

**I B.TECH – EXAMINATIONS, JUNE - 2011**  
**APPLIED CHEMISTRY**  
**(CIVIL ENGINEERING)**

Time: 3hours

Max.Marks:80

**Answer any FIVE questions**  
**All questions carry equal marks**

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- 1.a) Explain the electro-chemical theory of wet corrosion.
- b) What are galvanic series? How are they important?
- c) Describe the use of inhibitors. [16]
  
- 2.a) What do you understand by surface preparation done to prevent corrosion? Explain the various methods.
- b) Discuss the composition and use of the following coatings in preventing corrosion of metals:  
 i) Enamels    ii) Varnishes. [8+8]
  
- 3.a) Describe the preparation, properties and uses of :  
 i) Nylon and            ii) Bakelite
- b) What is Vulcanization? Explain the process and its importance. [8+8]
  
- 4.a) Discuss the classification of refractories giving examples.
- b) Explain the causes for the failure of a refractory material.
- c) Discuss the characteristics and engineering applications of thermal insulators. [16]
  
- 5.a) Describe the analysis of water with reference to its alkalinity, chlorides and dissolved oxygen.
- b) Explain methods used in the sterilization of water used for drinking purposes. [8+8]
  
- 6.a) Describe the properties and uses of the following lubricants:  
 i) Graphite    ii) Molybdenum disulphide and    iii) Lithium based greases.
- b) Write about the following properties of lubricants:  
 i) Aniline point and    ii) Neutralization Number. [8+8]
  
- 7.a) What is meant by internal treatment of boiler-water? How it is done?
- b) Outline the ion-exchange process for softening of hard water.
- c) A sample of water from a well in Kadapa town showed the following analysis:  
 KOH = 0.57 mg/litre;            MgSO<sub>4</sub> = 2.40 mg/litre;  
 MgCl<sub>2</sub> = 0.94 mg/litre;            Ca(HCO<sub>3</sub>)<sub>2</sub> = 1.62 mg/litre;  
 Ca(NO<sub>3</sub>)<sub>2</sub> = 1.64 mg/litre;            Suspended impurities = 1.32 mg/litre.  
 Calculate the temporary, permanent and total hardness of water sample in ppm units and Francke. [16]
  
- 8.a) What are lines? How are they classified and what are their properties and uses?
- b) Write a note on manufacture of cement. [8+8]

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