

Code.No: R05010104

R05

SET-1

**I - B.TECH EXAMINATIONS, DECEMBER - 2010**  
**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 difference between temporary and permanent hardness.
- b) What is EDTA? What is its structure? Describe its use in determining hardness of water.
- c) Write a brief note on mineral water. [5+8+3]
  
- 2.a) What are plastics? How are they important?
- b) Describe the preparation, properties and uses of:
  - i) PVC and
  - ii) Teflon. [8+8]
  
- 3.a) What do you understand by thick-film and thin-film lubrication?
- b) Discuss the following properties of lubricants:
  - i) Flash and fire points
  - ii) Oxidation stability. [8+8]
  
- 4.a) What are the important properties of water for steam making in boilers?
- b) Describe the Zeolite process for softening of hard water.
- c) A sample of water from a borewell in Bibinagar near Hyderabad showed the following analysis:  
 $\text{CaSO}_4 = 13.6 \text{ ppm}$ ;  $\text{Mg SO}_4 = 12.0 \text{ ppm}$ ;  $\text{Mg}(\text{HCO}_3)_2 = 14.6 \text{ ppm}$ ;  $\text{Ca}(\text{HCO}_3)_2 = 8.1 \text{ ppm}$ ; Organic impurities = 2.55 ppm;  $\text{NaOH} = 3.2 \text{ ppm}$ ;  
 Calculate temporary, permanent and total hardness of water sample. [4+7+5]
  
- 5.a) What are the different types of corrosions? Briefly explain the wet and dry corrosions.
- b) Describe the factors that influence corrosion. [8+8]
  
- 6.a) Discuss the isolation and processing of crude natural rubber.
- b) Outline the preparation, properties and uses of:
  - i) Buna-S rubber and
  - ii) Thiokol rubber. [8+8]
  
- 7.a) Write notes on phosphate and chromate coatings.
- b) Explain the composition and uses of the following corrosion preventive coatings:
  - i) Lacquers and
  - ii) Distempers. [8+8]
  
8. Write notes on any two of the following:
  - a) Manufacture of cement
  - b) Setting and hardening of cement
  - c) Characteristics of refractories
  - d) Applications of thermal and electrical insulators. [8 x 2]

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