SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Course & Branch: B.E/B.TECH - CSE/E&C/ECE/EEE/EIE/ETCE/IT
Title of the paper: Applied Chemistry – II/
Principles of Electrochemical Sciences & Instrumentation
Semester: II Max. Marks: 80
Sub.Code: 3ET204A/4ET204A/5ET204A/6C0019 Time: 3 Hours
Date: 08-12-2008 Session: AN

PART – A (10 x 2 = 20)

Answer All the Questions

1. Distinguish between reversible and irreversible cells. Give one example for each.

2. The equivalent conductances at infinite dilution of HCl, CH_3COONA and NaCl are 426, 91 and 126 ohm^{-1} cm^{-2} respectively. Calculate the equivalent conductance at infinite dilution for CH_3COOH.

3. Define Pilling-Bedworth rule.

4. What is luminous paints? Give their applications.

5. Differentiate between primary and secondary cells.

6. Write a note on Ni-Cd battery.

7. What is meant by Moh's scale?

8. What are adhesives? Give two examples?

9. Define pH.

10. Write any two applications of conductivity meter.

PART – B (5 x 12 = 60)

Answer All the Questions

11. Explain the determination of EMF of a cell by Poggendorff's method. Give any two applications.

(or)

12. Describe the construction and working principles of calomel and hydrogen electrodes.

13. (a) Discuss the mechanism of electrochemical corrosion.
(b) Write the corrosion control by use of sacrificial anode method.

(or)

14. What are the various constituents of paints? Explain their functions and uses.

15. Write the principle involved in the functioning of a fuel cell. With a neat sketch, explain the working of a hydrogen-oxygen fuel cell.

(or)

16. Draw a diagram. Give the description of lead-acid storage cell. Explain its functioning during discharging and recharging.

17. Discuss the composition and uses of any four natural and synthetic abrasives.

(or)

18. Explain the following properties of lubricants and discuss their significance.
(a) Viscosity index
(b) Flash & fire point
(c) Cloud & pour point
(d) Aniline point

19. Discuss extensively the application and principle in gas chromatography.

(or)

20. Discuss extensively the application and principle in liquid chromatography.