SYED JAWWAD

7386

WASTE WATER

Water waste Treatment Importance:-

It has a lot of Importance.

Potential source of Energy:-

In the waste-water treatment process, the generation of Biogas takes place as a final product. It is a potential source of energy. It can be used as a fertilizer, source of heat or electricity etc.

A resource:-

If Waste water can actually became a big resource. We would be able to use it at many places like for flushing of toilets, watering of plants and lawns, washing of cars, roads etc.

Beneficial for Irrigations.-

Waste water treatment would be able to help in irrigation so it is beneficial for irrigational countries like Pakistan.

Need for Environment & Mother Land/Earth:-

By opting for waste water treatment we can take care of environment and can also Protect our Mother Land and Earth.

Privilege for Human Beings:-

Waste-Water Treatment gives privilege or freedom to human beings, of using water as much as they need to and to drain it without thinking much about the environment's safety.

Question No. 1

Rectangular tanks are preferred over circular tanks for removal of settleable solids during preliminary treatment because rectangular tanks are right choice for it and they are especially designed in a way that slow down the flow of water. They are long and narrow. The design makes the solids settle out of water.

Question No. 2

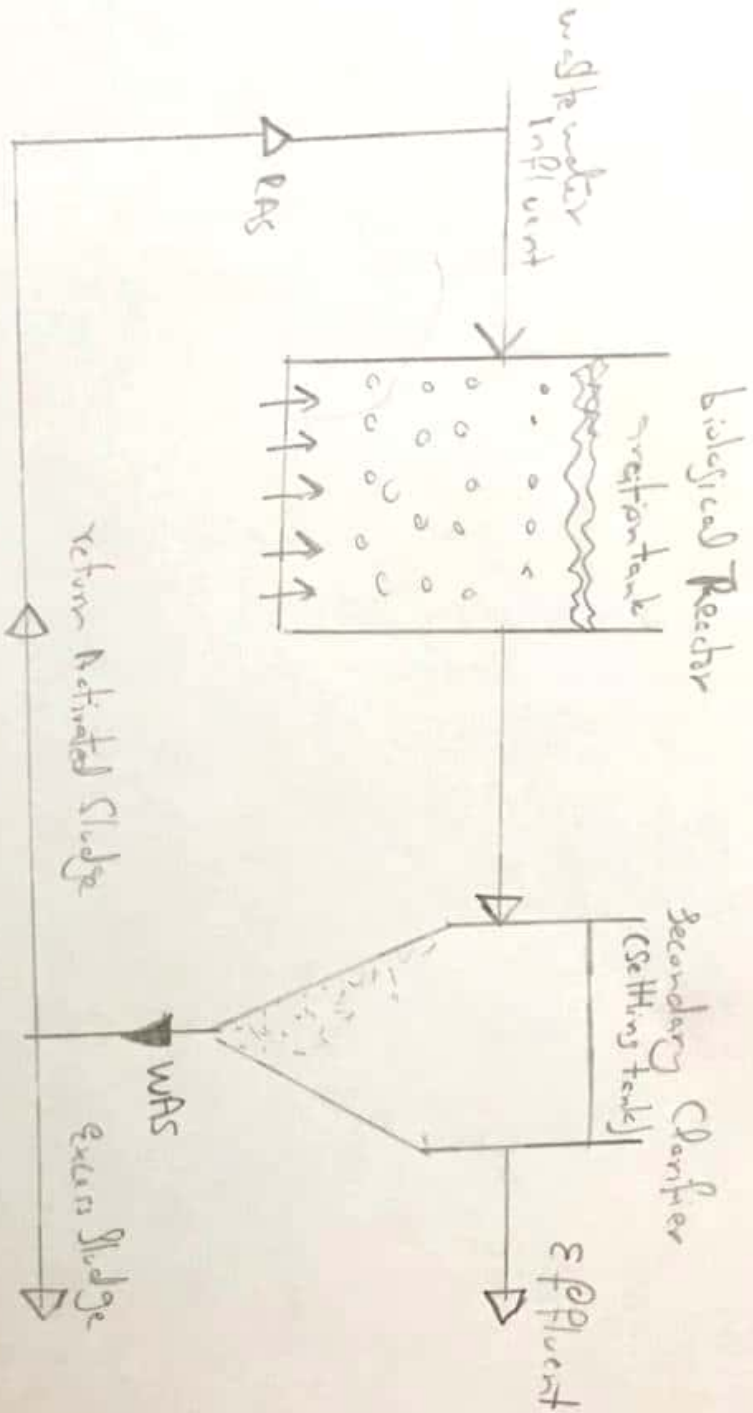
(4)

Aerobic Waste-Water Treatment	An-aerobic Waste-Water Treatment
• In this treatment there is involvement or presence of oxygen, types of microbes	• There is no presence or involvement of oxygen, types of microbes
• This is done for low to medium strength wastewater	• This is done for Medium to high strength waste-water.
• The technology involved in it is Activated Sludge Process (ASP) and many more.	• The technology involved in it is Anaerobic Digestors and many more.
• High or more energy is consumed in this process.	• less energy is consumed in this process.
• There is more investment required for it.	• There is less investment required for it.

