GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. Sem-I & II Remedial Examination Nov/ Dec. 2010

Subject code: 110001   **Subject Name: Chemistry**
Date: 27 / 11/2010   **Time: 10.30 am – 01.00 pm**
                                                                 Total Marks: 70

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)**   Answer in short.   **05**
       1 What is Caustic Embrittlement?
       2 Mention the composition of most commonly used stainless steel.
       3 What is the use of IR spectrometer?
       4 What happens when excess of lime is used during manufacturing of cement?
       5 How natural rubber is prepared?

      (b)   Define the following: **05**
       1 Composition of Gasoline or Petrol.
       2 Greases.
       3 Acid refractories.
       4 Melt spinning.
       5 Aerobic Fermentation.

      (c) Reason it: **04**
       1 Rusting of iron is quicker in saline water than in ordinary water.
       2 Neutrons preferred as a projectiles to carry out nuclear reaction.
       3 Radioactive wastes disposed off in salt mines.
       4 Chloramine is preferable to bleaching powder or chlorine for sterilization of drinking water

Q.2 **(a)** Answer in short: **07**
       1 Scales and Sludge.
       2 Rust.
       3 Principle of Chromatography.
       4 Different air pollutants.
       5 Advantage of CNG over Gasoline and Diesel.
       6 Ingredients of the Portland cement.
       7 Enzymes and its characteristic

      (b) Answer the followings:
       1 A sample of water on analysis was found to contain: Ca $(HCO_3)_2$= 4mg\l; Mg $(HCO_3)_2$= 6mg\l; $CaSO_4$ = 8mg\l; $MgSO_4$ = 10 mg\l. Calculate the temporary, permanent and total hardness of water in ppm, ^oFr, ^oCl. [M.wt of: Ca $(HCO_3)_2$= 162, Mg $(HCO_3)_2$= 146, $CaSO_4$ = 136, $MgSO_4$ = 120]   **03**
       2 Write in detail the different constitution of plastic.   **02**
       3 Explain Injection moulding   **02**

<div align="center">**OR**</div>

      (b) Answer the followings:
       1 A sample of Coal has the following composition by weight : C = 84.9%; H = 11.4% S = 3.2%; O = 0.4%; ash = 1%. Calculate the minimum quantity of air required for combustion of 1 Kg of coal.   **03**
       2 Write the preparation of following fibers,   **02**
           (1) Cellulose acetate
       3 Classification of Polymers.   **02**

Q.3 **(a)** Explain the principle of Conductometric titration. Show the different graphical representation of, **04**
(1) Strong acid v\s Strong base   (2) Strong acid v\s Weak base
(3) Weak acid v\s Strong base   (4) Weak acid v\s Weak base.

(b) Discuss different softening methods of water. Write in detail about Cold and Hot Lime soda process. **04**

(c) Write a note on:
1)   Classification of Lubricants.   (2)   Varnishes and Lacquers. **06**

OR

Q.3 **(a)** Discuss Break point chlorination and Priming, Foaming in boiler. **04**
(b) Importance of pH. **04**
(c) Write a note on: **06**
(1)   Organic coatings.   (2)   Electroless plating.

Q.4 **(a)** Write a note on Coal gas and LPG gas as fuel. **04**
(b) (1)   Explain the principle of Wet or Electrochemical corrosion. **04**
(2)   Write a note on Non Ferrous alloy. **02**
(c) Explain the importance of biomembrane along with the principles of diffusion and reverse osmosis. **04**

OR

Q.4 **(a)** Write a note on Pitting and Stress corrosion. **04**
(b) (1)   Manufacturing of Ethyl alcohol by fermentation. **04**
(2)   Write a note on Mild and High carbon steel. **02**
(c) What is crude oil? Explain the refining of crude oil. **04**

Q.5 **(a)** Explain the wet process for manufacturing of Portland cement. **04**
(b) Write a note on Ozone layer depletion and Acid rain. **04**
(c) (1)   Write a note on any two Solar energy devices **04**
(2)   Explain the different properties of refractories. **02**

OR

Q.5 **(a)** What happens due to over use of natural resources? **04**
(b) Write in short about **04**
(1)   Different types of Cement.   (2)   Gypsum plaster.
(c) Write a note on:
(1)   Fire clay and silica bricks.   (2)   Energy conservation. **06**

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