Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III(New) • EXAMINATION – WINTER 2016

Subject Code:2131301 **Date:02/01/2017**

Subject Name:Environmental Sciences I

Time:10:30 AM to 01:00 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		**Short Questions**	**14**
	1	Which types of cleaning agents are mainly used for removal of inorganic deposits like scaling?	
	2	Define the term: Desalination	
	3	State Roults law.	
	4	Define equivalent weight	
	5	Define the term: Bonding.	
	6	What is called mole fraction?	
	7	How will you distinguish ketone and esters by common characteristics?	
	8	Define : Desiccation	
	9	What is known as primary standard solution in volumetric analysis?	
	10	At which pH range for acid base titration phenolphthalein is used as an end point indicator?	
	11	What do u understand by the term mg/L as $CaCO_3$?	
	12	Define specific conduction.	
	13	What is used as source in UV spectroscopy?	
	14	What is pH Scale?	
Q.2	**(a)**	Describe Familiarization of Laboratory.	**03**
	(b)	Explain zeolite method of water softening.	**04**
	(c)	What is alkalinity? Explain the applications of alkalinity data.	**07**
		OR	
	(c)	Define secondary standard solution. How will prepare standard NaOH solution? Which reagents would you like to use as primary or secondary standard? Why?	**07**
Q.3	**(a)**	Draw figures of three glass wares used in distillation process with their names and applications.	**03**
	(b)	Define Normality. Compare 1 molar sugar solution in water and 1 molal sugar solution in water which one will be more sweeter? why?	**04**
	(c)	Explain the gravimetric method of TS, TDS and TSS measurement in water and waste water.	**07**
		OR	
Q.3	**(a)**	Explain the terms precision and accuracy with example.	**03**
	(b)	What do you mean by the term demineralised water? Write a note on a method for preparation of demineralised water.	**04**
	(c)	List three methods for determining chloride in water and waste water. Explain argentometric method for the same.	**07**
Q.4	**(a)**	Define the terms: precipitation, filteration and drying.	**03**
	(b)	Explain the requirements of primary standards.	**04**
	(c)	What is turbidity? Explain any one method of its measurement in detail.	**07**
		OR	
Q.4	**(a)**	Give a list of three parameters of water and waste water analysis with the names of those parameters measuring instruments.	**03**

	(b)	Find out the pH of following standard solutions. i) 0.02 N sodium hydroxide ii) 0.03 N nitric acid	**04**
	(c)	What is gravimetric analysis? Write a note on its applications in environmental engineering field.	**07**
Q.5	**(a)**	Calculate the value of universal gas law constant in the unit L·atm/mol·K and mL·atm/mol·K at STP.	**03**
	(b)	Explain the concept of quantitative analysis with example.	**04**
	(c)	Describe Henry's law & Dalton's law with their significance in the field of environmental engineering.	**07**

OR

Q.5	**(a)**	Explain the types of hardness with respect to the anions associated with the metallic ions.	**03**
	(b)	Draw neat diagram of spectrophotometer with its components.	**04**
	(c)	Enlist standard methods for the determination of sulfates in water and waste water explain any one of them.	**07**

****