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2043

Reg. No. :

Name :

Combined First and Second Semester B.Tech. Degree
Examination, May 2014
(2008 Scheme)
08-103 : ENGINEERING CHEMISTRY

Time : 3 Hours

Max. Marks : 100

PART – A

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

1. Hardness of a solution is 1000 ppm. Calculate its molarity.
2. Differentiate between Thermo Gravimetry and differential Thermal Analysis.
3. Represent a saturated Calomel Electrode. Write down the electrode equation.
4. Explain the actions of anodic and cathodic inhibitors using suitable examples.
5. Differentiate between Galvanic Series and Electrochemical Series.
6. What is Breakpoint Chlorination ?
7. Which of the following molecules will be both microwave and I.R active ?
a) H_2O b) N_2 c) HCl d) CO_2
8. What is Neoprene ? How is it prepared ? Discuss its properties.
9. What is grease ? How is prepared ?
10. Write a note on Biodiesel.

P.T.O.



PART – B

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

Module – I

11. a) What is paint ? List out the constituents and explain their functions.
b) Write a note on hot dipping.
12. a) Derive Nernst equation for electrode potential of a single electrode.
b) Calculate the concentration of chloride ions in the following electrode at 25°C.
 $\text{Pt, Cl}_{2(1\text{atm.})}/\text{Cl}^{-}_{(\text{aq.})}$
if its electrode potential is +0.96 V
[standard potential = +1.13 V]
13. a) Explain the theories of corrosion.
b) Explain the properties and applications of nanowires.

Module – II

14. Describe the EDTA method of estimation of hardness of water.
15. Derive an expression for the microwave spectrum of a simple diatomic molecule with a permanent dipole moment.
16. Discuss the sources, effects and control measures of important air pollutants.

Module – III

17. How will you determine the Calorific value of coal ? What is meant by calorific value of a fuel ?
18. Discuss the theory of setting and hardening of cement. What are the constituents in Portland cement and their functions ?
19. Write a note on :
i) Solid lubricants and liquid lubricants
ii) Viscosity index and
iii) Aniline point.
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