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Date: \_\_\_/\_\_\_/\_\_\_

Name

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Section

A

Subject

Waste Water Engineering

Department

BE (C)

Instructor

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Q No 1

Ans

Waste water Engineering:

It is the application of engineering method to improve sanitation of human communities;

primarily by providing the removal and disposal of human waste, treatment and reuse application for various purpose.

Applications in safeguarding the environment:

As we know that waste water engineering is directly related to improving environment.

\* So the applications in safeguarding the environment are given below;

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1. By disposing off treated wastewater which will reduce the risk of ground water contamination and safeguarding aquatic life.

2. Wastewater normally contain 99.9% water and 0.1 percent solids.

The main concern about wastewater treatment is simply to reduce all or most part of this 0.1% of solids.

3. Wastewater is full of contaminants including bacteria, chemicals, and other toxins. Its treatment aims at reducing the contaminants to acceptable levels to make the effluent safe for discharge back into the environment or reuse it for various purposes.

5. Type of treatment wastewater depends on the characteristic of generated wastewater and effluent disposal standards.

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**Q No 2**

**Ans:**

About 60% - 85% of per capita consumption of water become waste water.

An situation where waste water flow rate data are limited or unavailable waste water flow rate estimate have to be developed from water consumption records in other information.

**Q No 3.**

**Ans:**

The nature of the contamination present in waste water. must be determined in order to evaluate the suitability of one treatment over another.

A characteristic of the wastewater, which provides a wide variety of information regarding the type and concentration of contaminants present, must be carried out to determine the

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type of contamination concerned.  
also characterizing of wastewater  
help in determining the type  
of contamination (physical, Biological  
or chemical) which is in  
designing of wastewater treatment  
plants accordingly.

Q No 4

Ans:

Characteristics of waste water  
are given below;

- ① physical characteristic.
- ② Chemical characteristics.
- ③ Biological characteristics.

(1) physical characteristics:

- 1- Turbidity
2. Total solids
- 3- color
- 4- odor
- 5- Temperature.

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## 2- Chemical characteristics due to chemical impurities:

- 1- Chemical oxygen demand (COD).
- 2- Total organic Carbon (TOC)
- 3- Nitrogen
- 4- Phosphorus
- 5- Chlorides.
- 6- Sulfates
- 7- Alkalinity.
8. pH
9. Heavy metal.
10. Trace element and priority pollutants.

## 3- Biological characteristics due to contaminants:

- 1- Biological oxygen demand (BOD).
- 2- Oxygen required for nitrification.
- 3- Microbial population.

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Q No 5

Ans:

Advantages of Combined Sewerage system:

The advantages of Combined Sewerage system are given below;

- 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 chocking are rare. It is easy to clean them.
- 4- In towns with narrow streets, this system is preferred.

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## Disadvantages of Combined Sewerage System:

- 1- Initial cost is high because of large dimension of sewers.
- 2- Because of large size of sewer, their handling and transportation is difficult.
- 3- Due to the 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.



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## 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 into the streams or can be reused/recycled without any treatment.

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## Disadvantages:-

- 1- Since the sewers are of smaller 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 also high.

For new townships we proposed:-

- \* we will recommended combined Sewerage System because the construction cost is very low as compared to separated sewerage system. Also
- \* Also the sewers are large size and therefore the chances of their choking are rare.

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- \* It is also easy to clean the Combined Sewerage.
- \* In towns the streets are narrow and we are preferred to Combined Sewerage system.
- \* Maintenance of this system is very low as compared to separate Sewerage system.