

SUBMITTED TO ENG NADDEM

SUBMITTED BY

HAMAD

SECTION

"B"

SUBJECT

WASTE WATER
ENGINEERING

S. ID

7747

DATE

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ANSWER TO QUESTION # 1

WASTE WATER :

Waste water treatment is process used to remove contaminants from wastewater or sewage and convert it into an effluent that can be returned to the water cycle with minimum impact on the environment, or directly reused.

OR

→ Waste water treatment is a process that convert waste water from its unusable state into an effluent that can be either returned to the water cycle with minimal environment-al issues or reused for another purpose.

→ Waste water treatment also called sewage treatment. the removal of impurities from a wastewater or sewage before they reach aquifer or natural bodies of water such as rivers, lakes, estuaries and oceans.

Since pure water is not found in nature (i.e. outside chemical laboratories) any distinction between clean water and polluted water depends on the type and concentration of impurities formed in the water as well as on its intended use.

* IMPORTANT OF WASTEWATER TREATMENT

Wastewater treatment important is to remove as much of the suspended solids as possible before the remaining water called effluent, is discharged back to the environment. As solid material decays it uses up oxygen, which is needed by the plant and animals living in the water.

→ Essential for life, clean water is one of the most important resources on the planet, wastewater, which is basically used water is also valuable resource, especially with recurring droughts and water shortages.

in many area of the world. however wastewater contain many harmful substances and cannot be released back into the environment until it is treated thus, the importance of wastewater treatment is twofold to restore the water supply and to protect from toxins.

* THE PURPOSE OF USING RECTANGULAR SEDIMENT TANK

We prefer rectangular tank because of following.

- 1) Easy to operate and low maintenance costs.
- 2) Easy adaption to high-rate settlers and tolerant to shock load
- 3) Commonly used in municipal and industrial application
- 4) Suited to large capacity plants.

ANSWER TO QUESTION 2

* AEROBIC WASTEWATER TREATMENT

→ Aerobic process use bacteria that require oxygen so air circulated throughout the treatment tank

→ These aerobic bacteria then break down the waste within the wastewater.

→ Some system utilize a pretreatment stage prior to the main treatment to reduce the chance of clogging the system.

→ Electricity is required for system operation.

ANAREOBIC WASTE WATER TREATMENT

• Aerobic bacteria transform organic matter in the wastewater into biogas that contains large amount of methane gas and carbon dioxide.

• Energy efficient process.

• often used to treat industrial wastewater that contain high level of organic matter in warm temperatures.

• It can be used as a pretreatment prior to aerobic municipal wastewater treatment.

* ACTIVITE SLUDGE PROCESS ::

Process for treating sewage or industrial wastewater using

~~aeration~~ aeration and a biological floc area aeration and composed of bacteria and protozoa.

A biological process that can be used for oxidizing carbonaceous biological matter, oxidizing nitrogenous matter (NH_3 and N_2) removal of nutrients (N and P).

Aeration method - diffused aeration surface aerator (cone) and pure oxygen aeration.

* PROCESS ::

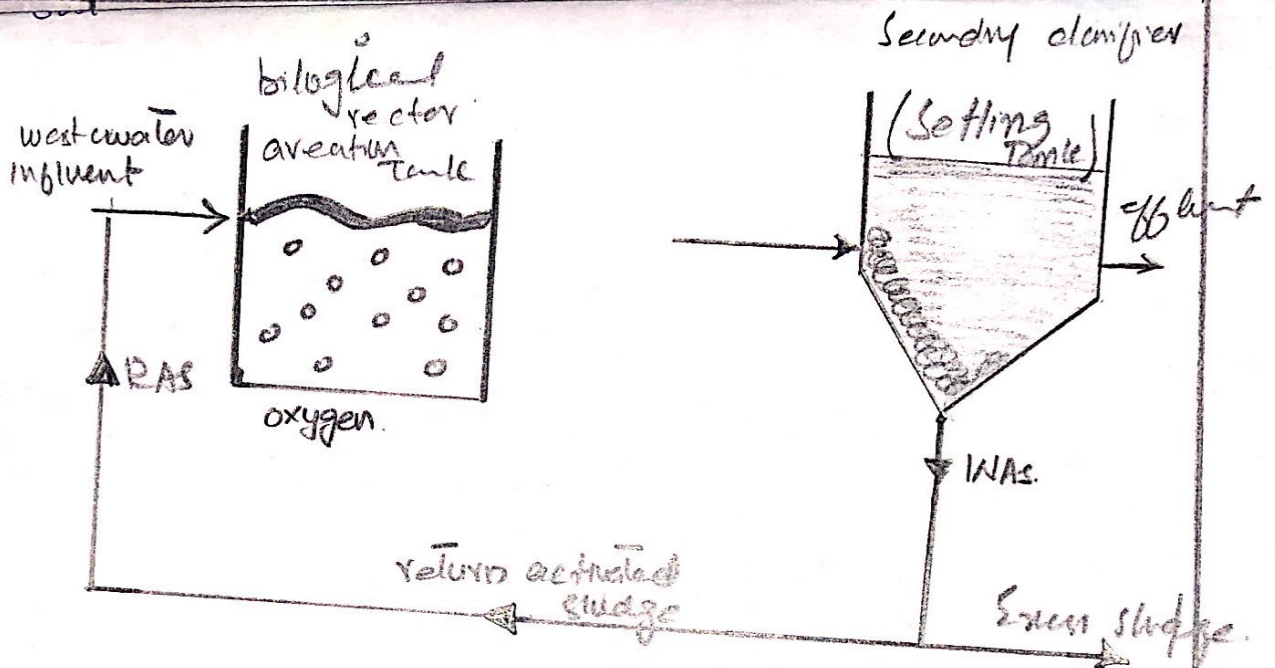
Pre-Treatment stage to remove large solids and other undesirable substances.

