

Subject Code: R10104/R10

Set No - 1

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

ENGINEERING CHEMISTRY-I

(Common to All Branches)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

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1. (a) Briefly explain how air-conditioning differ from refrigeration.
(b) Define Osmosis. Explain the phenomenon of reverse osmosis in desalination of brackish water. [7+8]
2. (a) Explain the mechanism of contact catalysis with suitable example.
(b) Discuss Tyndall effect and Brownian movement. [7+8]
3. (a) What is a biosensor? How does it function? Give the applications of biosensor.
(b) Explain fluorescence and phosphorescence with a neat Jablonski diagram. [7+8]
4. (a) Give the important properties of superconductors.
(b) What are intrinsic semiconductors? Differentiate p- and n- semiconductors. [7+8]
5. (a) Discuss the working of bomb calorimeter with a neat sketch.
(b) Why is coke preferred than coal in metallurgical process?
(c) How is nitrogen determined in a coal sample? [7+4+4]
6. (a) Explain the measurement of pH of solution using glass electrode.
(b) Derive Nernst's equation for single electrode potential.
(c) Explain the construction and working of H₂-O₂ fuel cell. [5+5+5]
7. (a) Differentiate between nuclear fission and nuclear fusion.
(b) Explain how radioactive waste can be disposed.
(c) Write notes on moderator and coolants parts of a nuclear reactor. [5+5+5]
8. (a) What are green house gases? How can they be minimized?
(b) Discuss solar heaters, solar reflectors and PV cells. [6+9]