

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

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- What is meant by cathodic and anodic inhibitors?.
  - What are the requirements of a paint?.
  - Describe the phosphate coatings.
- Describe the preparation, properties and engineering, uses of polyethylene.
  - What is meant by Fabrication of plastics? Mention the different fabrication techniques.
- Explain the lime-soda process for the softening of water used for steam generation in industrial boilers mentioning clearly the reactions and conditions employed.
- What is the total hardness of a sample of water in <sup>0</sup>Fr and <sup>0</sup>Clarke having the following salts given that the atomic wt. of Mg is 24 and that of Ca is 40 :-  $\text{CaCl}_2 = 11.1 \text{ mg/litre}$ ;  $\text{Mg}(\text{HCO}_3)_2 = 7.3 \text{ mg/litre}$ ;  $\text{Mg}(\text{NO}_3)_2 = 14.8 \text{ mg/litre}$ ;  $\text{Ca}(\text{HCO}_3)_2 = 8.1 \text{ mg/litre}$ .
- Discuss the formation of coal. What is the importance of carbon, ash, moisture and volatile matter present in the coal?
  - Give an account of classification of coal based on the proximate analysis.
- Explain Fischer Tropsch method for the manufacture of synthetic petrol.
  - 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.
- What do you understand by 'Refractoriness'. Explain its measurement.
  - Write a short note on 'refractoriness-under-load' (RUL).
- Define flash and fire points.
  - Discuss the important functions of lubricants.

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