Name of Examination :B.E. CONSTRUCTION ENGINEERING FOURTH YEAR SECOND SEMESTER - 2022

Sub: ADVANCED ENVIRONMENTAL ENGINEERING(HONS.)   Marks: 42

Part-I

3+3+3=9

1. What do you mean by environment? What is pollution? Can any/all element(s) be defined as pollutants-explain in your language.

2. What are the **characteristics** of parameters of any waste water? Explain briefly with names and sources. Give a tentative idea of domestic waste water about its characteristic

4+8+3=15

3. How many types of treatment you know for any waste water? Draw flow sheets for primary and secondary treatments.

OR   4+5=9

4. Give details of a activated sludge plant .   9

5. What are the sources of air pollution? What is hazardous waste and give their basic characteristics.

3+6=9

B. E. CONSTRUCTION ENGINEERING 4TH YEAR 2ND SEMESTER EXAM. 2022

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PART - II

Full Marks : 28

Answer any TWO questions.

	No. of Questions		Marks
CO3	Q1.a)	What do you mean by alkalinity of water? Explain giving necessary equations.	04
	Q1.b)	The result of chemical analysis of a sample of raw water is given below: Ca^{++} = 60 mg/L as $CaCO_3$, Na^+ = 2.7 meq/L Total alkalinity = 80 mg/L as $CaCO_3$ Total hardness = 120 mg/L as $CaCO_3$ SO_4^{--} = 20 mg/L as $CaCO_3$ Cl^- = 140 mg/L as $CaCO_{3s}$ NO_3^- = 15 mg/L as $CaCO_3$ i) Prepare a bar diagram for raw water. ii) Estimate the quantity in kg /day of CaO [85% pure] and soda ash [90% pure] required to soften 3ML/day of this water.	10
CO3	Q2.a)	Illustrate the disinfecting action of chlorine by giving the relevant equations.	4
	Q2.b)	Results of chlorine demand test on a raw water are given below:	10

Sample No.	Chlorine dosage, mg/L	Residual chlorine after 10 min. contact (mg/L)
1	0.3	0.18
2	0.5	0.38
3	0.7	0.51

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PART - II

Full Marks : 28

Answer any TWO questions.

	No. of Questions				Marks
		4	0.9	0.46	
		5	1.1	0.20	
		6	1.3	0.40	
		7	1.5	0.60	
		8	1.7	0.80	
		Sketch a chlorine demand curve. What is the 'break-point dosage' and what is the 'chlorine demand' at dosage of 1.3 mg/L?			
	Q.3(a)	How many types of filters are there? Compare the salient features of SSF and RSF.			6
	Q.3(b)	Determine the quantity of alum required in order to treat 15 MLD at a treatment plant where 14 ppm of alum dose is required. Also determine the amount of CO_2 gas that will be liberated in this entire process.			8