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Iqba National University Peshawar

Name Waqar Ul Mulk

ID 7727

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Department BE (civil)

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Question # 1

What is Waste Water Engineering ?

Briefly describe its application in Safeguarding the environment ?

Answer ;

It is the application of engineering method to improve sanitation of human communities, Primarily by providing the removal and disposal of human waste, treatment and reuse application for various purposes.

Waste Water engineering is also known as Sanitary engineering or Public health engineering.

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Applications ;

(1) By disposing off treated wastewater in order to reduce ground water contamination and protect aquatic life.

(2) Waste Water engineering deals with the managing of waste water 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

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the environment.

(4) Primary objective of wastewater

engineering is to provide a good

sanitary environmental condition in

a city.

Question # 2

Briefly describe the relationship of

wastewater generation with water

supply of a locality?

Answer :

In a situation where wastewater

flow rate data are limited or

unavailable, wastewater flow rate

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estimated have to be developed from
Water consumption records in
other information.

About 60-85% of supplied
Water per capita become wastewater.

Simply wastewater generated
is dependent on supplied water
as the supplied water increased
the rate of waste water will
be more.

Question # 3

What is the importance of Waste Water characterization?

Answer ;

The importance of Waste Water characterization is to know about physical, chemical and biological characteristics of Waste Water because due to this importance we know that, it will be in hard form and suspended solids are present in it. The importance of chemical characterization is we know that chemical are present in Waste Water which are mostly come out.

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from industries and to treat that as they are. From biological characterization we know that water has bacteria present in it.

Question # 4

Enlist physical, chemical and biological characteristics of wastewater?

Answer ;

(i) Physical characteristics ;

(ii) Colour (iii) Taste and odour

(iiii) Turbidity (iv) Temperature

(v) Density (vi) Specific gravity.

(2) Chemical Characteristics ;

- (i) Hardness
- (ii) Sulphates
- (iii) Organic matter
- (iv) 'PH' value
- (v) Toxics
- (vi) Fats, oils, Greases
- (vii) Dissolved oxygen
- (viii) Chlorides content
- (ix) Sulphides
- (x) Nitrogen content
- (xi) Hydrogen gas
- (xii) PRIORITY pollutants.
- (xiii) Trace elements .

(3) Biological Characteristics ;

- (i) Biological oxygen demand
- (ii) Bacteria
- (iii) Fungi
- (iv) Algae
- (v) Protozoa
- (vi) Viruses
- (vii) Pathogenic micro-organisms groups .

Question # 5

What are the advantages and disadvantages of combined and separate Sewerage system? Which Sewerage system will you recommend for a new proposed township. Support your answer with justification?

Answer ;

Combined Sewerage system ;

Advantages	Disadvantages
(i) Convenience minimal Intervention by users.	(i) Because of large dimensions of sewers,
(ii) Low health risk.	Initial cost is high.
(iii) More suitable in narrow streets.	(ii) Need a reliable supply of piped water.

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(iv) No nuisance from Smells, Mosquitoes or flies in high density areas.

flies.

(v) Storm Water and Waste Water can be

managed at the same time.

(vi) Moderate operation and maintenance cost.

(vii) The strength of domestic sewage is reduced because of dilution of storm water.

(iii) Difficult to construct

(iv) Recycling of nutrients

and energy becomes difficult

(v) Problem associated

with blockages and

breakdown of pumping

equipment.

(vi) High treatment

cost due to inclusion

of storm water.

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Separate Sewerage System ;

Advantages

(i) Size of Sewers requires less.

(ii) Less treatment

Cost because of Ex-clusion of storm Water.

(iii) As the Sewer are similar in section they can be easily ventilated.

(iv) Rain Water can be discharged into streams without any treatment.

Disadvantages

(i) They are likely to get blocked.

(ii) This system requires laying two sets of pipe which may be difficult in congested areas.

(iii) Initial cost is high because two separate sets are used.

(iv) Maintenance cost of sewer is also high.

Question # 5 Part (B)

For a new proposed township I will suggest separate sewerage system, because our main purpose in waste water engineering is the treatment of waste water.

Justification ;

(i) In separate sewerage system sanitary sewage and storm water flows in a separate pipes, Thus quantity of sewage to be treated is less and easy, as compared to combined sewerage system.

(ii) In separate sewerage system we also avoid the over

flow of storm water.

(iii) Less degree of Sanitation is achieved in Sepexate Sewerage System.