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Subject # waste water engg-

Dep: # Be Civil

Section # 'C'

Semester # 8th

Q No. 1

Ans

Waste water Treatment..

Waste-water treatment consist of applying known technology to improve of upgrade the quality of waste waters

Importents of wastewater

(i) it is Importent to produce an environment Safe fluid waste Stream and a Solid Suitable for disposal or re-use

(2) it is very Importent to provide Some degree of treatment to waste-water before it can be for agricultural or for irrigation

(3) it is Importent to produce an environmentty Safe fluid waste Stream and a Solid waste Suitable for disposal

(4) The major aim of waste water treatment is the removed the suspended solid as possible before the mainly water called effluent is discharge back to the environment.

(5) waste water treatment is fundamental to protect the health of many people of ecosystem.

(6) good waste water treatment allow the maximum amount of water to be re-used instead going to waste

(C) Mostly rectangular tank are preffered over circular tank for rw removed of settleble solids

(i) Rectangular tank require less land than circular tank

(ii) required less head loss for rectangular tank

(iii) the shape of the rectangular clarifies provide a less longer path for

waste water flow and the suspended solids to travel.

(iv) flow distribution (configuration) for rectangular tank require simple and less expansive pipe work lay out while circular require complicated and expensive pipe work.

Q NO. 2

ANS

Aerobic treatment:-

⇒ application.

low to medium Strength waste water (< 1000 ppm) eg. muncipal Sewage etc.

⇒ Capital investment:-

Relatively high

⇒ Energy Consumption:-

Relatively high

⇒ Foot print:-

Relatively large

⇒ post treatment:-

typically directed discharge

⇒ post treatment:-

Net Sludge:-

Relatively high

Anaerobic treatment.

is a biological process where micro-organism degrade organic contaminants in the absence of oxygen.

=> application:-
Medium to high strength wastewater (> 4000 ppm) e.g food and beverage industry of waste water

=> Capital investment:-
Relatively low with pay back

=> Energy consumption,
Relatively low

=> Foot print,
Ratively Small and impact

=> post-treatment:-
Required to full fill wastewater standared discharge requirement.

e.g
Aneroloic digestors, CSTR etc.

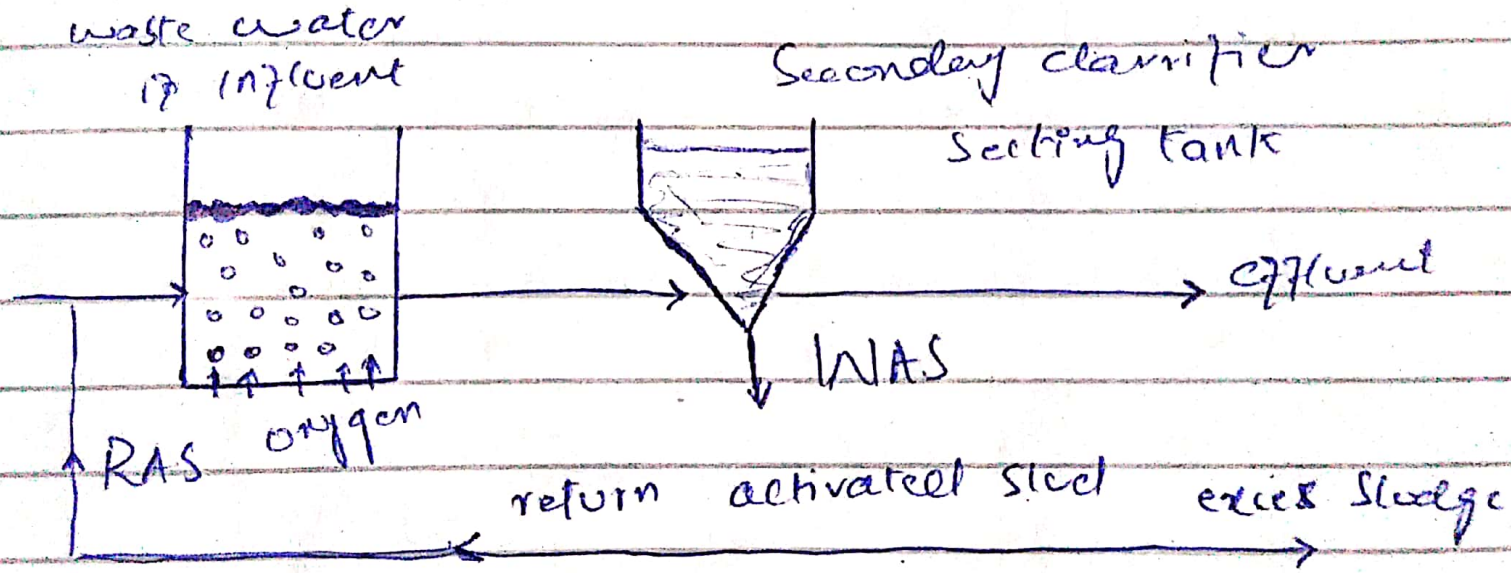
Activated Sludge process

- Microorganism responsible for treatment are maintained in liquid suspension by appropriate mixing methods.
- main Consituents of ASP are aeration tank in which oxygen is provided for the microorganism in suspension.
- Aeration tank is followed by clarifier / Settler in which micro-organism form flocks and settle down at bottom.
- formation of floc particles ranging in size from 50 to 200 Hm removed by gravity settling. leaving relatively clean liquid as treatment effluent.
- A part of settle bio flocs are recycle to the aeration tank to mentain amount of micro-organism in system
- Remaining settle bio flocs are

