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Paper Waste-water Engineering  
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Question # 1:-

What is waste-water Engineering?  
Briefly describe its application in  
safely guarding the environment?

Answer:-

Wastewater engineering is the  
application of engineering method  
to improve sanitation of human  
communities, primarily by providing  
the removal & disposal of human  
waste & addition to supply  
of safe potable water.

Applications 80

- (1) Wastewater Engineering deals with the management of wastewaters & its treatment to reuse it for various purpose.
- 2) Wastewater flow into the aeration basin where it is brought into contact with a heterogenous culture of microbes, consisting primarily of heterotrophic bacteria.
- 3) the recovery of sewage is an effective means of store water resource & promoting the reuse of water resources. It impact measure to reduce the pollution of sewage & protect the environment.
- 4) By Disposing off treated wastewater in order to reduce ground water contamination & protect aquatic life.

(Question # 02)

Briefly describe the relationship of wastewater generation with water supply of a locality?

Answers-

The liquid waste water is essentially the water supply of the community after it has been used in variety of application.

→ about 60-85% of supplied water per capita become wastewater

→ Waste water generated dependant on supply water. As increase the waste water will be more.

→ In situation where where wastewater flow rate data are limited. or un-available wastewater flow rate estimate have to develop from water consumption records in other information.

(Question 03)

What is importance of wastewater characterization?

Answer :-

A characterization of wastewater provide a wide variety of information regarding the type & concentration of contaminants present.

With the characterization of waste water, we determine the nature of contaminants (physical & chemical) & the design wastewater treatment plant according to nature of contaminants.

→ Due to the variability in contaminants concentration in wastewater across the food & beverage sector, facility specific characterization of wastewater play a significant role in treatment determination & design.

(Question 04)

Enlist physical, chemical & biological characteristics of waste water?

Answer :- (Physical characteristics)

- 1) Temperature
- 2) Colour.
- 3) Odour
- 4) Turbidity
- 5) Total Solid.

(Chemical characteristics)

- (1) Chemical oxygen demand (COD)
- (2) Total organic carbon (TOC)
- (3) Nitrogen, Phosphorus, Chloride Sulphate Alkalinity, PH, Heavy metal Trace Element & priority pollutants.

(Biological characteristic)

- Biological oxygen Demand (BOD)
- Oxygen required for nitrification & Microbial pollution.

Question # 5.

Answer:- Combine Sewage system Advantages

→ Both domestic sewage & storm water are carried in a single sewer, so construction cost is less.

→ the strength of domestic sewage is reduced because of dilution of storm water.

→ The sewers are of large size & therefore the rate of therefore the chance of their chocking are rare. It easy to clean them.

(4) In town with narrow streets this system is preferred.

Disadvantages:-

- > Initial cost is high because of large dimensions of sewers.
- > Because of large size of sewer their handling & transportation is difficult.
- (3) Due to the inclusion of storm water the load on the treatment plant increase & ultimately increase treatment cost.
- (4) During heavy rain the sewers may be overflow & may thus create unhygienic condition.
- (5) If the whole sewage is to be disposed off pumping it unecnomial.

(Separate Sewage Advantages)

- > Size of sewers is generally less.
- > Since the sanitary sewage & storm water flow in a separate pipe the quality of sewage to be treated.
- (3) Rain water can be discharge in to the stream or can be reused recycled without any treatment.

## (Dis-Advantages of Separate Sewage)

- Since the sewers are of smaller size, it is difficult to clean them.
- they are likely to get choked & blocked.
- Initial cost is high, when two separate sets are used.
- Maintenance of system is also high.

## (Justification)

- I will propose combined sewage system for a new township because both domestic sewage & sewage water are carried in a single sewer. water are carried in a single sewer so construction cost less & sewer of large size are easy to clean.