Reg. No. : ....

Name : ....

Combined First and Second Semester B.Tech. Degree Examination, April 2013
(2008 Scheme)
08-103 : ENGINEERING CHEMISTRY

Time : 3 Hours

Max. Marks : 100

PART – A

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

1. Calculate the hardness of 0.01 M. $AlCl_3$ solution.

2. State Beer Lamberts Law.

3. Distinguish between thermoplastic resin and thermosetting resin.

4. What is Butyl Rubber ? How is it prepared ? Mention two uses.

5. Explain Reverse Osmosis. What are its advantages ?

6. Which of the following molecules are microwave active ? Rationalise your answer.

   a) CO_2 b) SO_2 c) HCl and   d) H_2O

7. Mention the advantages of conductometric titrations.

8. What is Schwardizing ? Mention its advantages.

9. The potential of a Hydrogen Electrode set up at 25°C in an aqueous solution is – 0.295 V. Calculate its pH.

10. Distinguish between G.C.V. and N.C.V.. How are they related ?

PART – B

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

Module – I

11. a) Distinguish between chemical corrosion and electrochemical corrosion.

    b) Explain the following terms :

       i) Galvanic corrosion and

       ii) Stress corrosion

12. Represent a Daniel cell at 25°C. Write down the cell reaction. Derive Nernst Equation for a single electrode.

13. a) Discuss the methods of preparation of nano materials.

    b) Write a note on Buckminster's Fullerenes.

Module – II

14. a) Calculate the amount of lime and soda for the treatment of 1000 KL water containing 16.2 ppm $Ca(HCO_3)_2$, 7.3 ppm $Mg(HCO_3)_2$, 13.6 ppm $CaSO_4$, 9 ppm $MgCl_2$, 12.6 ppm $FcSO_4.7H_2O$ and 0.1 ppm HCl.

    b) Write a note on internal conditioning of water.

15. Discuss the theory and applications of Gas Solid Chromatography and Gas Liquid Chromatography.

16. a) Distinguish between B.O.D. and C.O.D.

    b) Explain the sewage treatment method.

Module – III

17. How will you determine the Gross Calorific Value of coal ?

18. a) Discuss the theory of friction and mechanism of lubrication.   6

    b) Write a note on solid lubricants.   4

19. a) Explain compounding of plastics.

    b) Explain the theory of setting and hardening of cement.