A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 99910

B.E./B.Tech. DEGREE EXAMINATION, NOV 2022

Elective

Chemical Engineering

19UCH910 - WASTE WATER TREATMENT& RECYCLING

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The surface water quality is affected by _____ and infiltration from rainfall. CO1- U

   (a) Precipitation (b) Run off (c) Wetlands (d) Farming

2. _____ are constructed for water supply, electricity generation, recreation, irrigation and others. CO1- U

   (a) Swimming pools (b) Ponds (c) Reservoirs (d) Tanks

3. Which of the following requires aesthetically pleasant water? CO1- U

   (a) Domestic use (b) Industrial use (c) Irrigation (d) Aquaculture

4. What is the type of pollution where the pollutants reach the water body in points called? CO1- U

   (a) Point-source pollution (b) Diffuse pollution

   (c) Point-source contamination (d) Diffuse contamination

5. What is the amount of solids released into wastewater by human beings? CO1- U

   (a) 30 gpcd (b) 40 gpcd (c) 60 gpcd (d) 70 gpcd

6. What is the term used for reuse of sewage sludge? CO1- U

   (a) Compost (b) Solids (c) Biosolids (d) Sludge

7. _____ Devices remove materials which would damage equipment or interfere with a process. CO1- U

   (a) Grit (b) Screening (c) Oxidation (d) Reduction

8. What is the percentage of dry solids assumed for the sludge at the outlet of a centrifuge? CO1- U

(a) 10-15% (b) 1-3% (c) 4-8% (d) 9-12%

9. In rotating biological contractors, what percent of corrugated plastic discs are submerged? CO1- U

(a) 20 (b) 50 (c) 80 (d) 40

10. What is the intermediate zone composed of in aerobic-anaerobic ponds? CO1- U

(a) Algae (b) Aerobic bacteria (c) Facultative bacteria (d) Organic solids

PART – B (5 x 2= 10 Marks)

11. List out the examples of Industrial waste. CO1- U

12. List out any three physical unit operation with application. CO1- U

13. What are the various advance treatment for waste water. CO1- U

14. Define Sludge Stabilization. CO1- U

15. Define Non- ideal flow reactors CO1- U

PART – C (5 x 16= 80 Marks)

16. (a) Explain about E-waste in detail. CO1- U (16)

Or

(b) Explain about Agricultural-waste in detail. CO1- U (16)

17. (a) Sketch the typical waste water treatment plant with the principle of Coagulation and Precipitation. CO1- U (16)

Or

(b) Sketch the typical waste water treatment plant with the working of RBC. CO1- U (16)

18. (a) Illustrate in detail about technology in advance waste water treatment. CO3- Ana (16)

Or

(b) Illustrate in detail about SBR. CO1- U (16)

19. (a) Sketch out the sludge treatment plant. CO2- App (16)

Or

(b) Write short notes on ASP & Trickling Filter. CO2- App (16)

20.	(a)	Explain the various components of waste water flows.	CO1- U	(16)
		Or		
	(b)	Explain the different types of reactor used in waste water treatment.	CO5- U	(16)