Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III (New) EXAMINATION – WINTER 2019

Subject Code: 3131305 Date: 28/11/2019

Subject Name: Environmental Chemistry-I

Time: 02:30 PM TO 05:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			Marks
Q.1	**(a)**	List out any two instruments along used in the Environmental chemistry lab and draw its figure.	**03**
	(b)	Write process for calibration of the pH meter.	**04**
	(c)	Explain Henry's law and Dalton's law with their significance in the field of	**07**
Q.2	**(a)**	Categorize types of sampling techniques.	**03**
	(b)	Determine process for the preparation of demineralized water.	**04**
	(c)	Explain the principle of the Atomic Emission Spectroscopy.	**07**
		OR	
	(c)	Enlist Electrode used in the Environmental Chemistry and Explain any two Electrodes in detail.	**07**
Q.3	**(a)**	Classify type of errors may be present while performing the experiments.	**03**
	(b)	Calculate the molarity of solution after 350 ml of water is added to 650 ml of 0.75 N NH_4OH solution.	**04**
	(c)	Prepare methods for making standard solution of 1M H_2SO_4.	**07**
		OR	
Q.3	**(a)**	Compare 2N sodium chloride solution in water and 2M sodium chloride solution, which is more salty? Why?	**03**
	(b)	Calculate weight required for preparation of the following solutions: (a) 0.45M NaCl in 450 ml, (b) 0.55N $CaSO_4$ in 550 ml	**04**
	(c)	Prepare methods for making standard solution of 1N NaOH.	**07**
Q.4	**(a)**	What is Dispersion and scattering?	**03**
	(b)	Explain Desiccation and Drying.	**04**
	(c)	Calculate hydrogen ion activity and hydroxide ion activity of following solution: (a) 4 pH (b) 6 pH (c) 8 pH	**07**
		OR	
Q.4	**(a)**	Define Chemical Precipitation and Filtration.	**03**
	(b)	Explain standard methods for the water and wastewater.	**04**
	(c)	Calculate pH of following solution (a) 0.2 g of hydrogen ion per liter, (b) $3.4x10^{-8}$ g of hydroxide ion per liter and (c) 0.05 N NaoH.	**07**
Q.5	**(a)**	Give the relation equation for calculate (a) TDS, (b) TSS, (c) TS with Gravimetric Analysis.	**03**
	(b)	Write application of alkalinity data.	**04**
	(c)	Explain experimental methods for determination of Hardness present in wastewater sample.	**07**
		OR	
Q.5	**(a)**	Give the relation equation for calculate (a) hydroxide alkalinity, (b) carbonate alkalinity, (c) bicarbonate alkalinity with phenolphthalein alkalinity and methyl orange alkalinity.	**03**
	(b)	What is the role of sulfate in the Environment engineering?	**04**
	(c)	Explain experimental methods for determination of Total Dissolved Solids (TDS) present in water sample.	**07**

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