are removed from the System is termed as (WAS) waste activated sludge

- activated Sludge process involve production of activated mass of micro-organism capable of stabilizing waste under aerobic condition.
- In aeration tank contact time is provided for mixing and aerating influent. generally reffered to mixed liquor Suspension Solid (MLLS)
- typically 99% of Suspended Solid and upto 90% of dissolved organics are removed by activated sludge process.
- The main drawback associated with AS (APS) is high electricity consumption particularly for aeration.

Diagram (ASP)



Q No. 3

ANS

(a) Assimilative Capacity of Recieving Bodies.

The ability of a body of water to cleans itself it capacity to receive waste-water without deleterious effects and without causing damage to aquatic life or humen who consume the water. it is level to which water body or nature control toxicity without affecting the aquatic life.

although waste-water is properly treated before it dispose of the natural water stream still it has impurities / pollutants that need to remove or make them less effective so that the receiving water bodies may not become unsuitable for use or cause to damage the aquatic life.

Q No:(3) (b) Part

(b) Helping waste water by Assimilative capacity

(i) Dilution.

Dilution is the proces of reduction / ~~un~~reducing the concentration of pollutant in reciving water bodies usually simply mixing with more quantity of water

⇒ under this topic we explain Assimulative capacity large quantity of clean water mixed with small quality of waste water so concentration of pollutent are reduce.

(ii) Dispersion.

In Dispersion we explain that reciving water body are more than the Dispersed over water and concentration of pollutant are become less so assimulative help wastewar treatment.

(iii) Level treatment can define as potential for removal of contamination from waste water through various means including

Conclusion:

assimulative capacity of wasle water helps in treatment above way.

=> Sonlight

=> Temperature

=> Flow velocity

Q No. 4

Sludge Handling Process.

=> (1) Primary operations,

(i) it include particle size reduction

(ii) Screening:
it include removal of fibrous material.

(iii) Degritting
removal of sand or other inorganic material

(iv) Blending:
in making sludge homogeneous

(v) Storage,
to ensure equalization in the system.

=> 2 Sludge thickening.

(i) Sludge thickning is unit operation to increase percentage a portion of liquid fraction

iii) volume reduction of approximately 30-80% can be reached with sludge thickning

=> 4 Dewatering.

i) Dewatering is undertaken to reduce the moisture content of sludge

(ii) compared to thermal (Evaporation) for water reduction. mechanical dewatering is often selected due to its low energy requirment

(iii) Centrifugation:-

In this method used for Separating liquids of different densities thickning slow

=> (5) Heat drying

(i) It involve the application of heat to evaporate water and to reduced the moisture content of biosolids

(ii) advantages:-

this method is to reduce product transpo...

(iii) Direct drying:-

Solid come into contact with hot gases which cause evaporation of moisture dryers Such a rotary dryers. and fluidized bed dryers are used.

(iv) Sludge Stabalization.

Instead it remove pathogenic eliminate offensive order minimize production of sugar gas

Methods.

① alkaline Stabilization are

② Anerobic Digestion.

Q No. 5 EIA Definition.

(a) A technique and a process by which information about environment effects of project is collected both by developer and from other sources and taken into account by plaing authorities in forming the the judgment on whether the development should process proceed.

"Simple words"

➤ A formal process to predict the environment consequences of human development activities and to plan appropriate measure to eliminate or reduce adverse effects and enhance positive effects'

D.T.°

(B)

waste water a large number of contimenants. Different parameters have been established from experience and theory to define physical, chemical and biological characteristics. the quality of influents wastewater to a treatment plant well define depend on the source and their activities.

⇒ Biochemical oxygen demand (BOD)

the (BOD) is amount of oxygen consumed to break down the organic matter present in the wastewater. High BOD values are undesirable and would affect the ecological cycle by reducing the normal dissolved oxygen to critical level.

⇒ chemical oxygen demand (COD)

the (COD) is an alternate measure of the amount organic matter. the amount of oxygen used up a strong oxidizing agent is measured.

this value of greater importance when evaluating waste water from industries.

=> Total Suspended Solid (TSS).

TSS is measure to indicate amount by mass of the suspended particles the amount of light to equatic plants and also cause pollution.

=> Total Kjeldahl Nitrogen:

waste water usually contain high level of nitrogen containg compounds the nitrogen exist mostly in free forms. nitrogen organic amonia and reduce nitrogen.