



INDIAN SCHOOL AL WADI AL KABIR

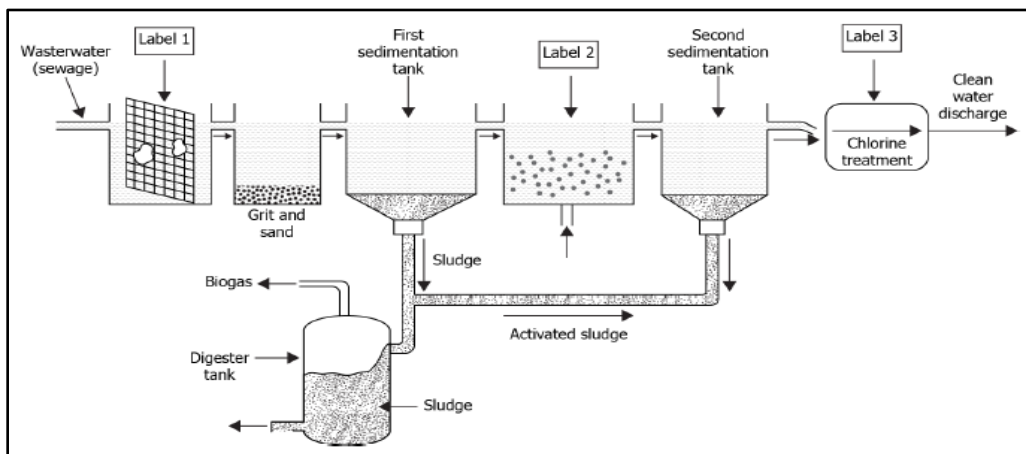


CLASS: VII	DEPARTMENT: SCIENCE 2025 - 26	DATE: 18/08/2025
WORKSHEET NO: 4	TOPIC WASTEWATER STORY	NOTE: A4 FILE FORMAT
NAME OF THE STUDENT:	CLASS & SEC:	ROLL NO.

I. OBJECTIVE-TYPE QUESTIONS:

1. The modern household water filters generate a lot of wastewater after filtration in several urban and rural homes. What can be a possible utility of this water that has a higher concentration of mineral salts and trace impurities?
 - a) Bathing
 - b) Cooking
 - c) Doing laundry
 - d) Watering plants
2. Kitchen waste in the form of small food particles, used tea leaves, grease, etc., is suggested to be disposed of along with other organic waste, such as fruit peels, etc., in the trash. However, most households end up disposing of oils, tea leaves, etc, down the kitchen sink, for convenience. Which of the following is the best argument to get households to curb this practice?
 - a) The organic waste should be buried in soil, outside the house.
 - b) Small food particles, oils, and fats clog smaller drains in sewerage.
 - c) The decomposing organic waste can create a foul smell in kitchens.
 - d) Organic and inorganic waste should be disposed of separately.
3. In a small village, due to the contamination of a water resource, several residents simultaneously got affected by dysentery. What measures can be taken in households to ensure protection from such waterborne diseases?
 - a) Filter the water before irrigating fields of food crops.
 - b) Test the tap water for bacterial culture growth.

- c) Disinfect the village water supply using UV light.
 - d) Boil the tap water before cooking or drinking.
4. Which of the following diseases can be prevented by consuming safe drinking water?
- a) Tuberculosis
 - b) Typhoid
 - c) Asthma
 - d) Dengue
5. A student cabinet member notices that an open drain outside the school is generally dry, but during the rainy season, it frequently overflows with sewerage. The student cabinet discusses this issue and asks the school authorities to urge the municipality to cover the drain and check for blockages. Which option states the best reason that made the student cabinet take up this issue?
- a) Sewage water poses an ugly sight outside the school.
 - b) Sewage spills can cause infection in several school children.
 - c) Sewage can make the roads muddy and slippery.
 - d) Sewage overflow can make students' shoes and clothes dirty.
6. Consider the following layout of an urban wastewater treatment plant.



