

***B.Tech. Degree I & II Semester Examination in  
Marine Engineering May 2014***

**MRE 1104 ENGINEERING CHEMISTRY**

Time : 3 Hours

Maximum Marks : 100

(5 x 20 = 100)

- I. (a) Describe hot lime-soda process of softening water. Write notes on reverse osmosis. (10)  
 (b) What are the requisites of drinking water? Explain the various steps for the purification of water for municipal supply. (10)
- OR**
- II. (a) Describe the cold lime-soda process of softening water. Give the reactions involved. (10)  
 (b) How are BOD and COD experimentally determined? (10)  
 Write notes on  
 (i) Effect of air pollution on human life  
 (ii) Acid rain  
 (iii) Photochemical smog.
- III. (a) What is a reference electrode? Explain the setting of standard hydrogen electrode. (7)  
 (b) What is emf? Explain the Poggendorff compensation method of determination of emf. (8)  
 (c) What is a standard cell? Explain the working of western-cadmium cell. (5)
- OR**
- IV. (a) Differentiate between thermotropic and lyotropic liquid crystals. (5)  
 (b) Explain the details of point defect with example. (10)  
 (c) Explain one method to find out the PH of an unknown solution. (5)
- V. (a) Differentiate the mechanism of chemical and electro chemical corrosion (8)  
 (b) Explain any four methods of prevention of corrosion. (12)
- OR**
- VI. (a) Write notes on the following: (15)  
 (i) Electroplating  
 (ii) Special paints  
 (iii) Laquars  
 (b) Differentiate between galvanization and tinning (5)
- VII. (a) Explain the working of solar cell. What are the merits and demerits of solar cell. (10)  
 (b) Define the terms octane number and cetane number. (5)  
 (c) Distinguish between producer gas and water gas. (5)
- OR**
- VIII. (a) What is meant by cracking of petroleum? Give a brief account of refining of petroleum. (10)  
 (b) Write notes on gross and net calorific value. (5)  
 (c) Distinguish between thermal cracking and catalytic cracking. (5)
- IX. (a) Differentiate between thermoplastic and thermosetting plastics. (5)  
 (b) What is vulcanization? What is its importance in rubber technology? (8)  
 (c) Explain the production, properties and two uses of polystyrene. (7)
- OR**
- X. (a) Write any four moulding techniques of natural rubber. (12)  
 (b) Give one method each for the production of the following polymers: (8)  
 (i) Phenol-formaldehyde  
 (ii) Urea-formaldehyde  
 (iii) PVC  
 (iv) Teflon