[Total No. of Ques. 05] Seat No: [ ] [Total No. of Pages: 01]

G H Raisoni College of Engineering and Management, Pune
(An Autonomous Institution affiliated to Savitribai Phule Pune University)
F.Y. B.Tech. [All Branches] (Term-I)
ESE WINTER 2022 (2020 Pattern)
Environmental Chemistry: UBSL102

[Time: 02:00 Hours] [Max. Marks: 50]

Instructions to the candidates:

1) ***All questions compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q. No.	*Sub Question*		*Marks*	*CO*	*BL*
1	A	Explain the process of water softening by zeolite method. Give reactions and draw neat labeled diagram. Mention two advantages of this method.	5	CO1	L2
	B	Explain the various steps involved in water treatment plant for domestic water along-with a flow diagram.	5	CO1	L2
		OR			
	C	100ml of water sample requires 10.5ml of 0.01M EDTA in titration. 100ml of same water sample when titrated after boiling and filtering requires 9.5ml of 0.01M EDTA. Explain the terms total, permanent and temporary hardness and calculate their values.	5	CO1	L3
2	A	Mention any two sources of solid waste with suitable example and discuss the various stages involved in solid waste management.	5	CO2	L2
	B	Mention any two sources of biomedical waste with suitable examples and discuss the management of biomedical waste. Give two harmful effects of this type of waste.	5	CO2	L2
3	A	Discuss the construction and functioning of lead-acid battery. Give the discharge and recharge reactions of this battery. Mention one advantage and disadvantage of this battery.	5	CO3	L2
	B	Discuss the construction and functioning of H_2-O_2 fuel cell along with a neat labeled diagram. Mention two advantages of this battery.	5	CO3	L2
4	A	Explain the terms HCV and LCV. Upon burning of 1g of solid fuel in a bomb calorimeter, the rise in temperature of water was found to be $1.5^{o}C$. The mass of water taken in calorimeter was 100g and the water equivalent was 10g. Evaluate the HCV of the fuel.	5	CO3	L3
	B	Discuss the use of biomass as a source of non-conventional energy. Mention one advantage and disadvantage of this source of energy.	5	CO3	L2
		OR			
	C	Discuss the process of generation of hydroelectricity with a diagram. Mention two advantages of this source of energy.	5	CO3	L2
5	A	Explain the terms primary and secondary pollutants with suitable examples. Explain any one method of air pollution control in detail.	5	CO4	L2
	B	Discuss the meaning of water quality index. Explain two sources of water pollution and their effect on humans. Suggest methods to control it.	5	CO4	L2

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