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Sec A

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Subject waste water
Engineering.

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Assignment = One (A)

Ans
1

Hydraulic Retention time:-

The HRT in waste water treatment plant is a measure at an average length of time holding the waste water in a tank.

The waste water treatment plant is mainly designed to handle the waste water at normal load and also during shock loads. The waste water is retained in different treatment units at particular time to achieve the desired parameters.

For example if we assume the HRT is 5 days and the total volume of the reactor is 500 MLD then the per day influent feeding amount is 100 MLD.

The HRT is decided by the reaction rate of the specific process or unit under the specific conditions.

Solid Retention Time:-

The solid Retention time is the average time the activated sludge solids are in the system.

SRT controls the concentrations of bacteria throughout the treatment system. A higher SRT contributes to higher bacterial concentration in the reactor which give rises to Reduced sludge production.

2 Methods used for decoupling SRT from HRT.

MBR's method can be used to decouple SRT from hydraulic Retention time.

Recuperative thickening also called Torpey's process are used to decouple SRT from HRT. it recycles active biomass and increases solids residence time without increasing the size.

Anaerobic digestion is the traditional method used to decouple SRT from HRT.

3 What are the advantages of decoupling SRT from HRT? We know that by decoupling of SRT from HRT in ~~the~~ biohydrogen production systems validated the promise of using

a gravity settler after
a CSTR.

The decoupling of SRT from HRT
not only increased glucose conversion
from 29-50% in the CSTR to 99.9%
in the IBRCS, but also volumetric
hydrogen production from 0.55-1.8
in the CSTR to 2.4-9.6

Decoupling of SRT from HRT to
ensure sufficient reactor biomass

By decoupling SRT from HRT,
the liquid waste water can be
processed faster

To achieve the necessary biomass
retention to degrade organic
pollutant, SRT is decoupled from
HRT.