In the layout, what do the labels 1, 2, and 3 correspond to?

- a) 1: Bar screen, 2: Aeration, 3: Disinfection
- b) 1: Sand filtration, 2: Settling tank, 3: Sludge collector
- c) 1: Settling tank, 2: Anaerobic digestion, 3: Disinfection
- d) 1: Grit removal, 2: Aeration, 3: Third sedimentation tank

7. Which of the following sources of domestic wastewater is most likely to be rich in inorganic waste but have very low organic matter content?

- a) Toilets
- b) Kitchen sinks
- c) Shower drains
- d) Garden run-off water

For question numbers 8-10, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii), and (iv) as given below -

- i) Both A and R are true, and R is the correct explanation of the assertion.*
- ii) Both A and R are true, but R is not the correct explanation of the assertion.*
- iii) A is true, but R is false.*
- iv) A is false, but R is true*

8. **Assertion (A):** Cleaning of water is a process of removing pollutants before they enter a water body.

Reason (R): The process of cleaning water and removal of pollutants from it is called “sewage treatment”.

9. **Assertion (A):** We should not consume contaminated water.

Reason (R): Contaminated water contains toxic chemicals and germs that can cause diseases.

10. **Assertion (A):** In a WWTP, wastewater is passed through bar screens, where large objects are removed.

Reason (R): Dried sludge is used as a manure, returning organic matter and nutrients to water.

II. VERY SHORT ANSWER TYPE QUESTIONS (2M):

- 1. What are the chemicals that are used to disinfect water? **[Hint: Chlorine and Ozone]**
- 2. What do you mean by Wastewater Treatment?

[Hint: The process of removing impurities from wastewater before it can be reused or sent to the water bodies is called wastewater treatment.]

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

[Hint: In a wastewater treatment plant, a bar screen removes large solid objects from the water. The wastewater is allowed to pass through the bar screen so that large solid objects such as rags, napkins, sticks, cans, plastic bags, polythene, etc. present in wastewater can be removed.]

4. What are vermi cakes? Write the use of vermi cakes.

[Hint: Vermi-processing toilets are a design of a toilet in which human excreta is treated by earthworms. In this process, human excreta are completely converted to cake-like substances called vermi cakes by earthworms.]

Vermi cakes are used mostly in the soil as manure and fertilisers as they are rich in nutrients.]

5. Untreated human excreta are a health hazard. Justify the statement.

[Hint: Untreated human excreta can cause a lot of health-related problems. It pollutes water, air, and soil. The polluted water contains disease-causing bacteria, which can spread diseases like cholera, typhoid, etc.]

6. Give reason:

a) Air is pumped into clarified water. **[Hint: Air is pumped into the clarified water to help aerobic bacteria grow. Bacteria consume human waste, food waste, soaps, and other unwanted matter remaining in clarified water.]**

b) Eucalyptus trees can be planted along sewage ponds. **[Hint: Eucalyptus trees should be planted all along sewage ponds as these trees absorb all surplus wastewater rapidly and release pure water vapour into the atmosphere, keeping our environment clean.]**

III. SHORT ANSWER TYPE QUESTIONS (3M):

1. What is sewage? Explain why it is harmful to discharge untreated sewage into rivers or seas. **[Hint: Sewage is a liquid containing wastes that is disposed of by households, industrial, and agricultural activities into water. It is harmful to discharge untreated sewage into rivers or seas because it can pollute the whole sources of water. Sewage contains harmful substances and disease-causing organisms. It is therefore dangerous to release untreated sewage in water.]**

