Reg. No. : | | | | | | | | | | |

Question Paper Code: 11005

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2015.

First Semester

Computer Science and Engineering

01UCY105 – APPLIED CHEMISTRY

(Common to EEE, ECE, EIE, ICE and IT branches)

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Define reference electrode.
2. Give the graphical representation of precipitation titration.
3. Write any two differences between thermal and photochemical reactions.
4. State Grothus – Droper law.
5. How can be galvanic corrosion avoided?
6. List out the advantages of electroless plating.
7. Bring any two differences between adsorption and absorption.
8. What do you mean by autocatalysis?
9. State Beer-Lambert's law.
10. What are Chromophores? Give examples.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Derive Nernst equation for the calculation of cell emf. (8)

(ii) Explain the measurement of pH of an unknown solution using glass electrode. mention its advantages. (8)

Or

(b) (i) Apply and explain the Poggendorf's method for the measurement of emf. (8)

(ii) What is emf series? Explain its significance. (8)

12. (a) (i) Discuss in detail about the kinetics of photochemical synthesis of HCl. (8)

(ii) Write short notes on Fluorescence. (8)

Or

(b) (i) When a substance *X* was exposed to 10 lights for 20 minutes and 4 Sec, 0.002 mole of it reacted. In the same time, *X* absorbed 2×10^{6} photons of radiation per second. What is the quantum yield of the reaction? (8)

(ii) Give a account of photolithography. (8)

13. (a) (i) Describe the mechanism of electrochemical corrosion by hydrogen evolution and oxygen absorption. (8)

(ii) What is the principle of cathodic protection method? Explain in detail about the impressed current cathodic protection method with a neat diagram. (8)

Or

(b) (i) Enlist and explain the factors influencing the rate of corrosion with respect to nature of metal. (8)

(ii) What are the important constituents of Paints? Explain the constituents and their functions with examples. (8)

14. (a) (i) Derive an expression for Langmuir's adsorption isotherm. (8)

(ii) Bring out the differences between Physisorption and Chemisorption. (8)

Or

(b) (i) Discuss the role of granular activated carbon in pollution abatement. (8)

(ii) Explain in detail the characteristics of catalysis. (8)

15. (a) (i) Discuss the principle involved in flame photometry and apply it for the estimation of nickel in an aqueous solution. (8)

(ii) Write short notes on electronic transitions caused by energy absorbed in UV region. (8)

Or

(b) (i) Explain the principle and working of atomic absorption spectroscopy with a neat diagram. (8)

(ii) Give a brief discussion on the principle and applications of XRD. (8)

———————