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: Principles of Electrochemical Sciences & Instrumentation

Semester: I	Max. Marks: 80
Sub.Code: 6C0019	Time: 3 Hours
Date: 14-12-2007	Session: AN

PART – A (10 x 2 = 20)

Answer All the Questions

1. Specific conductance decreases but equivalent conductance increases on dilution. Why?

2. Define single electrode potential.

3. Small anodic area results in intense corrosion. Explain.

4. What is luminous paint? Give the important pigment present in it.

5. Write a note on cycle-life of a battery.

6. Why does electrochemical cell stop working after some time?

7. What are soft abrasives? Give examples.

8. Outline the functions of lubricants.

9. State basic principle of chromatographic separation.

10. What are the characteristic features of a carrier gas in GC?

PART – B (5 x 12 = 60)

Answer All the Questions

11. State Kohlrauch's law. Illustrate its applications in detail.

(or)

12. What is electrolyte concentration cell? Derive an expression for obtaining an emf of concentration cell. Discuss its applications.

13. (a) What is cathodic protection? Explain the sacrificial anode and impressed current techniques for the prevention of corrosion. (10)

(b) State Pilling – Bedworth rule. (2)

(or)

14. (a) What is paint? What are the various constituents present in the paint? Explain their functions with example. (9)

(b) Write notes on anodizing. (3)

15. What is reversible battery? Describe the construction and working of Lead – Acid battery with reactions occurring during charging and discharging.

(or)

16. Illustrate in detail the principle and working of hydrogen-oxygen fuel cell with diagram.

17. Explain in detail the physical and chemical factors affecting adhesive action.

(or)

18. (a) What are the various additives added to improve the various properties of lubricant? Give one example each.
(b) Write short notes on solid lubricants.

19. What is the principle underlying Conductometric titration? Discuss the titration curves obtained in the titration of
(a) strong acid and strong base
(b) Strong acid and Weak base and
(c) Silver nitrate and Potassium chloride.

(or)

20. With a neat sketch explain the principle and working of GC.