

**B.E. CONSTRUCTION ENGINEERING FOURTH YEAR SECOND
SEMESTER EXAM 2024**

SUBJECT: ADVANCED ENVIRONMENTAL ENGINEERING (HONS.)

Time : Three hours

Full Marks : 100

Use separate answer script for each Part

PART I (40 Marks)

Answer any TWO questions.

	No. of Questions		Marks																										
CO3	Q1.a)	Explain plain sedimentation. Discuss in detail the design features of continuous flow settling tank with neat sketch. Explain the meaning of detention time and surface loading.	10																										
	Q1.b)	The maximum daily demand at a water purification plant has been estimated as 12 MLD. Design the dimensions of a suitable sedimentation tank (fitted with a mechanical sludge removal arrangement) for the raw supplies, assuming a detention period of 6 hours and the velocity of flow as 20 cm per minute.	10																										
CO3	Q2.a)	Illustrate the disinfecting action of chlorine by giving the relevant equations.	8																										
	Q2.b)	Results of chlorine demand test on a raw water are given below: <table border="1" data-bbox="518 1294 1241 1865"> <thead> <tr> <th>Sample No.</th> <th>Chlorine dosage, mg/L</th> <th>Residual chlorine after 10 min. contact (mg/L)</th> </tr> </thead> <tbody> <tr><td>1</td><td>0.3</td><td>0.18</td></tr> <tr><td>2</td><td>0.5</td><td>0.38</td></tr> <tr><td>3</td><td>0.7</td><td>0.51</td></tr> <tr><td>4</td><td>0.9</td><td>0.46</td></tr> <tr><td>5</td><td>1.1</td><td>0.20</td></tr> <tr><td>6</td><td>1.3</td><td>0.40</td></tr> <tr><td>7</td><td>1.5</td><td>0.60</td></tr> <tr><td>8</td><td>1.7</td><td>0.80</td></tr> </tbody> </table>	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	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
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SUBJECT: ADVANCED ENVIRONMENTAL ENGINEERING (HONS.)

PART - I

Full Marks : 40

Answer any TWO questions.

	No. of Questions		Marks
		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.	10
	Q.3(b)	What are the impurities in water? What is water analysis? What are the basic tests required in this?	5
	Q.3(c)	Write a note on physical and chemical tests of water mentioning the IS code criteria for the same.	5

Part-II**B.E Construction Engineering 4th Year 2nd Semester Examination, 2024****Ref: Ex/CON/PE/H/T/423A/2024****Advanced Environmental Engineering****PART II (60 Marks)**

Use separate answer script for each Part

Answer all the question**Total-60**

Q1	CO1	PO1	A) Define environment.	2
			B) Describe how water, air & land get polluted	5
		PO2	A) Describe the different methods of treatment of waste water	4
Q2	CO2	PO1	A) Define solid waste management	5
		PO2	A) Describe sources of solid waste	5
		PO3	A) Define methods of solid waste disposal	4
			B) Describe each method briefly	4
C) Discuss the advantage and disadvantage of any one method	6			
Q3	CO2	PO1	A) Define MINAS	3X3= 9
		PO2	B) Describe the names of polluting parameters for air for BS stage-VI	
		PO3	C) Give the MINAS of the parameters for both petrol & diesel engines	
Q4	CO3	PO1	A) Define hazardous waste	4
		PO2	A) Describe basic characteristics hazardous waste	6
		PO3	A) Describe storage & disposal of hazardous waste	6