

Code No: R13204

**R13****SET-1****I B. Tech II Semester Supplementary Examinations, Nov/Dec - 2017****ENGINEERING CHEMISTRY**

(Com. to ECE, EEE, EIE, Bio-Tech, E Com E, Agri E)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. Answering the question in **Part-A** is Compulsory  
3. Answer any **THREE** Questions from **Part-B**
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**PART -A**

1. a) Explain how dissolved oxygen is removed from hard water. (3M)
- b) What are batteries? What are its types? Give examples. (4M)
- c) Explain why galvanized containers are not preferred for packing food stuffs. (3M)
- d) What are thermosetting polymers? Explain preparation of Bakelite. (4M)
- e) How is nitrogen estimated by ultimate analysis? (4M)
- f) What are greenhouse gases? How do they effect on the environment? (4M)

**PART -B**

2. a) Define hardness, temporary and permanent hardness. How can they be minimized? (8M)
- b) Explain Ni-Cd battery and lead acid battery. (8M)
3. a) Explain the mechanism how iron corrodes in acidic and alkaline medium. (8M)
- b) Differentiate between plasticized and rigid PVC. Give their properties and uses. (8M)
4. a) What is net calorific value and gross calorific value? Calculate the HCV and LCV of a coal sample containing is C = 78%; H = 12%; O = 4%; N = 1%; S = 3% and ash = 2%. (8M)
- b) What are carbon nanotubes? Discuss their properties. (8M)
5. a) Discuss the importance of vulcanization. Write the preparation and uses of Thiokol. (8M)
- b) Explain ion exchange process used for softening of hard water. Mention its advantages. (8M)
6. a) Explain the principle in glass electrode. (8M)
- b) Explain fluid bed catalytic cracking with a neat sketch. (8M)
7. a) Explain how corrosion is prevented by cathodic protection. (8M)
- b) What is setting and hardening of cement. Explain the chemistry involved in this process by chemical reactions. (8M)

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