



Reg. No. : ~~.....~~.....

Name : ~~.....~~.....

**Combined First and Second Semester B.Tech. Degree Examination,
May 2011
(2008 Scheme)
08-103 : ENGINEERING CHEMISTRY
(CMNPHERARUFB)**

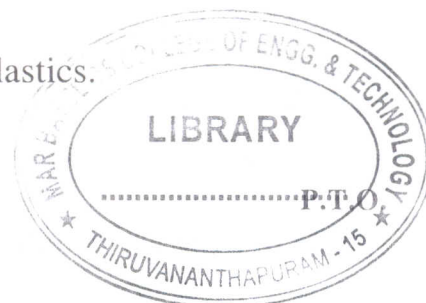
Time : 3 Hours

Max. Marks : 100

PART – A

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

1. State and explain Nernst Equation.
2. Define electrode potential. A copper rod is placed in 0.1 M solution of CuSO_4 at 50°C . Calculate the potential of the electrode $E_{\text{Cu}/\text{Cu}^{2+}}^\circ = + 0.34 \text{ V}$.
3. What is stress corrosion ?
4. What are inhibitors ?
5. Explain the significance of breakpoint chlorination.
6. Which of the following molecules can give IR absorption and explain ?
a) O_2 b) N_2 c) H_2O d) HCN e) HCl
7. Explain the USAB process.
8. Which are the various modes of vibration possible for water, which of them are IR active ?
9. Differentiate between thermoplastics and thermosetting plastics.
10. Define viscosity index, flash and fire points.





PART – B

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

Module – I

11. a) How will you determine the pH of a solution using calomel electrode ?
b) Write notes on Li – ion cell.
12. Explain the factors affecting corrosion.
13. What are paints ? Mention the important ingredients and their functions with suitable examples.

Module – II

14. a) Explain the Lime soda process for water softening.
b) A sample of water on analysis gave the following results :
 $\text{Ca}^{2+} = 30 \text{ mg/L}$, $\text{Mg}^{2+} = 18 \text{ mg/L}$, $\text{HCO}_3^- = 244 \text{ mg/L}$, $\text{Na}^+ = 23 \text{ mg/L}$.
Calculate the amount of lime and soda required per litre to soften the water.
15. What are the sources of air pollution and how can it be controlled ?
16. Write notes on :
 - a) Thermogravimetry
 - b) HPLC.

Module – III

17. a) Explain the different types of moulding techniques.
b) Write notes on :
 - a) Bakelite
 - b) Urea formaldehyde
 18. Write short notes on :
 - a) Biohydrogen
 - b) Biodiesel
 - c) Biomass
 19. Give the various processes involved in the manufacture of Portland cement.
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