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Q NO 1

Answer:-

Waste water Engineering:

waste water engeneering is the brdth of environmental engineering in when the basic principle of science and engeneering are applied to solving the issues associated with treatment and reuse of waste water. Treatment of wastewater is a Process used to removel contaminants from waste water or sowage.

Application and Safeguarding the environment:-

1. water resources assessment and development to agonest and enchance avaliablity of water (ground water, surface water, teanal water s resource)

2. water resources allocation to the

to the completing group of water uses in the socity (municipal, commercial, industrial, agricultural)

3 water utalization by various groups of water uses which comprises the delivery consumptive (the ways water could be conserved and waste water generation reduced).

4 Environment protection and pollution control to stop the consuption of fresh water by polletion and to return wastewater to the water cycle as a beneficial source of water

⇒ supplying more water to match the damand focusing mainly on the assessement and development of new water resource.

⇒ Environmental protection, pollution control and recovery of wastewater the main application of wastewater engineering and safegarding of living thing

in the environment

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Q No 2

Ans **Relationship b/w wastewater generation and water supply:-**

Average daily per capita consumption varies local use depends on.

2 **Characteristics of Population.**

Economic level of the population determines the use of water which usually ranges from 50 to 380 liter/capita/days in the slum districts it usually varies from 50 to 100 liter/capita/day. The quantity of wastewater is directly proportional to the characteristic of population.

2 **Quality of water**

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

3 **Pressure:-**

High pressure maintained in the system results is greater use, in addition it increases cosses in the leaks.

4 **Maintenance:-**

A well designed program of maintanced will reduces less and waste in the system (detection of leaks, Dressence of unauthorized connection from survey.

5 **Size Of the City:.**

Small communities tend to have more limited use of water. unsewered homes have less use of water usually less than 401 l/cap/day. cities having water using industries may result in high per capita use thus waste-water generation increases.

6 **Metering:-**

Melering of water supplie to the individual useos has been shown to reduce the consumption substantially. As the consumer has to pay in the proportion to the quantity of water consumed.

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Q.No 3

Importance Of Wastewater Characteristic:-

Because of changing wastewater characteris and the imposition of stricte, limits is being placed on wastewater characterization. Because process modeling is widely used in the designed and optimization of biological treatment processes (e.g activated sludge). through characterization of wastewater particularly wastewater containing industrial waste is increasing imortant praes modeling for activated sludge as it

is currently concerned required experimental assessment of kinetic and stoichiometric constant (radionuclides of organic nitrogen, chemical oxygen demand (COD) and the total organic carbon into solute and particulate constituent is now used to optimize the performance of both existing and proposed new biological treatment plant design to achieve nutrient removal techniques from microbiological science such as RNA and DNA typing are being used to identify the active mass of biological treatment process, Because of an understanding of the nature of wastewater is the fountain measal of the design and operation of waste cleanlines treatment are daise of factorey.

Q No 4

Ans

Characteristics of Wastewater

Physical characteristics	Chemical characteristics	Biological characteristics
⇒ Odor	PH value ⇒ (COD)	Biochemical organ demond (BOD)
⇒ Temperature	organic matter	oxygen required for nutrification
⇒ Density	Nitrogen contents	and microbial population
⇒ Specific gravity	chloride contents	⇒ most of bacteria are helpful in
⇒ Turgidity	fats, oil & Greases	Oxidation and decomposition of
⇒ Colour	Sulphides, sulphate and H^+ gas	Sewage

Q No5 Combine Sewerage System

Advantages	Disatvantages
① Both domestic sewage and storm water are carried in a single sewerge so construction cost is in	Initial cost is high because of large dimension of sewers.

2	The strength of domestic sewage is reduced because of dilation of storm water	Because of large size of sewers, their handling and transpiration is difficult.
3	The sewers are large size and therefore their chances of their chocking are rare it is easy to clean them	Due to the inclusion of storm water the treatment plant increases and ultimitely increase treatment costs.
4	In town with narrow streets this system is preferred	During heavy rain the sewer may be overflow and may thus create unhygienic conditions.
5	〃	The whole sewages is to be disposed off by pumping it is uneconomical

Separate Sewerage System

	Advantages	Disadvantages
①	Size of sewers is generally less	Since the sewers are smaller size, it is difficult to clean them
2	Since the sanitary sewage and storm water flows in a separate pipes, the quantity of sewage to be treated is less	They are likely to be chocked/ blocked. 〃 〃 〃
3	As the sewer are smaller in section they can be easily ventilated	initial cost is high when two separate sets are used.
4	Rain water can be discharge into the streams or can be reused/recycled with	Maintenance cost of system is also high

any treatment

→ Sewerage system depending on the area weather condition, if the area has rainy and flood so we recommended separate sewerage system.

→ And if the area has not more rainy so we recommended combine sewerage system.