



Reg. No. :

Name :

**Combined First and Second Semester B.Tech. Degree
Examination, April 2016
(2008 Scheme)
08-103 : ENGINEERING CHEMISTRY**

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions from Part A. **Each** question carries 4 marks.

1. Write Nernst equation for a single electrode potential. Give any two application.
2. Calculate the hardness of .0001 M $Al_2(SO_4)_3$ solution.
3. What is paint ? Mention the main ingredients of paint.
4. What is aniline point and give its significance ?
5. Give the preparation of Biohydrogen and Bio diesel.
6. CO_2 and water vapour are “green house gases” comment.
7. What is the condition for a molecule to be infra red active ? Explain the condition with reference to CO_2 .
8. Write a note on the properties and uses of PVC and Bakelite.
9. Give the preparation and uses of nanomaterials.
10. Explain the role of buffer in EDTA estimation of hardness of water.

P.T.O.



PART – B

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

Module – I

11. a) What are reference electrode ? How can you determine the pH of a solution using Quin hydron electrode by coupling with calomel electrode ?
b) What are fuel cells ? List the advantages of fuel cells.
12. Describe different methods used for controlling corrosion.
13. a) What are nanomaterials ? Write down the properties and applications of nanomaterials.
b) Write briefly Lazer ablation technique and sputtering technique.

Module – II

14. a) Discuss the principle of N.M.R. spectroscopy.
b) Write a short account of spin-spin splitting.
15. Explain the principle of
 - a) Gas chromatography
 - b) HPLC.
16. a) Explain the Hot-Lime Soda Process for softening of water.
b) Write a note on different types of hardness.

Module – III

17. Discuss the mechanism of polymerization.
18. Explain the term flash and fire point of Lubricant. Describe the measurement of viscosity index.
19. Explain :
 - a) The chemical reaction in the manufacture of port land cement.
 - b) The theory of setting and hardening of cement.
 - c) The role of Gypsum in cement.