Q No (01)

Ans Waste Water Treatment:~

Waste water treatment consists of applying known technology to improve or upgrade the quality of a wastewater. Waste water treatmant involves collecting the wastewater in a centralized or decentralized location (waste wate treatment plant) and subjecting the wastewater to various treatment Processes.

★ Importance:~

The principal objective of wastewater treatment is generally in allow human and industrial effluents to be disposed off without causing danger to human health or unacceptable damage to the natural environment.

→ Wastewater if properly treated, is an important resource and can be used for various purposes including irrigation, lawn watering, car washing, flushing toilets and landscaping etc.

→ Waste water treatment can also generate biogas as final product which is potential source of energy.

★ Rectangular Tanks are preferred:~

Rectangular clarifies typically requires less land than circular clarifies for a similar surface area. The reduction becomes even more significant in a multiple

Unit design, where common concrete walls are used between rectangular basins. The resulting land availability is a major advantage for treatment plant layout. Construction cost is also reduced as a result of the common concrete walls.

The even flow distribution configuration for rectangular clarifies requires simpler and less expensive pipe work layout and pumping requirements as compared to circular clarifies where the pipes require a more complicated layout pattern and perhaps a seperate pumping station as well.

Q.No(03)

Ans Assimilative capacity :~

Assimilative capacity of receiving water bodies refers to the ability of a body of water to cleanse itself; its capacity to receive wastewaters 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 streams still it has impurities / pollutants that need to removed or make them less effective so that the receiving water bodies may not become unsuitable for use or cause damage to the aquatic life.

* Assimilative capacity help in wastewater treatment :~

(1) Dilution :~

Dilution is the process of reducing the concentration of pollutants in receiving water, usually simply by mixing with more quantity of water.

(2) Dispersion :~

Dispersion is the distribution of pollutants in relatively large area of water. Dillution and dispersion are inter related.

(3) Sunlight :~

Sunlight facilitates biological decomposition of pollutants and kills pathogens by ultravoilet radiation(UV)

(4) Temperature :~

Temperature plays an important role in assimilative capacity of receiving water. Increase in temperature will increase the biological decomposition of organics and thus assimilative capacity will improve. Increase in temperature also causes to increase the dillution process and thus increases the assimilative capacity.

(5) Flow velocity :~

Flow velocity is also critical to assimilative capacity of receiving water bodies. Higher the flow velocity will encourage quick dilution and dispersion of pollutants.

Q. No(04)

Ans Sludge Management :~

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

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

★ Advantages of sludge handling/manging in wastewater engineering :~

1) AS wastewater engineering is directly related to environment sludge management is approach towards a better environment.

2) Residual wastes from hospitals, research facilities and other industries 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 breaks down dangerous substances such as pathogens and toxic chemicals. Flue gases from exhaust pipes must be handled properly by utilizing a complex treatment system to prevent hazardous emissions and ashes from ~~contain~~ contaminating the environment.

(3) Due to excess of new problems in sludge management every year new techniques and professional/experts are emerges in wastewate engineering industry to face the challenges and finding the solutions.

Q.No(05)

Ans EIA is an environmental study comprising collection of data, predication of qualitative and quantitative impacts, comparison of alternatives impacts evaluation of preventive, migratory and compensatory measures, formulation of environmental management and training plans and monitoring arrangements, and framing of recommendations and such other components as may be prescribed. (Pakistan Environmental Protection Act, 1997)

Or

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

The following consideration should keep in mind while conducting EIA For the newly proposed wastewater treatment plant. Environmental Damages should be minimum such as do not affect water body greenery and energy consumption the environment should be controlled.

Environmental Benefits should be maximum and water life should be protected.

Ensure that Development is according to: National Quality standards (NEQs)

The project should not conflict with Govt. Policies

International obligations should be strictly forwarded.

Most treatment plants have primary treatment (Physical removal of floatable and settleable solids) and secondary treatment (the biological removal of dissolved solids). Some other treatment plants have tertiary treatment option. The purpose of tertiary treatment is to provide a final treatment stage to raise to effluent quality before it is discharged to the receiving environment (sea, river, lake, ground, etc.). More than one treatment process may be used at any treatment plant.

Q.No(02)

Ans Aerobic Wastewater Treatment:-

The waste water treatment process which use bacteria that require oxygen, so that the air is circulated throughout the treatment tank, such type of treatment is known as aerobic waste water treatment.

With the help of these aerobic bacteria, the waste within the wastewater is broken down.

Some of wastewater treatment plants utilize a pretreatment to reduce the chance of clogging the system.

Electricity is also required for the operation of system.

The process of wastewater treatment in which Anearobic bacteria transforms organic matter in the wastewater in to figas that contains large amounts of methane gas & carbon dioxide is called Anaerobic wastewater treatment..