

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2013****Subject code: 711702N****Date: 04-06-2013****Subject Name: Environmental Chemistry****Time: 10.30 am – 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.**

- Q.1 (a)** Short Answer Question **07**
1. What does valence state means to be?
 2. The Pyro salts of Chromic acids are commonly called.
 3. Explain the importance of heat of vaporization as per environmental engineers.
 4. Explain second law of thermodynamics.
 5. Due to high persistence and high potential for creating harm to human and environment which particular pesticides are banned?
 6. Instead of Endocrine disrupting chemical which particular composition is suggested by National research council?
 7. With the help of chromatographic method quantitative measurement up to which level is measured?
- (b)** Explain Gas Chromatographic method in detail with schematic diagram. **07**
- Q.2 (a)** Explain in brief any suitable method to determine the presence of Nitrates and Nitrites in surface or ground water. **07**
- (b)** How is soil formed? Describe important factors affecting the types and characteristic of soil. **07**
- OR**
- (b)** Explain in brief different sources and composition of agricultural pollution and its remedies. **07**
- Q.3 (a)** Explain in detail the membrane probes and its principle of working for the dissolved oxygen analysis. **07**
- (b)** Enlist different reactions on basis of their speed and velocity and write in detail about consecutive reactions explaining bacterial nitrification of ammonia. **07**
- OR**
- Q.3 (a)** A 100ml sample when titrated with 0.02 N H₂SO₄, the following titre values are obtained, to reach phenolphthalein end point = 19.5ml, to reach methyl orange end point = 24.5ml. Calculate hydroxide, carbonates and bicarbonates alkalities of the sample. **07**
- (b)** Discuss amelioration of soil acidity. **07**
- Q.4 (a)** Enlist different types of alcohols, aldehydes and ketones with their sources and utility and explain their course of degradation chemically as well as biologically. **07**
- (b)** (1) Biological degradation of detergents. **07**
(2) Determination of pH and Hardness.
- OR**
- Q.4 (a)** Enlist different types of pesticides their biological properties and rate the contamination carried out by them. **07**
- (b)** Explain the importance of oxidation-reduction reactions with examples. **07**

- Q.5 (a)** Explain in brief the importance of (1) Acidity (2) Alkanity determination (3) Biological Oxygen Demand. **07**
- (b)** Explain the standard methods of determination of solids: Total, Dissolved, and Settleable. **07**

OR

- Q.5 (a)** Explain in brief the principle of: (1) Polarography (2) Colorimetric (3) Spectrophotometric. **07**
- (b)** Explain different sources of soil pollution and the remedial measure to control the same with latest technology. **07**
