

Subject Code: R13104/R13

Set No - 1

I B. Tech I Semester Supplementary Examinations May/June - 2016

ENGINEERING CHEMISTRY

(Common to CE, ME, CSE, PCE, IT, ChemE, AeroE, AME, MinE, PE, MetalE, 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) Differentiate between octane and cetane number.
- (b) Calculate the temporary and permanent hardness of water, which on analysis is found to contain the following: $\text{Ca}(\text{HCO}_3)_2 = 14.6 \text{ mg/L}$, $\text{MgCl}_2 = 9.5 \text{ mg/L}$, $\text{CaSO}_4 = 27.2 \text{ mg/L}$.
- (c) Write brief notes on (i) glass electrode (ii) stereoregular polymers
(iii) electroplating (iv) properties of fullerenes.

[3+3+16]

PART-B

2. (a) Explain zeolite process of softening of hard water. Give the merits and demerits of zeolite process.
 - (b) What are the different types of hard water and mention their units.
 - (c) What are green house gases? Explain the construction and working of PV cell.
- [6+5+5]
3. (a) Explain the determination of single electrode potential.
 - (b) What is primary reference electrode? Explain the working of it.
 - (c) Write notes on refining of petroleum.
- [6+5+5]
4. (a) Explain how proper selection and design of materials minimize corrosion..
 - (b) What is corrosion? Explain electrochemical theory of corrosion.
 - (c) Write the differences between thermoplastics and thermosetting plastics.
- [6+5+5]
5. (a) Write any two moulding techniques of plastics.
 - (b) What are the drawbacks of natural rubber? Explain how to overcome these drawbacks.
 - (c) What is disinfection of water? Explain the importance of break-point chlorination.
- [6+5+5]
6. (a) What is calorific value? Calculate the weight and volume of air required for combustion of 2 Kg of carbon.
 - (b) Explain proximate analysis of coal.
 - (c) Derive Nernst equation for electro chemical cell.
- [6+5+5]
7. (a) Explain setting and hardening of cement.
 - (b) What are nanomaterials? Explain preparations of CNT's by arc-discharge method.
 - (c) Write the environmental factors affecting the rate of corrosion.
- [6+5+5]

