

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-III • EXAMINATION – WINTER 2013**

**Subject Code: 131301****Date: 03/12/2013****Subject Name: Environmental Science - I****Time: 02:30pm-05:00pm****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) Find the PH of following solutions: **07**  
(i) 0.02M HCl, (ii) 0.02N HCl, and (iii) 0.02N NaOH
- (b) Give the difference between, **07**  
(i) Primary Standards and Secondary Standards  
(ii) Normal Solution and Molar Solution
- Q.2** (a) Define atomic weight and equivalent weight. Calculate gram molecular **07**  
weight of  $\text{CaCO}_3$  and  $\text{H}_2\text{SO}_4$
- (b) Differentiate between oxidation and reduction reactions with examples related **07**  
to environmental engineering.
- OR**
- (b) Explain activity coefficient of pure chemical compound. **07**
- Q.3** (a) Write the procedure for analysis of alum. **07**
- (b) Write the available capacity and uses of following glass wares: **07**  
(i) Separating funnel (ii) Distillation flask (iii) Neselar tube  
(iv) Durham tube (v) Funnel (vi) Mohr's pipette (vii) Desiccators
- OR**
- Q.3** (a) Write the short note on conductivity meter. **07**
- (b) Write the uses of following instruments **07**  
(i) High volume Air Sampler (ii) Hot Air Oven  
(iii) BOD Incubator (iv) TOC analyzer  
(v) High Performance Liquid Chromatography  
(vi) Stack Monitoring Kit (vii) Auto Exhaust Analyzer
- Q.4** (a) Describe Henry's and Dalton's law with their importance in environmental **07**  
Engineering field.
- (b) Give the difference between Temporary Hardness and Permanent **07**  
Hardness
- OR**
- Q.4** (a) Write the importance of calibration of glass wares and instruments. **07**
- (b) Give the difference between Demineralized & Distilled water in detail. **07**
- Q.5** (a) Write a short note on Nephelometer with figure. **07**
- (b) Enlist glassware for titration process and list the available capacities. **07**
- OR**
- Q.5** (a) Give the difference between volumetric and gravimetric methods with **07**  
appropriate example
- (b) Explain methods for washing of laboratory wares. **07**

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