



Reg. No. :

Name :

**Combined First and Second Semester B.Tech. Degree
Examination, May 2009
(2008 Scheme)**

08-103 : ENGINEERING CHEMISTRY

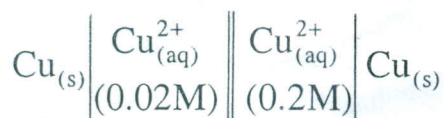
Time: 3 Hours

Max. Marks: 100

PART - A

Answer **all** questions. **Each** carries **4** marks.

1. What is Helmholtz electrical double layer ?
2. Draw neatly a labelled diagram of saturated Calomel electrode. Also give the redox reaction involved.
3. How are nano materials prepared by laser-abrasion technique ?
4. What is meant by cathodic protection ? How is it done ?
5. Calculate the emf of the following cell at 298 K.



6. Differentiate between aerobic oxidation and anaerobic oxidation.
7. Outline the principle and applications of gas chromatography.
8. How are the following elastomers prepared ?
 - a) Neoprene
 - b) Buna-S.
9. What are conducting polymers ? Give two examples with their chemical structures.
10. Outline the functions of drying oils and thinners in paint.



PART – B

Answer **two full** questions from **each** Module. **Each** question carries **10** marks.

MODULE – I

11. What is quinhydrone electrode ? Explain how is it used to determine the pH of a solution, by coupling with a saturated Calomel electrode.
12. Write notes on :
 - a) Corrosion inhibitors
 - b) Chemical conversion coatings.
13. What are the advantages of conductometric titrations over ordinary volumetric methods ? Illustrate the different cases of conductometric titrations with suitable examples.

MODULE – II

14. Explain the major boiler troubles, their reasons and remedies.
15. Discuss the basic principle of thermogravimetric analysis with the instrumentation, graphical interpretation and applications.
16. What is the significance of BOD and COD in sewage treatment ? How is BOD determined ? Explain the USAB process.

MODULE – III

17. Differentiate between gross calorific value and net calorific value of a fuel. How is the calorific value of a solid fuel determined ?
 18. a) What is meant by compounding of plastics ? Explain the different moulding constituents with their functions with examples.
b) Write note on Silicon Rubber.
 19. Write detailed notes on :
 - a) Extreme pressure lubrication.
 - b) Setting and hardening of Portland cement.
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