

Class 7th Living science solution 2017-18

Chapter : 20. WASTEWATER MANAGEMENT

P. 226 Oral Questions For Formative Assessment

1. In our homes, industries, offices, hospitals, and other places. It is also generated as rainwater runs down the land through roofs, ground and agricultural fields.
2. There can be blockages in open drains. So sewage may stagnate and even overflow. This results in breeding of mosquitoes, flies and other germs.
3. No, there can be leaks at the damaged joints in the pipes. This could be a major risk for public health particularly where drinking water pipe and sewage pipe pass close to each other.

P. 228 Oral Questions For Formative Assessment

1. The aim of sewage treatment is to remove the solid material from the sewage and also to make its liquid part less harmful for humans and other animals.
2. Cooking oil can block pipes when it hardens.
3. Sanitary napkins can clog drains and prevent free flow of oxygen that interferes with the decomposition process.
4. Paints can kill microbes that clean the water.
5. Faeces, food waste, soap. They grow in air pumped in the tank and consume these contaminants to remove them.

P. 229 For Formative and Summative Assessment

- A. 1. b 2. c 3. d 4. a
- B. 1. mosquitoes 2. false 3. oxygen 4. true
- C. 1. Wastewater from houses, industries, hospitals, etc., and rainwater that runs over land containing waste matter such as excreta is called sewage
2. It is necessary to treat sewage before disposing it off in a water body. Without being treated, it can result in a major health hazard for humans and animals.
 3. yellow fever, malaria, dengue, cholera
 4. During floods, sanitation system can overflow and this may contaminate drinking water supply and cause sewage to back flow. For this reason, cholera outbreak is common after floods.
 5. In a city, the amount of storm water collected can be very large. This can cause overflowing of and bursting of sewage pipes, if there are no separate pipes for sewage and storm water. Also the large quantity of storm water can not be properly treated in a treatment plant.
 6. Sewage treatment involves physical, chemical and biological processes.
 7. Contamination of drinking water can happen in covered drains also. A common reason is damaged, leaky joints in water pipes in areas where the water pipes and sewage lines are close to each other.
- D. 1. When we use water at home to wash clothes and utensils, bathe and flush toilets, it becomes dirty. This dirty water is called wastewater. It contains urine, faeces, detergent and dirt released after washing clothes and utensils, and food wastes. Harmful microorganisms that can cause diseases such as jaundice, cholera and typhoid are present in it.

Wastewater is also generated in industries, hospitals, hotels, offices and at other places. Industrial wastewater contains poisonous chemicals. Wastewater from hospitals may contain several types of disease-causing germs, and dangerous radioactive materials. Rainwater that has run down the land also forms wastewater. It may pick up various contaminants including soil particles, heavy metals, organic compounds, animal waste, and oil and grease. It may also pick up human faeces. It also picks up fertilizers and pesticides.

2. Due to improper drainage, sewage may collect in pools and stagnate. These are perfect places for flies and mosquitoes to breed. This may spread diseases such as yellow fever, malaria and dengue. Different types of germs such as those of cholera can also grow and multiply in stagnant wastewater. Decay of organic waste present in wastewater leads to unpleasant smell.

3. If a city does not have proper storm water drainage system, this water starts overflowing on the streets and may even enter houses. This is dangerous for public health and property. Sanitation system can overflow during floods. There is also the risk of floodwater contaminating drinking water supplies, bursting pipelines and cause sewers to back flow or even break.

4. The main steps used in sewage treatment are:

(i) The wastewater is first passed through screens of vertical bars, which remove large solid materials such as plastic bags, sticks, etc.

(ii) The water is then passed through settling tanks known as grit chambers. Its speed is reduced so that solids such as sand, silt and gravel settle down and are removed.

(iii) After this, the wastewater passes into a sedimentation tank called a clarifier, in which organic materials settle down and are removed with a scraper. Floating materials like oil and grease are removed, with the help of a skimmer. The water that emerges from the settling tank is called clarified water.

(iv) Next air is passed through the clarified water in an aeration tank. This allows aerobic bacteria to grow and consume organic contaminants. The treated water is removed from the top and discharged into a water body.

5. The sludge is used to obtain methane, carbon dioxide and humus like material by a process called digestion. It consists of decomposing the sludge with the help of anaerobic bacteria. Dried sludge can be used as a fertilizer. The methane formed can be used as a fuel.

6. Do not dispose off cooking oils and fats in the kitchen sink. They can block pipes when they harden. Throw them in dustbins. Do not dispose off used tea leaves, solid food remains, sanitary napkins, etc. in the kitchen sink or in the toilet. They clog drains and prevent free flow of oxygen that interferes with the decomposition process. Throw them in dustbins.

7. One such method involves making a septic tank. The sewage is allowed to flow into a tank in which anaerobic bacteria decompose the waste. Another method allows the excreta to flow into a biogas plant through covered drains. The biogas produced can be used as a fuel. A new method recently tested in India is to use red worms to treat human excreta and convert it into vermicompost. This method is simple, hygienic and uses less water.

HOTS Questions

1. Storm water disposal pipes should be bigger because the amount of storm water can be very large.

2. Because the quantum of plastic disposed off in the form of plastic bags is many times more than the quantum disposed off as other plastic products such as buckets or TV cabinets. This is because plastic bags normally get disposed off after a single use, whereas one bucket may be disposed off after several years of use.