

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B. E. - SEMESTER – I • EXAMINATION – WINTER • 2014**

**Subject code: 110001****Date: 02-01-2015****Subject Name: Chemistry****Time: 10:30 am - 01:00 pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) i) Explain the terms with examples: Lubricant, Photochemical smog **04**  
 ii) Differentiate between chemical corrosion & electro chemical corrosion **03**  
 (b) What is hardness of water? Calculate the temporary and total Hardness of water **07**  
 sample containing following data in mg/L.  
 $Mg(HCO_3)_2=248$ ;  $Ca(HCO_3)_2=81$ ;  $MgCl_2=190$ ;  $CaSO_4=78$  Given:molecular  
 weight of.  $Mg(HCO_3)_2=146$ ;  $Ca(HCO_3)_2=162$ ;  $MgCl_2=95$ ;  $CaSO_4=136$ .
- Q.2** (a) What are the characteristic of a good fuel? Explain any one method of analysis. **07**  
 (b) What is Galvanic Corrosion? Explain it with mechanism. **07**
- Q.3** (a) What are the constituents of Portland cement? Discuss the mechanism of setting **07**  
 and hardening of Portland cement.  
 (b) What is galvanic corrosion? Explain its mechanism. **07**
- Q.4** (a) Explain the factors affecting on fermentation process in detail. **07**  
 (b) Discuss: **07**  
 1. Melt and Wet spinning **04**  
 2. Acid rain and Green house effect. **03**
- Q.5** (a) Explain the following term and their effects on the environment: **07**  
 1. Green house effect.  
 2. Ozone depletion  
 3. Acid rain.  
 (b) What is meant by fermentation? Discuss the manufacture of ethanol from **07**  
 molasses by fermentation process.
- Q.6** (a) Explain the terms: Paints and varnishes. Discuss types of inorganic surface **07**  
 coatings.  
 (b) i) Differentiate Renewable and Non-renewable source of energy. **03**  
 ii)justify the statement “Solar energy is the ultimate sources of all types of **04**  
 energy”
- Q.7** (a) Explain the terms: Specific gravity, Melting point, Boiling point. **07**  
 (b) Give Classification, properties and uses of abrasives. **07**

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