Code No: NR10104 **NR**

I B.Tech Supplementary Examinations, November/December 2005
ENGINEERING CHEMISTRY
(Common to Civil Engineering,Mechanical Engineering,Mechatronics,Production Engineering and Aeronautical Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What is Cathodic protection? Explain sacrificial anode method?
   (b) Explain the effect of following factors on the rate of corrosion
      i. Nature of corrosion product
      ii. Anodic and cathodic area
      iii. P^H.
   (c) What is anodizing? Explain anodizing of Aluminium? [5+6+5]
2. (a) Explain the rusting of Iron by electrochemical theory?
   (b) Discuss the following corrossion control methods?
      i. Galvanising
      ii. tinning
   (c) What is a paint? What are the different constituents of a paint and explain their factors. [5+5+6]
3. (a) Differentiate between thermo plastic and thermo setting plastics. Give two examples for each.
   (b) How is natural rubber obtained for latex?
   (c) Give properties and engineering uses of [5+5+6]
      i. Teflon
      ii. Nylon
      iii. Urea-formaldehyde series.
4. (a) Explain Condensation polymerization with suitable examples.
   (b) Write short notes on:
      i. Buna-S
      ii. Thiokol
   (c) Explain compounding and vulcanisation of rubber. [3+5+8]
5. (a) What do you mean by hardness of water? How it is classified?
   (b) Mention important requisites of drinking water.
   (c) How is hardness of water determined by Complexometric EDTA method.

(d) Explain how the hardness in water can be removed by ion-exchange processes. What are the different units in which the hardness of water is expressed. How are they related to each other. [2+2+4+8]

6. (a) What is Lime-soda process for water softening? Give chemical reactions involved during softening.
   (b) Write note on analysis of dissolved oxygen of water.
   (c) What are boiler troubles and what are their consequences?
   (d) Outline the various stages in purifying water for drinking purpose? [5+4+3+4]

7. (a) What are chemical fuels? How are they classified? Give examples?
   (b) How will you manufacture petrol by fischer-tropsch method.
   (c) What is metallurgical coke? What are the specifications for such a coke?
   (d) Write short notes on Cracking? [5+5+3+3]

8. (a) Explain the following terms:
      i. Cloud and pour points
      ii. Flash and fire points.
   (b) Explain how the following acts as lubricants
      i. Graphite
      ii. Molybdenum disulphide.
   (c) Write an explanatory note on semi-solid lubricant. [8+4+4]

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