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SECTION: B

SUBJECT: Waste water Engineering

SUBMITTED TO: Engr. Nadeem

DEPT: B.S Civil

SEMESTER: 8

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= WASTE WATER ENGINEERING =

Q1

Ans:

WASTE WATER ENGINEERING:

It is

that branch of environmental engineering in which the basic principles of science and engineering are applied to solving the issues associated with the treatment and reuse of waste water.

APPLICATIONS:

(i)

Waste water engineering deals with the management of waste water and its treatment to reuse it for various purposes.

(ii)

The recovery of sewage is in effective means of saving water resources and promoting the cause of water resources. It is an important measure to reduce the pollution of sewage & protect the environment.

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(iii) Primary objective of waste water engineering is to provide a good sanitary environment condition in a city.

Q2
Ans:

RELATION B/W WASTEWATER GENERATION AND WATER SUPPLY

→ Average daily per capita consumption varies from 130 to 200 liters local use depends on:

(i) Quality of water:

Water which is poor quality will be used less the water which is satisfactory will be consume.

(ii) Pressure:

High pressure maintained in the system results in greater use, In addition it increase losses in leaks.

(iii) Characteristic of Population:

Economic level of the population determines the use of water which usually ranged from 50 to 380 liter/capita/day. The quantity of waste water is directly proportional to the characteristic of population.

(iv) Size of the City: ③
Small communities tend to have more limited use of water unsewered usually less than 40 L/cap/day. Cities having water using industries may result in high Per Capita use this waste water generation increases.

(v) Metering: Metering of water supplies to the individual users has been shown to reduce the consumption substantially. As the consumers has to pay in proportion to the quantity of water consumed.

Q3

(4)

Ans

IMPORTANCE OF WASTEWATER CHARACTERIZATION

→ A characterization of wastewater provides a wide variety of information regarding the type and concentration of contaminants present. With characterization of wastewater we determine the nature of contaminant (physical, biological, chemical) and then design waste water treatment plant according to the nature contaminants.



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Q4
Ans:

CHARACTERISTICS OF WASTEWATER

→ PHYSICAL CHARACTERISTICS

- 1) Turbidity
- 2) Colour
- 3) Odor
- 4) Total solids
- 5) Temperature

→ CHEMICAL CHARACTERISTICS

- 1) Chemical oxygen demand (COD)
- 2) Total organic carbon (TOC)
- 3) Nitrogen
- 4) Phosphorus
- 5) Chlorides
- 6) Sulfates
- 7) Alkalinity
- 8) ~~PH~~ PH heavy metals

(5)

(6)

→ BIOLOGICAL CHARACTERISTICS

- 1) Biochemical oxygen demand (BOD)
- 2) Oxygen required for nitrification
- 4) ~~PA~~ Microbial population.

Q.5
Ans:

COMBINE SEWAGE SYSTEM:

ADVANTAGES

- (1) Both domestic sewage and storm water are carried in a ~~big~~ 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 large size and therefore the chances of their clogging are rare. It is easy to clean them.
- (4) In town with narrow streets this system is preferred.

DISADVANTAGES:

- 1) Initial cost is high because of large dimension of sewers.
- 2) Because of large size of sewers their handling and transporting is difficult.
- 3) During heavy rain the sewer may be overflow and may thus create problems.
- 4) The whole sewage is to be disposed off by pumping it is uneconomical.

(8)

ADVANTAGES OF SEPARATE SYSTEM:

- The load on treatment plant is less as only sewage is carried to the plant
- The size of sewer is small thus economical
- When pumping is required, the system proves to be economical.
- Natural/storm water is not unnecessarily polluted by sewage.

DISADVANTAGES OF SEPARATE SYSTEM:

- Cleaning of sewer is difficult due to their small size.
- The self cleansing velocity is not easily obtained.
- Maintenance cost is high
- Sewage sewers are provided below storm sewer which causes greater depth and pumping at waste water treatment plant (WWTP)

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