscopic organisms settle at the bottom in the form of activated sludge. Activated sludge contains 2% solids and 98% water. It is then passed onto the digester. The organic waste in the sludge is broken down with the help of anaerobic bacteria. This process is called digestion and as a result of it, biogas is produced. The biogas produced in the secondary treatment can be used either as a fuel or to produce electricity. The sediment in the digester is then left in sand-drying beds where some water drains out and some evaporates. The remaining dried sludge can be used to make fertilizers or compost.

c) **Tertiary treatment**: Tertiary treatment is the last stage in wastewater treatment and it involves a chemical process. The secondary clarified water from the clarifier is treated with chlorine to remove compounds of phosphorus and nitrogen and to kill bacteria. Chlorine acts as a disinfectant. The use of chlorine to kill germs in wastewater is called chlorination. After treatment, the water becomes fit to be released into water bodies

5. Suggest some methods that can be followed to control the amount of sewage generation in our homes.

Ans: Some methods that can be followed to control the amount of sewage generation in our homes:

a) We should be careful about the disposal of substances down the drain in our homes.

b) We should not pour cooking oils and fats down the drain as they cause blockage. They should always be disposed of in bins.

c) Solid wastes from kitchen such as tea leaves, fruit and vegetable peels and pulps, and other soft solids such as cotton, tissue papers, wet wipes and diapers can block sewers.

d) Chemicals present in everyday liquids such as cleaning agents, beauty products, medicines, paints, and insecticides cannot be removed from wastewater during sewage treatment. They require more advanced treatment to be removed from water. If they contaminate the environment, they can adversely affect living organisms in different ways.

e) Various wastes also harm microorganisms that are used to degrade sewage.

H. Out of the box!

1. Which do you think is preferable: a single pipe for sewage and rainwater or two separate pipes? Give reasons for your answer.

Ans: It is always better to have two separate pipelines for sewage and rainwater so that the sources of water do not get contaminated

2. Why are chlorine compounds added to the water in swimming pools?

Ans: Swimming pool has a lot of footfall with people swimming in it and the water may get contaminated with germs, and chlorine acts as disinfectant.