Question No. 2

(5)

Activated Sludge Process:-



Activated Sludge Process:-

In a liquid suspension we keep the micro-organisms, which are focal in the treatment through different blending methods. There are two important components of this process which are:-

1. Aeration tank=
2. Setting tank / Clarifier=

Aeration Tank:- It provides oxygen for micro-organisms growth and also helps them in being in the liquid suspension. Also there is contact time given ~~to~~ influent wastewater and microbial liquid suspension, for mixing and supplying oxygen, known as Mixed liquor suspended solids (MLSS).

Setting Tank / Clarifiers:- It comes after aeration tanks and this micro organisms form flocs and are settled down at the end. They are sided by gravity and clear liquid is left behind and it is known as effluent.

Recycle Activated (RAS): Sludge

It's a process in which the floc made by micro-organisms are sent to aeration tank from settling tank to maintain the quantity of microbes in aeration tank for its proper and efficient functioning and initiation of system.

Wasted Activated Sludge (WAS):

In a settling system, the floc of microbes is settled down ~~by gravity~~ Same is sent back to aeration system and the ones which are left are removed from system. This is called Wasted Activated Sludge.

Drawback of Activated Sludge Process:-

Overall APS system is beneficial because it removes around 90% of dissolved organics and 99% of suspended solids but in aeration tank electricity is consumpted more which is it's drawback.

Question No. 3

Assimilative capacity of recieving water bodies means ~~for~~ refers to the natural property of water. Water has the ability to purify itself, even after mixing up with wastewater. Water, itself controls it's toxic level, and doesn't get harmful fr. the aquatic life and for those who consume it. It's also about ~~this~~ capability or capacitance of recieving waste waters, however without harmful effects. ~~or any~~ The priority is a lot given to aquatic life. There should not be anything affecting it and also those human beings who consume it like maraine animals.

Question No. 4 (10)

Sludge:- It is the left over substance usually consists of semi-solid and solid materials like mud, ~~waste~~ water etc from waste water or industrial waste.

Sludge Management:- It is managed through various processes which are

1. Heat Drying
2. Dewatering
3. Thickening
4. Stabilization
5. Primary operations

(These methods are budget friendly, effective for recycling, socially acceptable and are safe for humans and environment).

- Heat Drying:- It is a process in which heat is given so that the fluid present in the sludge is evaporated, so that the content of moisture is reduced.
- Dewatering:- It's main purpose is also reduction of moisture content. Also centrifugation method is involved to separate liquids with

different densities.

- Thickening:- The main purpose of this process is to focus on uplifting the percentage of solid content in sludge, and that is done by liquid fraction. Also different methods like Gravity, floating and Rotatory drum is used.
- Stabilization:- This process involves Reduction of pathogens, methanes production and odors. We do it by two different methods known as Alkaline and Anaerobic.
- Primary Operations:- It includes five processes known as:-

1. Degriting:- It works on eliminating inorganic materials.
2. Blending:- It helps in making sludge homogeneous.
3. Storage:- It works on the equall distribution of flow in the system.
4. Grinding:- It focuses on size of particles. It reduces them.
5. Screening:- It eliminates fibrous materials.

Question No. 4 (12)

Advantages of sludge management in waste water engineering:-

1. There would be more freedom for or space waste water treatment as there would be less burden because ~~of~~ the distribution for purification of water is divided equally on both the processes.

2. The quality of waste or usable water would get more better and better as it is going through double processes.

3. Both processes are eco and budget friendly. They are also efficient recyling processes. So they both wouldnt cause any harm to each other in terms of environment especially. That is an advantage for waste water engineering.

Question No. 5

Environmental Impact Assessment (EIA)=
It's purpose is development, advancement ~~in~~ economically. It's for bringing the positive change or outcome. It is focusing on welfare of human beings. It's also about reducing the adverse affects. It also highlights sustainability which refers to fulfilling needs of generations without much compromise, in an economic way. It has turn out to be an important factor in managing and planning of development. It also believes in uplifting of positive environmental effects. It helps projects with long term viability and cost. It is basically a process of identifying, analysing, reducing, and predicting biological, physical and social and other effects of development proposals before decision are made.

Question No. 5 (14)

In my opinion, the parameters should be considered while conducting EIA for newly proposed wastewater treatment are

1. Participation:- The participation of all respectives parties involved should be done timely, for process

2. Certainity:- Participants should be on same page during the process and timing of assessment

3. Transparency:- The decisions ~~made~~ of assessment should be transparent.

4. Accountability:- The decision makers would be accountable to everybody for their decisions

5. Credibility:- While doing the assessment, there should be professionalism maintained and also objectivity should be focused.

6. Flexibility:- There should be quick decision making in the proposal

7. Practicality:- The assessment process results should be beneficial in planning and making of decisions.

8. Cost Effectiveness:- The process should give priority to safety of environment and also in less cost.

Question No. 1

Water Waste Treatment:- It is basically about the process of making usable water re-usable by improving the quality of water through implication of Technology.

It includes collection of water in a Waste-Water Treatment Plant and making it to go through different processes of Treatment. As it is about making the quality of water better, firstly the removal of solids, organic mater etc is done.

Waste water treatment involves three major Processes which are physical, biological and chemical.

Waste water treatment includes four important processes of treatment which awares about their degree of treatment and they are set up in an increasing level manner. They are

1. Preliminary Treatment
2. Primary Treatment
3. Secondary Treatment
4. Tertiary / Advanced Treatment

Lastly there is also focus on disinfection of Pathogen