

Very Short Answer Questions

Q.1. Why are open drains a concern?

[NCERT Exemplar]

Ans. It is so because they create unsanitary and unhygienic conditions.

Q.2. How are open drains harmful for human health?

[NCERT Exemplar]

Ans. In the unhygienic conditions of open drains, flies, mosquitoes, and other insects breed and spread a number of diseases.

Q.3. Why should we not throw used tea leaves into sink?

[NCERT Exemplar]

Ans. Used tea leaves may choke the drain-pipe of the sink.

Q.4. Name two inorganic impurities present in sewage.

[NCERT Exemplar]

Ans. Nitrates, phosphates, metals. (Any two)

Q.5. Animal waste, oil and urea are some of the organic impurities present in sewage. Name two more organic impurities present in sewage.

[NCERT Exemplar]

Ans. Pesticides, herbicides, fruit and vegetable wastes. (Any two)

Q.6. What do you mean by sewage treatment?

Ans. The process of removal of pollutants to clean water before it enters a water body or is reused is commonly termed as sewage treatment.

Q.7. Define contaminants.

Ans. Dissolved and suspended impurities present in water are called contaminants.

Q.8. Name two useful products formed after wastewater treatment.

Ans. Biogas and sludge.

Q.9. Name any two disinfectants.

Ans. Chlorine and ozone.

Short Answer Questions

Q.1. Name two alternative arrangements for sewage disposal where there is no sewerage system.

[NCERT Exemplar]

Ans. (a) Septic tanks

(b) Composting pits

Q.2. A mixture (x) in water contains suspended solids, organic impurities, inorganic impurities (a), nutrients (b), disease causing bacteria and other microbes. Give names for (x), (a) and (b).

[NCERT Exemplar]

Ans. (x)–Sewage

(a)–Nitrates, phosphates and metals

(b)–Phosphorus and nitrogen

Q.3. What is 'onsite sewage disposal system'?

Ans. It is an alternative arrangement for sewage disposal to improve sanitation in places where there is no sewage system like in rural areas or in isolated buildings.

Q.4. What is a vermi-processing toilet?

Ans. It is a design of toilet in which human excreta is treated by earthworms to be converted into vermicakes which are good for the soil. It is a novel, low water-use toilet for safe processing of human waste.

Q.5. Why is clarified water passed through aeration tanks?

Ans. In aeration tanks clarified water is acted upon by aerobic bacteria which remove the suspended solids and dissolved substances, leaving fairly pure water.

Q.6. How is biogas formed?

Ans. The excreta of animals and humans is collected in a separate tank in a biogas plant. Here it is acted upon by the anaerobic bacteria which produce biogas in the process.

Long Answer Questions

Q.1. What are the different types of inorganic and organic impurities generally present in sewage?

[NCERT Exemplar]

Ans. Wastewater is composed primarily of natural organic substance, which are by-products of human, animal and plant processes. The primary elements in domestic wastewater are nitrogen, phosphorous, ammonia and carbon, these elements are released with the growth of bacteria in standing water. The bacteria consume the oxygen present in water and as a result, living organisms in the water start to die. We know that sewage is a complex mixture containing suspended solids, organic and inorganic impurities, nutrients, saprotrophic and disease-causing bacteria and other microbes.

Organic impurities	Human faeces, animal waste, oil, urea (urine)
Inorganic impurities	Nitrates, phosphates, metals
Nutrients	Phosphorus and nitrogen
Bacteria	Such as which cause cholera and typhoid
Other microbes	Such as which cause dysentery

Q.2. Describe various steps of cleaning wastewater in a wastewater treatment plant.

[NCERT Exemplar]

Ans. (a) Wastewater is passed through bar screens. Large objects like rags, sticks, cans, plastic packets, napkins are removed.

(b) Water then goes to a grit and sand removal tank. The speed of the incoming wastewater is decreased to allow sand, grit and pebbles to settle down.

(c) The water is then allowed to settle in a large tank which is sloped towards the middle. Solids like faeces settle at the bottom and are removed with a scraper. This is the sludge. A skimmer removes the floatable solids like oil and grease. Water so cleared is called clarified water. The sludge is transferred to a separate tank where it is decomposed by the anaerobic bacteria. The biogas produced in the process can be used as fuel or can be used to produce electricity.

(d) Air is pumped into the clarified water to help aerobic bacteria to grow. Bacteria consume human waste, food waste, soaps and other unwanted matter still remaining in

clarified water. After several hours, the suspended microbes settle at the bottom of the tank as activated sludge. The water is then removed from the top.

Q.3. Give short note on alternative methods for sewage.

Ans. Every community should have a way of disposing sewage so that people, animals and flies cannot touch it. This is called a sewage system. We know that poor sanitation is the basic cause of a number of diseases. To make our sanitation get better there are different types of sewage systems which can be used such as on-site systems and sewage or effluent systems. Septic tanks, composting pits, chemical toilets, etc., are examples of on-site sewage disposal systems.

HOTS (Higher Order Thinking Skills)

Q.1. What are storm drains?

Ans. Storm drains or storm sewers are large pipes that transport storm water run-off from streets to natural water bodies, to avoid street flooding.