

IQRA NATIONAL
UNIVERSITY

**WASTEWATER
ENGINEERING**

MID TERM EXAM

ID : 7724

SECTION : A

MODULE : 8th SEMESTER



(Q -1) What is wastewater engineering? Briefly describe it's application in safeguarding the environment?

(ANS) : Wastewater is the combination of liquid and water-transported wastes from homes , commercial buildings , industrial facilities , and institutions , along with any groundwater infiltration and surface water and stormwater inflow that may enter the sewer system.

APPLICATIONS :

- (1) By disposing off treated wastewater in order to reduce ground water contamination and protect aquatic life.
- (2) Wastewater Engineering deals with the management of wastewater and its treatment to reuse it for various purposes.
- (3) The recovery of sewage is an effective means of saving water resources and promoting the reuse of water resources.

It is an important measure to reduce the pollution of sewage and protect the environment.

(4) Primary objective of wastewater engineering is to provide a good sanitary environmental condition in a city .

(Q-2) Briefly describe the relationship of wastewater generation with water supply of a locality?

(Ans) : The relationship of wastewater generation with water supply of a locality is that ;



In situations where wastewater flow rate data are limited or unavailable wastewater flow rate estimate have to be developed from water consumption records in other information.


+ About 60-85% of supplied water per capita becomes wastewater.

+ Simply wastewater generated is dependant on supplied water. As increase, the waste water will be more.

 (Q3) : ***What is the importance of wastewater characterization?***

(ANS) : : A characterization of wastewater provide a wide velocity of information regarding the type and concentration of contamination present.


With characterization of wastewater , we determine the nature of contaminants (Physical, Chemical, and then design wastewater treatment plant according to the nature of contaminants.

 ***(Q-4) : Enlist physical, chemical and biological characteristics of wastewater?***

(ANS) : Characteristics Of Wastewater are as follow :

- (1) Physical Characteristics :** Turbidity , Color , Odor , Total Solids and Temperature .
- (2) Chemical Characteristics :** Chemical Oxygen Demand (COD) , Total Organic Carbon (TOC) , Nitrogen , Phosphorus , Chlorides , Sulphates Alkalinity , pH , Heavy metals , Trace Elements and Priority Pollutants.
- (3) Biological Characteristics :** Biological Oxygen Demand (BOD) , Oxygen

required for nitrification , and
Microbial population.

 ***(Q-5) : What are the advantages and disadvantages of combine and separate sewerage system? Which sewerage system will you recommend for a new proposed township Support your answer with justification ?***

(ANS) : Combine Sewerage System :
ADVANTAGES :

- (1) Both domestic sewage and storm water are carried in a single sewer, so construction cost is less.
- (2) The strength of domestic sewage is reduced because of dilution of storm water.
- (3) The sewers are of large size, and therefore the chances of their chocking are rare. It is easy to clean them.
- (4) In towns with narrow streets, this system is preferred.

Disadvantages :

- (1) Initial cost is high because of large dimensions of sewers.
- (2) Because of large size of sewer, their handling and transportation is difficult.

- (3) Due to the inclusion of storm water, the load on the treatment plant increases and ultimately increases treatment costs. (4) During heavy rain the sewer may be overflow and may thus create unhygienic conditions.
- (5) If the whole sewage is to be disposed off by pumping it is uneconomical.

Separate Sewerage System :

Advantages :

- (1) Size of sewers is generally less.
- (2) Since the sanitary sewage and storm water flows in a

separate pipes, the quantity of sewage to be treated is less.

(3) As the sewer are smaller in section, they can be easily ventilated.

(4) Rain water can be discharged in to the streams or can be reused / recycled without any treatment.

DISADVANTAGES :

(1) Since the sewers are of smaller size, it is difficult to clean them.

(2) They are likely to get chocked / blocked.

(3) Initial cost is high, when two separate sets are used.

(4) Maintenance cost of system is also high.

Justificatio

n :

I will propose combined sewage system for a new township because both domestic sewage and sewage water are carried in a single sewer so construction cost is less and sewer are of large size so they are easy to clean.

END OF

PAPER