

# Assignment/Quiz 1



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**SECTION** : **"A"**

**DEPARTMENT** : **CIVIL Engineering**

**SUBJECT** : **Wastewater Engg**

**SUBMITTED TO** : **Engr.Nadeem**

Question No: 01 Answer:

## Wastewater Engineering:

It is the application of engineering methods to improve sanitation of human communities, primarily by providing the removal and disposal of human waste, and in addition to the supply of safe potable water.

### Application in safeguarding the environment:

- If we make a proper discipline for the disposal of wastewater, then we make safe our environment from wastewaters.
- Wastewater engineering deals with the management of wastewater and its treatment to reuse it for various purposes.
- By disposing off treated wastewater in order to reduce ground water contamination and protect the aquatic life.

- 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 & protect the environment.

- The main objective of wastewater engineering is to provide a good sanitary system in a city.

## Question Nos 02 Answer:

The relationship of wastewater generation with water supply of a locality is that; wastewater generation is depend upon the supplied of water, if the supplied water is more, the wastewater will be more. We know that 60-85% of supplied water per capita become wastewater. For example if in situation where wastewater flowrate data is not available then wastewater flowrate estimate have to be developed from water consumption records.

## Question No: 03      Answer:

The importance of wastewater characterization is to know about the nature of wastewater. It ~~tells~~ ~~it~~ tells us about a different variety of information regarding the type and concentration of contaminants ~~are~~ present in it. It also provides information about nature of contaminants: Physical, ~~etc~~ chemical and biological. Physical means it will be in hard form and suspended solids are present in it. Due to chemical characterization, the chemical present in it will mostly come from industries & how to treat it, and biological means that the wastewater have bacteria etc present in it & how to treat ~~it~~ it.

## Question No: 04 Answer

### Physical Characteristics:

- (1) Solids
  - Settleable solids
  - Total solids (TS)
  - Total suspended solids (TSS)
  - Total dissolved solids (TDS)
  - Volatile solids (Vs)
  - Fixed solids (Fs)

(2) Odour

(3) Temperature

(4) Density

(5) Specific gravity

(6) Turbidity

(7) Colour

### Chemical characteristics:

(1) pH value

(2) Organic Matter (OM)

(3) Nitrogen contents

(4) Chlorides contents

(5) Fats, oils and greases

(6) Sulphides, ~~sulphates~~ sulphates and hydrogen gas

(7) Toxics

(8) Dissolved oxygen (DO)

### Biological characteristics:

The environmental engineers must have considerable knowledge of the ~~biog~~ biological of wastewater because it is very important characteristics.

The engineer should know:

- (1) The principal groups of microorganism found in wastewater.
- (2) The pathogenic organisms.
- (3) Indicator organism (indicate the presence of pathogens)
- (4) The methods used to amount the microorganism.
- (5) The methods to evaluate the toxicity of treated wastewater.

## Question No: 5      Answer

### Combined Sewerage System

#### Advantages:

- (1) Both domestic sewage and 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 choking are rare. It is easy to clean them.
- (4) In towns with narrow streets, this system is preferred.

#### Disadvantages:

- (1) Initial cost high because of large dimensions of sewers.
- (2) Because of large size of sewer their handling and transportation is difficult.
- (3) Due to inclusion of storm water, the load on the treatment plant increases and ultimately increases



treatment costs.

- (4) During heavy rain the sewer may be overflow and may thus create unhygienic conditions.
- (5) If the whole sewage is to be disposed off by pumping it is uneconomical.

## Separate Sewerage System

### Advantages:

- (1) Size of sewer 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 sewers are smaller in section, they can be easily ventilated.
- (4) Rain water can be discharged into the streams or can be reused/ recycled without any treatment.

### Disadvantages:

- (1) Since the sewers are smaller

in size, it is difficult to clean them.

- (2) They are likely to get choked/blocked.
- (3) Initial cost is high, when two separate sets are used.
- (4) Maintenance cost of system is too high.

Which system proposed for new township?

From the above discussion of advantages & disadvantages of both sewerage system, I will propose combined sewerage system because the size of sewers are large, it can be cleaned easily and cannot be choked/blocked and due to storm water the domestic sewage become diluted. The initial cost of both sewerage system are approximately same and the combined sewerage system that's why I will suggest.