

Subject Code: R13104/R13**Set No - 1****I B. Tech I Semester Supplementary Examinations December - 2016****ENGINEERING CHEMISTRY****(Common to CE, ME, CSE, PCE, IT, ChemE, AeroE, AME, MinE, PE, Metal E, Textile Engg.)****Time: 3 hours****Max. Marks: 70**

Question Paper Consists of **Part-A** and **Part-B**
Answering the question in **Part-A** is Compulsory,
Three Questions should be answered from **Part-B**

PART-A

1. (a) Calculate the gross and net calorific value of a sample of coal having following composition: C=85%, H=8%, S=1%, N=2% and ash=4%, Latent heat of steam=587cal/g.
- (b) What is meant by reverse osmosis as applied to water chemistry?
- (c) Draw strong acid-weak base conductometric titration curve and explain it.
- (d) Why are gaseous fuels, more advantageous than solid fuels?
- (e) Write a short note on decay of cement concrete and its prevention.
- (f) Describe a fabrication method used for thermoplastics.

[3+4+4+3+4+4]

PART-B

2. (a) Define fuel cell. Explain the construction and working of H₂-O₂ fuel cell. What are the advantages and limitations of fuel cell?
 - (b) (i) What is break-point chlorination of water?
 - (ii) Discuss the factors affecting sedimentation.
- [8+8]
3. (a) Write short notes on the following: (i) Liquid crystals (ii) Nano materials
 - (b) Write the preparation, properties and engineering applications of Bakelite and PVC.
- [8+8]
4. (a) What is concentration cell? Explain with example. Derive the equation for emf of concentration cell.
 - (b) Mention the distinctions between electroplating and electro less plating. Mention advantages of electroless plating.
- [8+8]
5. (a) What is latex? How is natural rubber isolated from it? What is vulcanization? How does it improve the property of natural rubber.
 - (b) What is green chemistry? Explain the 12 principles of green chemistry.
- [8+8]
6. (a) Describe ion exchange process for demineralization of water.
 - (b) What is meant by knocking in IC engines? Explain the mechanism of knocking in chemical terms.
- [8+8]
7. (a) (i) What is LPG? What are the advantages of LPG over gaseous fuels?
 - (ii) Write short note on cracking.
 - (b) (i) Discuss the various factors influencing the rate of corrosion.
 - (ii) What is drying oil? Describe the function of drying oil in paint.
- [8+8]
