

Code :RR100304

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

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

- (a) What is meant by cathodic and anodic inhibitors?.

(b) What are the requirements of a paint?.

(c) Describe the phosphate coatings.
- (a) Describe the preparation, properties and engineering, uses of polyethylene.

(b) What is meant by Fabrication of plastics? Mention the different fabrication techniques.
3. Explain the lime-soda process for the softening of water used for steam generation in industrial boilers mentioning clearly the reactions and conditions employed.
4. What is the total hardness of a sample of water in ⁰Fr and ⁰Clarke having the following salts given that the atomic wt. of Mg is 24 and that of Ca is 40 :- $\text{CaCl}_2 = 11.1 \text{ mg/litre}$; $\text{Mg}(\text{HCO}_3)_2 = 7.3 \text{ mg/litre}$; $\text{Mg}(\text{NO}_3)_2 = 14.8 \text{ mg/litre}$; $\text{Ca}(\text{HCO}_3)_2 = 8.1 \text{ mg/litre}$.
- (a) Discuss the formation of coal. What is the importance of carbon, ash, moisture and volatile matter present in the coal?

(b) Give an account of classification of coal based on the proximate analysis.
- (a) Explain Fischer Tropsch method for the manufacture of synthetic petrol.

(b) How are fuels classified? Compared their relative advantages Calculate the weight and volume of air needed for complete combustion of 5.0 Kg of coal containing 80% carbon, 15% hydrogen and 5% oxygen.
- (a) What do you understand by 'Refractoriness'. Explain its measurement.

(b) Write a short note on 'refractoriness-under-load' (RUL).
- (a) Define flash and fire points.

(b) Discuss the important functions of lubricants.
