

Code :R7100305

**B.Tech I Year (R07) Supplementary Examinations, December 2010**  
**ENGINEERING CHEMISTRY**  
**(Mechanical Engineering)**

Time: 3 hours

Max Marks: 80

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

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1. (a) Why does water become hard?  
 (b) Explain the different methods for the estimation of water.
2. Write short notes on the following:
  - (a) Colloidal conditioning
  - (b) Sodium aluminate condition
  - (c) Calgon conditioning
  - (d) Carbonate conditioning.
3. Give reasons for the following:
  - (a) Iron sheets undergo corrosion at a faster rate when riveted with copper rivets.
  - (b) A zinc article under strain undergoes corrosion at a higher rate.
4. Write short note on:
  - (a) Distemblers
  - (b) Emulsion paints
  - (c) Lacquers.
5. (a) What is a plastic?  
 (b) Write the merits and demerits of using plastics in place of metals?  
 (c) Explain the differences between a thermoset and thermo plastic material with examples.
6. Explain the below mentioned properties of the lubricants and discuss their significance.
  - (a) Saponification value
  - (b) Aniline point
  - (c) Viscosity and viscosity index.
  - (d) Flash point.
7. How to select lubricants for the following:
  - (a) cutting tools
  - (b) I.C engines
  - (c) steam engines
  - (d) steam turbines
  - (e) Gears.
8. (a) Calculate the gross and net calorific value of coal having the following composition.  
 Carbon = 82%, Hydrogen = 8%, Sulphur = 1.5%, Nitrogen = 3%,  
 Ash = 5.5%,  
 Latent heat of steam = 587 cal/gm.  
 (b) Write a note on Nuclear fuels.

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