

SUBMITTED TO

ENGR NADEEM

SUBMITTED BY

MOHAMMAD

HUSSAIN

STUDENT ID

7739

SECTION

'B'

SUBJECT

WASTE WATER

ENGINEERING.

Q no 1:

Answer.

Waste Water Treatment.

Wastewater treatment is a 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.

⇒ Wastewater treatment is a process that converts wastewater from its unusable state into an effluent that can be either returned to the water cycle with minimal environmental issues or reused for another purpose.

⇒ Wastewater treatment, also called Sewage treatment.

The removal of impurities from a wastewater or sewage before they reach a aquifers or natural bodies of water such as rivers, lake, 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 found in the water as well as on its intended use.

Importance of wastewater

treatment:

Wastewater treatment importance 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 use 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 a valuable resource, especially with recurring droughts and water storage shortages in many areas of the world. However, wastewater contains 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 tanks.

We prefer rectangular tanks because of the following.

1) Easy to operate and low maintenance costs.

2) Easy adaptation to high-rate
setters and tolerant to shock load.

3) Commonly used in municipal and
industrial applications.

4) Suited to large capacity plants.

Qno: 13009

Answer:

AEROBIC WASTEWATER

TREATMENT

- ⇒ Aerobic process use bacteria that require oxygen, so air circulated throughout the treatment tank.
- ⇒ These aerobic bacteria then breakdown 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.

ANAEROBIC WASTEWATER

TREATMENT.

- ⇒ Anaerobic 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 pretreated prior to aerobic municipal wastewater treatment.

ACTIVATED

SLUDGE

PROCESS

→ process for treating sewage or industrial wastewaters using aeration and biological floc 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 dissolved aeration surface aeration (cones) and pure oxygen aeration.

Process:

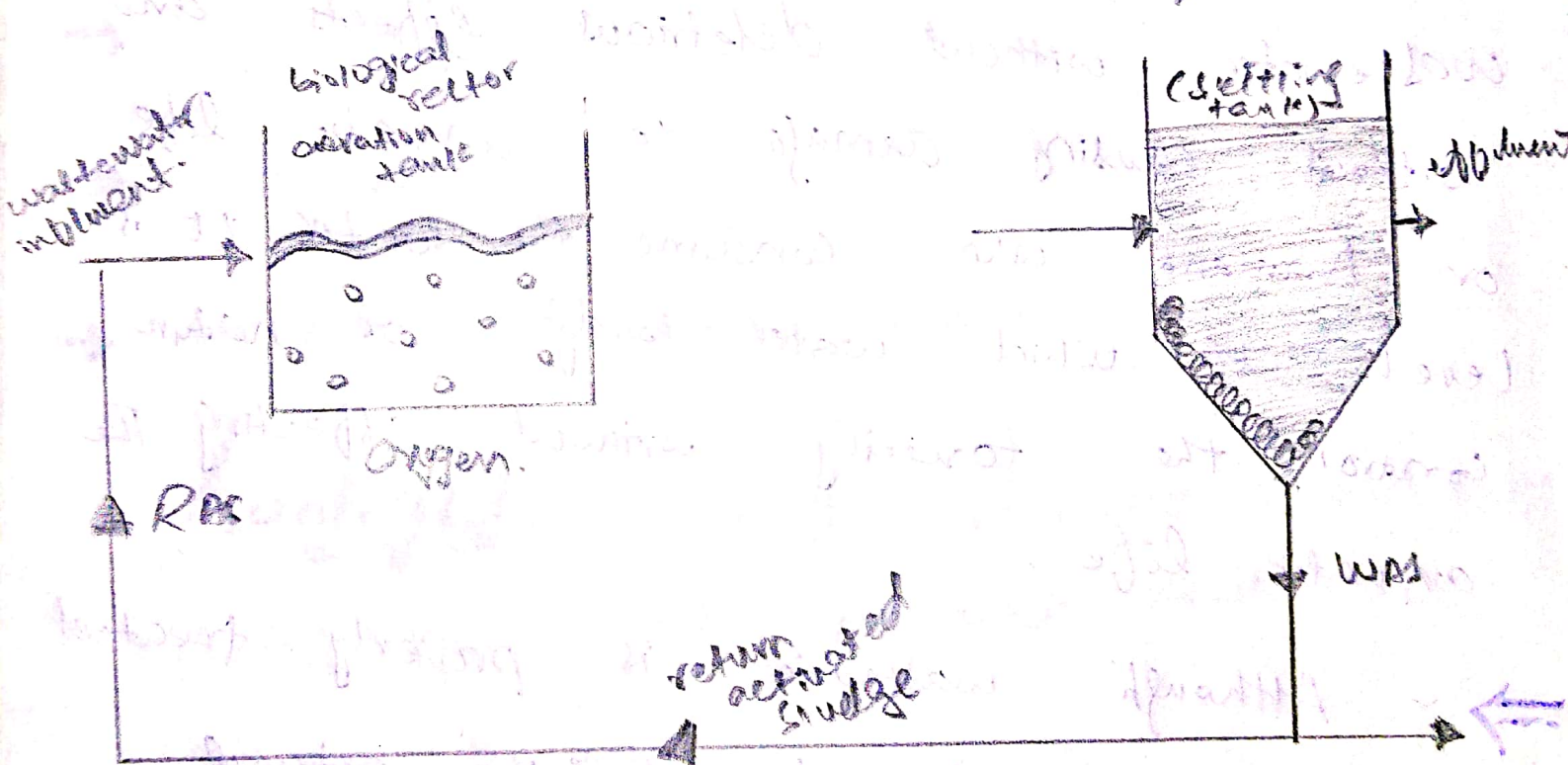
⇒ Pre-treatment stage to remove large solids and other undesirable substances.