Aeration stage where aerobic bacteria digest biological wastes.

Settling stage allows undigested solids to settle form a sludge that must be periodically remove from the system.

Disinfecting stage, where chlorine or similar disinfection is mixed with water to

produce an antiseptic out.



QUESTION : 3

* ASSIMILATIVE CAPACITY OF RECEIVING WATER BODIES

→ The ability of a body of water to cleanse itself. Its capacity to receive wastewaters without deteriorous effect and without causing damage to aquatic life or humans who consume the water. It is level to which water body or nature control the toxicity without affecting the aquatic life.

→ Although wastewater is properly treated before it is disposed of to the natural water streams still it has impurities / pollutants that need to be removed or make them less effective so that the receiving water bodies may not become unsuitable for use or cause to the aquatic life.

* ASSUMPTIVE CAPACITY HELPS IN WASTEWATER TREATMENT ARE :

Follow are the factor which

help in assimilative water capacity.

- Sunlight
- Dispersion
- Dilution
- Temperature
- Depth of flowing water.

* **Sunlight**: Sunlight facilitates biological decomposition of pollutants and kills pathogens by UV.

* **Dispersion**: Dispersion is the distribution of pollutants in relatively large area of water. Dilution and dispersion are interrelated.

* **TEMPERATURE**: Temperature play important role in assimilative capacity of receiving water. temperature increase the organic decomposer.

QUESTION : 4

ANSWER

* SLUDGE MANAGEMENT :

Sludge refers to the residual, semi-solid material left from municipal waste-water or industrial waste-water treatment processes.

Sustainable sludge handling/Managing may be defined as a socially acceptable, cost-effective method that meets the requirement of efficient recycling of resource while ensuring that harmful substances are not transferred to human or the environment. i.e. water, air or soil.

* ADVANTAGES :

Advantages of sludge handling/Managing in waste-water engineering.

→ As wastewater engineering is directly related to environment sludge management is approach toward a better environment.

→ Residual waste from hospitals, research facilities and other industrial can be hazardous to our health and the environment. These harmful elements may require thermal treatment to control the spread of diseases or toxins. Sewage sludge incineration reduces volume (up to 90%) and weight (up to 75%) and break down dangerous substance such as pathogen and toxic chemicals. Flue gases from exhaust a complex pipes must be handled properly by utilizing a complex treatment system to prevent hazardous emission and ashes from contaminating the environment.

→ Due to excess of new problem in sludge management every year new techniques and professional experts are emerges in waste water engineering industry to face the challenge and finding the solutions.

QUESTION # 5
ANSWER

* **DEFINITION EIA :**

An environmental study comprising collection of data, prediction of qualitative and quantitative impact of preventive mitigatory and compensatory measures, formulation of environmental management and training plans and monitoring arrangements and forming of recommendation and such forming of recommendation and such component as may be prescribed.

→ A formal process to predict the environmental consequences of human development activities and to plan appropriate measures to eliminate or reduce adverse effect and to enhance positive effect.

→ The following consideration should keep in mind while conducting EIA for the newly proposed waste water treatment plant.

→ Environmental Dangers should be minimum such as do not affect water body, greenery and energy consumption which effect the environment should be controlled. Environmental Benefits should be maximum and water life should be protected. Ensure that Development is according to (NEQs) The project should not conflict with Govt policies.

→ International obligators should be strictly followed.

→ Most of treatment plant have primary treatment and secondary treatment. Some other treatment plant have tertiary treatment. option the purpose of tertiary treatment.