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***B. Tech. Degree I & II Semester Examination in
Marine Engineering May 2015***

MRE 1104 ENGINEERING CHEMISTRY

Time: 3 Hours

Maximum Marks: 100

(5×20=100)

- I. (a) What are boiler troubles and how can they be avoided? (7)
 (b) Describe the ion exchange process for softening of hard water. (7)
 (c) Describe Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD). (6)
- OR**
- II. (a) Explain the process of reverse osmosis. (7)
 (b) Explain the working of electro dialysis cell. (7)
 (c) Suggest four methods to control air pollution. (6)
- III. (a) Write the construction of Weston cadmium cell. (6)
 (b) Explain the terms (i) standard hydrogen electrode (ii) calomel electrode. (14)
- OR**
- IV. (a) What are crystal defects? Explain stoichiometric and nonstoichiometric defects in crystals. (10)
 (b) Write notes on: (i) Liquid crystal display (ii) Super conductors. (10)
- V. (a) Explain cathodic protection. (6)
 (b) What are the constituents of paints and what are their functions? (7)
 (c) Explain the electrochemical theory of corrosion. (7)
- OR**
- VI. (a) Explain the difference between wet and dry corrosion. (6)
 (b) Describe the metallic coatings (i) tinning (ii) hot dipping. (8)
 (c) Distinguish between varnish and enamel. (6)
- VII. (a) Discuss on refining of petroleum and its important functions. (8)
 (b) What are the advantages of gaseous fuels over solid and liquid fuels? (6)
 (c) Discuss on the proximate analysis of coal. (6)
- OR**
- VIII. (a) Write notes on: (i) nuclear fusion (ii) nuclear fission. (6)
 (b) Describe the determination of calorific value of solid fuel. (8)
 (c) Describe the preparation, composition and uses of (i) producer gas and (ii) water gas. (6)
- IX. (a) What are the advantages of vulcanized rubber? (6)
 (b) What are the main differences between addition and condensation polymerization? Give an example in each case. (8)
 (c) Describe the preparation, properties and applications of (i) silicone rubber and (ii) thiokol rubber. (6)
- OR**
- X. (a) What are the differences between thermoplastics and thermosetting plastics? (6)
 (b) Outline the preparation, properties and uses of (i) Bakelite and (ii) Nylon (6,6). (8)
 (c) What is Buna-S? Mention its important uses. (6)