

SYED JAWAD

7386

WASTE WATER

&

MANAGEMENT

Q # 1

1

## WASTE-WATER ENGINEERING:-

It is also known as sanitary or public health Engineering. This field is basically related to the removal or disposal of human waste, treatment and re-use application for various purposes by improving the sanitation system. It is basically used for the improvement of environment by reducing contamination and saving the aquatic life.

## APPLICATIONS

- ① ULTRASOUND APPLICATION
  - ② ADVANCES IN IMMOBILIZED
  - ③ OZONE BIOLOGICAL ACTIVATED CARBON
  - ④ ELECTROMECHANICAL AP TASENSORS
- ① ULTRASOUND:- This aims for the understanding of sludge disintegration and ultrasonic density. and is more important than sonification.
- ② ADVANCES IN IMMOBILIZED:-  
This is effective in treating heavy metal waste-water organic, hydroxybenzene and nitrogen. It is more effective than normal biological method

③ OZONE BIOLOGICAL ACTIVATED CARBON:-  
It's an advance treatment technology and widely in China. Because of it's technical and Economical Advantages.

④ ELECTRO-MECHANICAL APTASENSORS:-  
These Small Chemically Unchanging, in-expensive APTasensors show tremendous sensitivity and Selectivity and emphasize on environmental Safeguarding.

### Q#2

The relationship between the waste-water generation with water supply of locality is that water supply records are used as a aid to estimate waste-water flow rate in-case the water flow rates are not possible to know or the data of the waste water flow rate is not available.

### Q#3

The waste-water characterization is very important as we get to know about physical, chemical and biological characteristics of waste water. The physical characteristics tells us that waste water will be in hard form as suspended solids are present into it. The chemical characteristics tells us about the chemicals present in the waste-water coming from industries.

The biological characteristics tells us about the bacteria present in the waste-water.

Q#4

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### PHYSICAL CHARACTERISTICS:-

The Physical Characteristics of waste water are

- 1) Turbidity
- 2) Odour
- 3) Temperature
- 4) Total Solids.

#### ① TURBIDITY:-

The turbidity of sewage is due to dirty dish water or mostly solid particles like fecal matter, cigarette etc. Turbidity is identified by the nephelometric.

#### ② ODOUR:-

Usually sewage is odourless but once it is stale, it starts to give offensive odour within 3-4 hours, oxygen is exhausted and odour is released due to hydrogen sulphide gas.

#### ③ TEMPERATURE:-

Temperature affects the biological activity of bacteria and solubility of gases in sewage.

The normal sewage is higher than the water supply temperature because of more heat utilization.

#### ④ TOTAL SOLIDS:-

The known volume of sewage sample and weighing of dry residual left determines the total solids.

CHEMICAL SOLIDS:-

SUSPENDED SOLIDS :- (S<sub>2</sub>)

They are not filterable solids. They are determined by known volume of glass filter and weighing of dry residual left.

DISSOLVED SOLIDS AND COLLOIDAL (S<sub>3</sub>) :-

Difference between total & suspended solids  
 $S_1 - S_2$

PH :- PH determines the reciprocal of hydrogen ion concentration in the sewage if the PH value is less than 7, it's acidic if the PH value is more than 7 it's alkaline.  
... alkaline but gets acidic

## BIOLOGICAL CHARACTERISTICS:-

Presence of Micro-organisms like Bacteria, Algae, fungi etc and mostly seen. Most of the bacteria are harmless and are usually helpful in oxidation and decomposition of Sewage. Usually routine Bacteriological tests are applied to check the concentration of Bacteria being present in the Sewage.

Q#5

## COMBINE SEWAGE SYSTEM:-

### ADVANTAGE:-

- ① Construction Cost is less as both Sewage and Storm water are carried in single Sewer.
- ② Because of water dilution - strength of domestic Sewage is reduced.
- ③ Their large sizes causes less chocking and easy cleaning.
- ④ This system is usually preferred in narrow streets.

### DISADVANTAGES:-

- ① Initial Cost is high as sewers have large dimensions
- ② Their large size cause difficulty in transportation.
- ③ Storm water Inclusion causes more load on treatment plant hence increase in Cost.
- ④ Sewer may overflow in heavy rain causing un-hygiene conditions.
- ⑤ Sewage can be un-economical if we dispose it off completely.

## SEPERATE SEWAGE SYSTEM:-

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### ADVANTAGES:-

- ① Sewer size is less.
- ② Treatment is less as both storm water and sewage flows in seperate pipes.
- ③ Ventilation can be done easily as sewers are small.
- ④ Rain water is discharged to the streams.

### DISADVANTAGES:-

- ① They are difficult to clean because of small size.
- ② They get choked / blocked easily.
- ③ As two seperate sets are being used, initial cost is high.
- ④ Maintenance costs more.

Q# 5 Part (b)

we will recommend Seperate sewage System for new proposed township because It has two Seperate pipes. One is for Storm water and the other pipe is for Sanitary sewage.