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Sec A

Subject waste water Engineering

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Q = 1

Ans :- Waste Water Engineering.

Treatment of waste water is a process used to remove contaminants from waste water or sewage. Waste water engineering is the branch of environmental engineering in which the basic principle of science and Engineering to improve human communities sanitation, primarily by providing the removal and disposal of human waste, treatment and reuse application for various purpose.

Applications :-

- ① By reducing ground water contamination and protect aquatic life by treating waste water.
- (2) Waste water engineering deals with waste water its treatment and to reuse it for various purpose



3) It is very important to save water resources and reuse of waste water. by doing such type of activities we can reduce the pollution of water and protect the environment. The recovery of waste water or sewage is an effective mean.

4) The very basic objective of waste water engineering is to provide a good sanitary system to the city.

Q=2

Ans = If there is unavailability or shortage of data of waste water flow rate. we can estimate it from previous data record of consumption or water supply flow rate. About 70% of supplied water per capita becomes waste water.

Q: 3

Ans:- By characterizing the waste water we can determine the nature of physical contaminants, chemical properties and biological contaminants. After this we will be able to design a water treatment plant according to the nature and type of contaminants.

A characterization of waste water provides a wide variety of information regarding the type and concentration of contaminants present.

Q: 4

Ans: Characteristics of waste water.

(1) Physical characteristics

a) Turbidity

b) colour

c) odor



d) total solids.

e) Temperature

(2) Chemical characteristics:

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 characteristics

a) Biological oxygen demand (BOD)

b) oxygen required for nitrification.

c) Microbial population (Bacteria, pathogens)

Q: 5

Ans: Combine 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 clear 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 sewers



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.

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 sewer are smaller in section they can be easily ventilated.
- 4) Rain water can be discharged in to the streams or can be reused without any treatment.

Part -2

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