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CLASS:- 7 'A'

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Internal Question paper solution.

Q1 // List the chemical characteristics of wastewater. Explain any four in detail.

Ans // Chemical characteristics of waste water :-

i) organic matter :-

→ In general sewage contains a large amount of organic matters.

→ amount of organic matter depends on types & condition of sewage.

→ Present in the form of dissolved substances, or in suspended form, colloidal form.

ii) chloride :-

→ Human waste consist of large amount of Nacl through urine & sweat.

So domestic waste from toilet & bathroom contains higher level of chloride.

iii) Biological oxygen demand (BOD)

→ sewage have high BOD due to presence of large amount of organic matters.

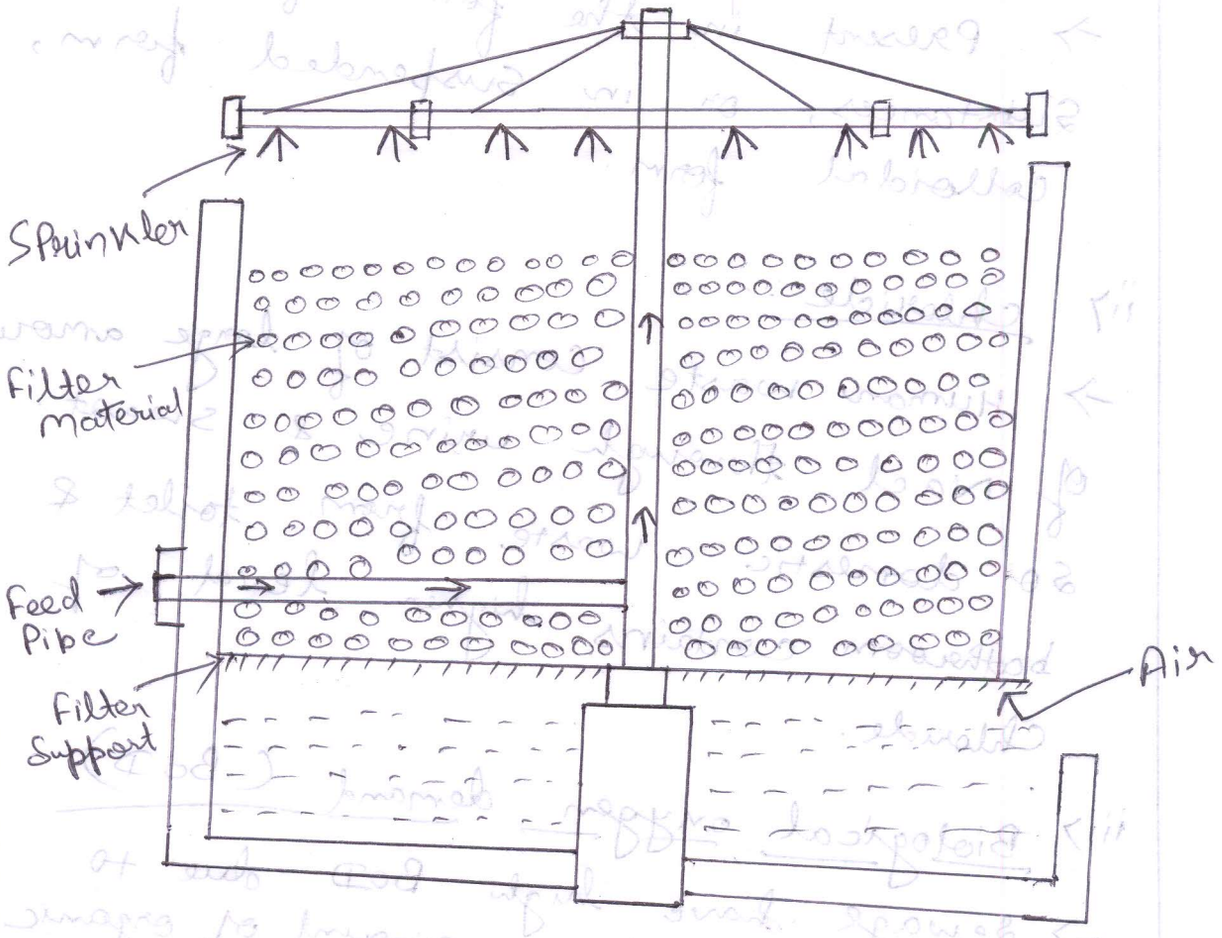
→ BOD value ranges from 100 mg/ltr. to 600 mg/ltr. or more.

iv) Dissolved oxygen (DO)

→ Sewage has low level of DO
→ In some sewage DO is absent
→ level of DO depends on age & condition of sewage.

Q2 With the help of a neat sketch explain the construction & working of trickling filters.

Ans



Trickling filter consists of a bed of permeable media on which a mixed population of microorganism is developed

It consist of several major components like screens, Grit, Primary & final settling tanks, pump, Trickling filter.

→ Trickling filter consists of a cylindrical structure made of concrete or brick & from inside it has honey combed wall with a filter media of gravel size 25 mm to 75 mm.

→ This filter uses microorganisms & bacteria as a biological weapon for treatment of waste water by removing phosphorous & Nitrogen content from it.

→ Feed pipe is used to feed waste water in the filter which is sprinkled from the hollow pipe & falls down onto the filter bed of very small gravel size containing microorganisms.

→ for reaching top to bottom waste water takes several hours & while it passes through the filter media the bacteria present reduces the phosphorous & Nitrogen content from it & finally at the bottom another filter support is given to remove finer particles present in the water & at bottom treated water is collected.

Q3 What is sewage sickness? Explain the preventive measures for the same.

Ans After continuous application of sewage load on land, the pores of the soil get clogged, preventing oxidation & causing bad smell & at that time the land is unable to take any further load of sewage. This is called Sewage Sickness.

→ Preventive measures:-

i) Pretreatment of sewage
ii) Provision of extra land
iii) under drainage of soil that will collect excessive sewage quantity.
iv) Sewage should be applied on land intermittently i.e, by giving rest to the land for some time. land should be ploughed during this time to keep soil aerated.
v) Rotation of crops
vi) Shallow depth application
vii) By not applying sewage in excess quantity.

Q4 Explain with the help of a flow diagram different unit operations involved in municipal wastewater treatment Plant.

i) Screening :- First treatment unit to remove floating bodies & bigger impurities.

ii) Grit Chamber :- To remove inorganic solids like sand, silt etc

iii) Primary settling tank :- organic suspended Particles are settled down.

iv) Biological process :- organic matter is decomposed in the presence of oxygen by microorganisms.

v) Secondary Settling tank :- It removes soluble & colloidal organic matter which remains after primary treatment.

vi) Filteration :- uses filter materials to remove very fine Particles.

vii) Cl_2 mines :- It acts as a disinfectant for the water that is treated.

Q.5) Explain BOD with the help of reaction curve.

Ans) BOD is the measure of the oxygen required to oxidize the organic matter present in the waste water through ..

the action of microorganisms present in the waste water.

The organic matter present in the waste water may belong to two groups:-

i) CBOD:- Carbonaceous BOD of a liquid waste is the amount of oxygen necessary for the microorganisms in the sample waste water to decompose the carbonacious materials. gts the first stage of oxidation.

ii) NBOD:- gn the second stage, the nitrogenous matter is oxidised & the corresponding BOD is known as second stage BOD.