⇒ Aeration stage - where aerobic bacteria digest biological waste.

Settling stage allows undigested solids to settle form a sludge;

that must be periodically removed from the system.

Disinfecting stage, where chlorine or similar disinfectant is mixed with water to produce an antiseptic out-put.



Qno 3.

Answer:

ASSIMILATIVE CAPACITY OF RECEIVING BODIES:

⇒ The ability of a body of water to cleanse itself, its capacity to receive wastewater without deleterious effects 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 stream still it has impurities/pollutants that need to be removed or make them less effective so that the receiving water bodies may not become ^{suitable} ~~unsuitable~~ for use or cause damage to the aquatic life.

ASSUMULATIVE CAPACITY HELPS IN WASTEWATER TREATMENT ARE.

Follow are the factors which helps in assumulative water capacity

- Sunlight
- dispersion
- Dilution
- Temperature
- depth of flowing water.

Sunlight: Sunlight facilitates biological decomposition of pollutants and kill 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 assumulative capacity of water. Temperature increases the organic decomposes.

Q no 4:

Answer:

SLUDGE MANAGEMENT:

Sludge management is most difficult and challenging task of wastewater treatment plant due to its high water content and poor dewatering and strict regulation for sludge reuse or disposal.

One of the recent goal of wastewater treatment plant is to develop more environmentally friendly processes to reduce the volume of sludge for disposal and to convert sludge into bioenergy.

Energy recovery of the sludge into biogas, syngas and bio-oil which can be further converted into electricity mechanical energy and heat.

⇒ Sludge Refers to the residual material left from municipal wastewater; or industrial waste-water treatment process.

Managing of Sludge :

Sustainable sludge handling / managing

may be define as.

A socially acceptable, cost-effective method that meets the requirements of efficient recycling of sources while ensuring that harmful substances are not transferred to humans or environment.

ADVANTAGES:

⇒ As environment engineering directly related to environment sludge management is approach towards better environment.

⇒ Residual waste from industries, hospital, research facilities can be hazardous to our health and environment. These should be manage properly because it spread diseases.

⇒ Sewage sludge incineration. reduce volume and weight and break down harmful substances.

⇒ Due to effects of these problems in sludge management every year new techniques and professional care emerges in waste water engineering industries to face the challenges and bringing the solution.

Qno: 5

Answer:

DEF: An Environmental Study comprising collection of data, prediction of qualitative and quantitative impact, comparison of alternatives, evaluation of preventive, mitigatory and compensatory measures, formulation of environmental management and training plans and monitoring arrangements and framing of recommendation and such other component as may be prescribed

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

→ The following are consideration should keep in mind while conducting EIA for newly proposed wastewater treatment plants

- Environmental damage should be minimum such as do not effect water body greenery and energy consumption which effect environment should be controlled.
- Environmental benefits should be maximum and water life should be controlled.
- Ensure that development is according to (NEQS).
- The project should be not conflict with Govt Policies.
- International obligations 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 to provide a final treatment stage to raise the effluent quality before it is discharged to receiving environment.

⇒ More than one treatment process
may be used at any treatment
plant.

