Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2131301 **Date: 31/05/2017**

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	Name the method used for the measurement of chloride	**1**
	2	Sulphate measurement is done at which pH.	**1**
	3	What is the weight of 2 moles of $AgNO_3$.	**1**
	4	Give the example of Primary standard solution	**1**
	5	At what temperature the TDS measurement is done?	**1**
	6	According to APHA, hardness is measured with what concentration of EDTA	**1**
	7	Find the number of moles in 196g of H_2SO_4.	**1**
	8	Name the electrodes used in pHmeter.	**1**
	9	What is the name of the principle on which conductivity meter is	**1**
	10	Write the formula of ideal gas law.	**1**
	11	Define molarity.	**1**
	12	Which type of bonding is present in NaCl.	**1**
	13	Which glassware is more accurate to prepare solutions: Beaker or Volumetric flask?	**1**
	14	Name any instrument used in the microbiological analysis.	
Q.2	**(a)**	Define primary standard and seceondary standard. Give examples	**03**
	(a)	Differentiate between Volumetric and Gravimetric analysis giving	**04**
	(c)	Cleaning of glassware is the important step in the analysis of parameters. Justify this statement. Give the procedure for the cleaning & washing in microbiological analysis	**07**
		OR	
	(c)	Write about the methods employed for the generation of distilled and demineralized water	**07**
Q.3	**(a)**	Define Molal & Normal solutions	**03**
	(b)	. Calibration of the instrument is a very important step. Justify this	**04**
	(c)	What is Hardness? What are its types? Write the procedure for the measurement of Calcium and Magnesium Hardness	**07**
		OR	
Q.3	**(a)**	Define Turbidity. What are the sources of turbidity in water.	**03**
	(b)	What is pH? Write the name of the parameters which you have tested till now in laboratory, which needs pH regulation. Calculate the pH of 0.01N H_2SO_4	**04**
	(c)	Write about the gas laws which have environmental significance	**07**
Q.4	**(a)**	How will you standardize 0.025 N FAS	**03**
	(b)	What is the need of familiarization of instruments in this subject	**04**

	(c)	Emission, transmission & scattering is the key words used in explaining the working principle of spectrophotometer. Explain this with the help of diagram.	**07**

OR

Q.4	**(a)**	Draw the diagram of electrodes used in pH meter	**03**
	(b)	How will you calibrate conductivity meter	**04**
	(c)	Calculate the temporary and permanent hardness of water sample containing $Mg(HCO_3)_2$= 7.3mg/L, $Ca(HCO_3)_2$= 16.2mg/L, $MgCl_2$= 9.5mg/L, $CaSO_4$=13.6mg/L).	**07**
Q.5	**(a)**	What precaution one should take while weighing on weighing balance.	**03**
	(b)	Write the method for the measurement of Chloride in wastewater	**04**
	(c)	How to prepare the following solutions (a) 0.01M EDTA in 1000 ml (b) 0.025N FAS in 500 ml (c) 0.01N H_2SO_4 in 500 ml (d) 0.02M $KMnO_4$ in 1000 ml (e) 0.02M $BaCl_2$ in 500 ml (f) 0.02M NaOH in 250 ml (g) 0.1M NH_4OH in 250 ml	**07**

OR

Q.5	**(a)**	State Graham's law	**03**
	(b)	Calculate volume of oxygen required at 25°C and 0.5 atm. Pressure for combustion of 40gm of methane.	**04**
	(c)	Standard methods of analysis of water and wastewater have great importance in Environment Engineering. Explain.	**07**

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