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Subject Wastewater Engineering

Submitted to Engr. Nadeem Ullah

Q#1 What is wastewater Engineering? Briefly describe its applications in Safeguarding the Environment?

Ans Wastewater Engineering:

It is the application of Engineering methods to improve, Sanitation of Human Communities, Primarly by Providing the Removal & disposal of human waste, treatment and reuse application for various Purpose

Applications:

1. Wastewater Engineering deals with the

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management of wastewater and its treatement to reuse it for various purposes.

2. By disposing off treated wastewater in order to reduce ground water contamination & protect aquatic life.

3. Primary objective of wastewater Engineering is to provide a good sanitary environment condition in a city.

Q#2 Briefly describe the relationship of wastewater generation with water supply of a locality?

Ans. In situation where wastewater flowrate data are limited or unavailable wastewater flow rate estimate have to be developed from water consumption records or other information.

Almost 60-85% of supplied water per capita becomes wastewater.

Simply wastewater generated is dependent on supplied water, as the supplied water increase, the

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the wastewater will be more

Q#3 What is the importance of wastewater Characterization?

Ans: Importance of W.W Characterization:

Characterization of wastewater provides a wide variety of information regarding the type and concentration of contaminants presents.

With Characterization of wastewater we determine the nature of Contaminant (physical, biological, chemical) and then design waste water treatment plant according to the nature of Contaminants.

Q#4 Enlist Physical, Chemical & biological Characteristics of Wastewater?

Ans: Characteristics of Wastewater:

1. Physical:

a) Turbidity
b) Color
c) Odour
d) total Solids
e) temperature

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2) CHEMICAL:

a) Chemical Oxygen demand (COD)
b) Total Organic Carbon (TOC)
c) Nitrogen
d) Phosphorous, Chlorides
e) PH
f) Heavy metals
g) Trace elements.
h) Priority Pollutants.

3) Biological:

a) Biological oxygen Demand (BOD)
b) Oxygen required for nitrification.
c) Microbial Population (Bacteria, Pathogens).

Q#5: What are the advantages and disadvantages of Combine and Separate Sewerage System? Which Sewerage System will you recommend for a new Proposed township Support your answer with Justification

Ans:
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1) Combined Sewerage System:

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Advantages :-

1. Both domestic Sewage & Storm water are Carried in a single Sewer, so Construction Cost is less.

2. The Strength of domestic Sewage is reduced because of dilution of Storm water.

3. The Sewers are of large Size, and therefore the Chances of their Chocking are rare. It is easy to Clean them.

4. In towns with narrow Streets, this System is preferred.

DISADVANTAGES :-

1. Initial Cost is high because of large dimensions of Sewers.

2. Because of large Size of Sewer, their handling and transportation is difficult.

3. During heavy rain the sewer may be overflow and may thus create unhygienic conditions.

4. if the whole sewage is to be disposed off by pumping it is uneconomical.

SEPARATE SEWERAGE SYSTEM

Advantages:

1. Size of sewers is generally less.

2. Since the sanitary sewage and storm water flows in a separate pipes, the quantity of sewage to be treated is less.

3. As the sewer are smaller in section, they can be easily ventilated.

4. Rain water can be discharged in to the streams or can be reused / recycled without any treatment.

Disadvantages:

1) Since the sewers are of smaller size, it is difficult to clean them.

2) They are likely to get clocked/blocked.

3) Initial cost is high, when two seperate sets are used.

4) Maintenance cost of system is also high.

X ——— X

Justification:

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