2. Explain the relationship between sanitation and disease. **[Hint: Sanitation and disease are related to each other. Sanitation involves the proper disposal of sewage and refuse from houses and public places. If sanitation is there, no disease will occur, but if sanitation is not done, various types of disease will occur and spread. So, sanitation should be maintained to avoid disease.]**
3. How can we contribute to maintaining sanitation at public places? **[Hint: A Large amount of waste is generated at public places. It must be disposed of properly to maintain sanitation. We can contribute towards maintaining sanitation by not scattering litter anywhere. We should carry the litter home and throw it in the dustbin if there is no dustbin in sight.]**
4. What are the various constituents of sewage? **[Hint: The various constituents include-
Organic impurities – Human faeces, animal waste, oil, urea (urine), oil, herbicides, fruit and vegetable waste, etc.
Inorganic impurities – Nitrates, Phosphates, metals.
Nutrients – Phosphorus and Nitrogen.
Bacteria – Such as *Vibrio cholerae*, which causes cholera, and *Salmonella paratyphi*, which causes typhoid.
Other microbes – Such as protozoa, which cause dysentery.]**
5. Write some simple steps to conserve water.
**[Hint: i] Turn off taps while brushing your teeth.
ii] Mop the floor instead of washing.
iii] Take shorter showers-5 minutes or less.
iv] Leaking taps or water pipes should be repaired immediately.]**
6. What is sludge? Explain how it is treated. **[Hint: Solids like faeces settle at the bottom while treating sewage, and this material is called sludge. Sludge can be treated as follows:
Sludge is removed using a scraper and then transferred to a tank where it is decomposed by anaerobic bacteria to produce biogas.]**

IV. LONG ANSWER TYPE QUESTIONS (5M):

1. Suggest better housekeeping practices that can be adopted to reduce waste generation.
[Hint: The following are some of the housekeeping practices that we should adopt:

- i. The oils and fats that are used for cooking should not be thrown in the drains. Instead, they should be thrown in the dustbin because if we throw them in the open drain, the fats clog the soil pores, reducing their effectiveness in filtering the water. Moreover, it is difficult to separate them from the water.
 - ii. As chemical substances such as insecticides, paints, solvents, motor oil, and medicines can kill the microbes in the water that help in its purification, they should not be thrown in the drains.
 - iii. Solid substances such as used tea leaves, solid food remains, cotton, sanitary towels, soft toys should always be thrown in the dustbin as these wastes choke the drains and do not allow the free flow of oxygen. This leads to the hampering of the degradation process.]
2. Describe various steps of cleaning wastewater in a wastewater treatment plant.
- [Hint: The various steps are: (a) Wastewater is passed through bar screens. Large objects like rags, sticks, cans, plastic packets, and 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 (these solid impurities are called sludge) and are removed with a scraper. The skimmer removes floatable solids like oil and grease. Water so cleared is called clarified water.
- (d) Air is pumped into the clarified water to help aerobic bacteria grow. Bacteria consume human waste, food waste, soaps, and other unwanted matter remaining in clarified water. All disease-causing bacteria are removed by chlorination.]

V. CASE STUDY- BASED QUESTIONS/ PASSAGE BASED QUESTIONS:

Samidha has seen huge garbage dumps outside the school campus, which are not being regularly disposed of by the municipality of the area. She discussed the problem with her science teacher and decided to organise a rally to spread awareness among local people.

The next day, she delivered this information in the assembly and convinced the schoolmates to join her. She also explained to them about the importance of sanitation at public places, which she had recently studied in biology.

i) In your view, who is responsible for maintaining sanitation at public places?

[Hint: The responsibility of maintaining sanitation at public places is primarily of common people or public who use or are around in that area, and secondarily of the local municipal body of that area to carry out the sanitation process and keep it clean.]

ii) What would happen, if all the wastes produced at public places are not disposed of regularly?

[Hint: Because of the degradation of garbage, diseases can spread and epidemics can break out if all of the waste generated in public areas is not disposed of on a regular basis.]

iii) What are the values shown by Samidha? **[Hint: The values shown by Samidha are like responsible citizen, dedicated, committed, courageous, progressive and a good leader.]**

ANSWERS FOR OBJECTIVE TYPE QUESTIONS [1 to 10] -

1 - d, 2 - b, 3 - d, 4 - b, 5 - b, 6 - a, 7 - c, 8 - ii, 9 - i, 10 - iii

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