



Reg. No. :

Name :

**Combined First and Second Semester B.Tech. Degree
Examination, October 2014
(2013 Scheme)
13.103 : ENGINEERING CHEMISTRY (ABCEFHMNPRSTU)**

Time : 3 Hours

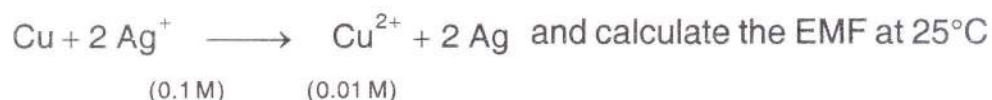
Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **2** marks.

(10×2= 20 Marks)

1. Represent the cell corresponding to the cell reaction



($E^\circ = + 0.46 \text{ V}$).

2. Calculate the hardness of 0.01 M AlCl_3 solution.
3. Explain the working of a catalytic convertor in an automobile.
4. Describe the 'Laser ablation' technique for the preparation of nano materials.
5. How 'Biodiesel' is prepared ?
6. What are 'corrosion inhibitors' ? Explain with two examples.
7. List out the advantages of a Fuel Cell.
8. Describe the preparation of PMMA. What are its uses ?
9. Write a note on 'Tacticity' of a polymer.
10. State and explain 'Beer Lamberts Law'.



PART – B

Answer **any one** question from **each** Module. **Each** question carries **20** marks.

(20×4= 80 Marks)

Module – I

11. a) I-R stretching frequency of CO is 2140 cm^{-1} . Calculate the force constant of the chemical bond. Given the atomic mass of C = 12 amu and that of O = 16.amu respectively.
- b) Discuss the theory and applications of Thermo Gravimetric Analysis with suitable examples.
12. a) Describe the preparation, properties and applications of PHBA and PLA.
- b) Outline the principles and applications of Gas Chromatography.

Module – II

13. a) What are concentration cells ? Describe its applications.
- b) Explain the construction and working of a Lithium ion cell.
14. a) Discuss the mechanism of Electrochemical corrosion.
- b) What is paint ? Describe the functions of its components with suitable examples.

Module – III

15. a) Discuss the various steps involved in the treatment of Municipal water.
- b) Differentiate between Biological Oxygen Demand and Chemical Oxygen Demand. Outline the principles involved in their estimations.
16. a) Identify the important air pollutants, their sources, effects and control measures.
- b) Write a note on :
- Reverse Osmosis and
 - Composting of solid waste



Module – IV

17. a) Discuss the steps involved in Proximate Analysis of a given sample of coal.
- b) Describe the method of preparation of Silicon Carbide refractories. Describe their properties and uses.
18. a) Define HCV and LCV of a fuel. How are they related ? Calculate the values for a fuel containing 90% C, 6% H₂, 2% S and 1.6% O₂.
- b) Discuss the manufacture of Portland Cement.
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