Subject code: 711702N

GUJARAT TECHNOLOGICAL UNIVERSITY M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2014

Date: 17-06-2014

Subject Name: Environmental Chemistry Time: 02:30 pm - 05:00 pm Total Marks:			
Ins	1.	tions: Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full mark.	
Q.1	(a)	Define following: 1. Molecules 2. Atom 3. Valance 4. Ionization. 5. I st law of thermodynamics 6. Vapour pressure 7. Volatile acid.	07
	(b)	Distinguish between order of reaction and molecularity with examples. Derive second order reaction equation for different concentrations.	07
Q.2	(a)	Calculate (i) Solubility product constant from given values of water solubility for (a) $Mg_3(PO_4)_2$, 6.1 x 10 ⁻⁵ mol/L (b) FeS, 6.3 x 10 ⁻⁹ mol/L (c) $Zn_3(PO_4)_2$, 1.6 x 10 ⁻⁷ mol/L (d) CuF_2 , 7.4 x 10 ⁻³ mol/L . (ii) Balance the following equation : $KI + K_2Cr_2O_7 + H_2SO_4 \qquad Cr_2(SO_4)_3 + I_2 + H_2O + K_2SO_4$	07
	(b)	What is osmosis? Explain process of osmosis and development of osmotic pressure in detail.	07
	(b)	OR Discuss rate of reaction. Explain simple dialysis cell for recovery of sodium hydroxide from industrial waste.	07
Q.3	(a)	Explain consecutive reaction with suitable example. Where this reaction is used in environment related issues? Explain acid-base and ion-exchange reaction of soil.	07 07
	(b)	OR	U /
Q.3	(a)	Explain in brief any suitable method to determine the presence of Nitrates and Nitrites in ground or surface water.	07
	(b)	Discuss in brief different sources and composition of agricultural pollution and its remedies.	07
Q.4	(a) (b)	Discuss about entry of waste and pollutants in soil and soil degradation. What is Michaelis ó Menten constant? Derive enzyme kinetics reactions related all equations and mention effect of temperature on it. OR	07 07
Q.4	(a) (b)	Discuss determination of Alkalinity and Hardness of water sample. What is the environmental significance of Dissolve oxygen and BOD?	07 07
Q.5	(a)	Give examples of types of pesticides. What are their biological properties and rate the contamination carried out by it?	07
	(b)	Explain in brief principle of: (1) Gas chromatography (2) Colorimetric (3) Polarography OR	07
Q.5	(a) (b)	Explain any two organic compounds with sources and properties of it. Discuss analytical method to determine Colour and Turbidity of water sample.	07 07
