

# 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  
Sub. Code :4ET204A/5ET204A/6C0019  
Date :20/05/2010

Max. Marks :80  
Time : 3 Hours  
Session :FN

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## PART - A

(10 x 2 = 20)

Answer ALL the Questions

1. What do you mean by electrode potential?
2. Specific conductance decreases but equivalent conductance increases on dilution. Why?
3. Zinc is more readily corroded when coupled with copper than with lead. Why?
4. What is meant by anodisation? How is it done?
5. Explain the advantages of fuel cells over conventional batteries.
6. Why does a dry cell become dead after along time even if it has not been used?
7. Give two examples each for natural and artificial abrasives.
8. What is meant by specific adhesion?
9. What do you mean by chromatography?
10. What are the important characteristics of a material to be used as an adsorbent in chromatography?

## PART – B

(5 x 12 = 60)

Answer ALL the Questions

11. (a) Derive Nernst equation. (8)  
(b) Write a note on SHE. (4)

(or)

12. State Kohlrausch law. Illustrate its applications.

13. Explain the cathodic protection method of corrosion control.

(or)

14. (a) Write a note on special paints. (8)

(b) Discuss the mechanism of drying oils. (4)

15. (a) Explain the construction and working of lead acid battery. Give the reactions involved during charging and discharging. (8)

(b) Distinguish between primary batteries and secondary batteries. (4)

(or)

16. (a) Discuss the principle and working of hydrogen – oxygen fuel cell. (8)

(b) Write a note on Nicad battery. (4)

17. Discuss the physical and chemical factors influencing adhesive action.

(or)

18. (a) What are the various types of additives used in lubricating oils and how do they contribute to the quality of lubricants? (8)

(b) Write a note on semi-solid lubricants. (4)

19. What are the essential parts of a gas chromatograph? Give its important applications.

(or)

20. Discuss the application of conductivity meter and pH meter.