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Wastewater Engineering



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Answer # 1 :

Wastewater Engineering :

Wastewater engineering or Sanitary engineering also known as public health engineering is the application of engineering methods to improve sanitation of human communities , Primarily by providing the removal and disposal of human waste treatment and reuse application for various purpose.

- Wastewater Engineering is directly related to improving environment by disposing off treated wastewater and thus reducing the dusts of ground water contamination and safeguarding aquatic life.

Applications :

- 1) By disposing off treated Wastewater in order to reduce ground water contamination and protect aquatic life.
- 2) Wastewater engineering deals with the management of wastewater and its treatment to reuse it for various purpose.
- 3) The recovery of Sewage is an effective means of saving water resources and promoting the reuse of water resources. It is an important measure to reduce the pollution of sewage and protect the environment.
- 4) Primary objective of Wastewater engineering is to provide a good Sanitary environment condition in a city.



Answer # 2 :

The relationship of Wastewater generation with water supply of a locality is that :

- If field measurement of Wastewater flow rates are not possible and actual Wastewater flow rate data are not available , Water supply records can often be used as an old to estimate Wastewater flow rates.

Answer # 3 :

The importance of Wastewater characterization is to know about physical , chemical and biological characteristic of Wastewater because due to this we know that Wastewater in physically means that if will be in hard form and suspended solids are present in it.

- Due to chemical characteristics we know that the chemical present in Wastewater which mostly come from industries and to treat at as they are.
 - Due to biological characterization we know that the Wastewater has the bacteria present in it.
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Answer # 4 :

Characteristics of Wastewater :

1) Physical characteristics :

Turbidity , color ,
salor , total solids and Temperature.

2) Chemical characteristics :

Chemical oxygen demand , Total organic Carbon , Nitrogen , PH , Heavy metals , Trace , elements and priority pollutants.

3) **Biological characteristics :**

Biochemical oxygen demand , oxygen required for nitrification and microbial population.

Answer # 5 :

1) **Combined Sewerage System**

Advantages :

- I. Both domestic sewerage and storm water are carried in a single sewer, so construction cost is less.

- II. The strength of domestic sewage is reduced because of dilution of storm water.
- III. The sewers are of large size, and therefore the chances of their choking are rare. It is easy to clean them.
- IV. In towns with narrow streets, this system is preferred.

Disadvantages :

- I. Initial cost is high because of large dimensions of sewers.
- II. Because of large size of sewer, their handling and transportation is difficult.
- III. Due to the inclusion of storm water, the load on the treatment plant increases and ultimately increases treatment costs.
- IV. During heavy rain the sewer may be overflow and may thus create unhygienic conditions.
- V. If the whole sewage is to be disposed off by pumping it is uneconomical.

Diagram :

Combined Sewerage System

COMBINED SEWER SYSTEM

- Sanitary
- Stormwater
- Combined



2) Separate Sewerage System

Advantages :

- I. Size of sewers is generally less.
- II. As the sewer are smaller in section, they can be easily ventilated.
- III. Rain water can be discharged in to the streams or can be reused / recycled without any treatment.

Disadvantages :

- I. Since the sewers are of smaller size, it is difficult to clean them.
- II. They are likely to get chocked / blocked.
- III. Initial cost is high, when two separate sets are sued.
- IV. Maintenance cost of system is also high.

Diagram :

Separate Sewerage System



I will suggest Combined Sewerage system because both domestic sewerage and storm water are carried in a single sewer so construction cost is less and sewer are of large size so they are easy to clean.
