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Question Paper Code: 11005

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2014.

First Semester

Computer Science and Engineering

O1UCY105 - 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. What is single electrode potential?
2. What are the advantages of conductometric titrations?
3. What are photo chemical reactions?
4. State Grothus-Drapers Law.
5. Define corrosion.
6. What is galvanic corrosion?
7. What is chemisorption?
8. What is the limitation of Langmuir's adsorption Isolation?
9. State Lambert's Law.
10. What is an auxochrome?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Define electromotive force. How is it measured by potentiometric method? (8)

(ii) Construct a glass electrode and explain its functioning. (8)

Or

(b) (i) What is an electro chemical series? Explain its different uses. (8)

(ii) Give a brief account of conductometric titration of strong acid versus strong base. (8)

12. (a) (i) State and explain the laws of Photo Chemistry. (8)

(ii) Write a brief account on fluorescence. (8)

Or

(b) (i) What are the differences between Thermal and Photo chemical reaction? (8)

(ii) A certain system absorbs 3×10^{16} quanta of light per second. On irradiation for 10 minutes, 0.002 mole of the reactant was found to have reacted. Calculate the quantum efficiency of the process. (8)

13. (a) (i) What are the factors affecting corrosion? (8)

(ii) Write an account on electroless plating of Ni. (8)

Or

(b) (i) What are paints? Mention the constituents of paints and give their functions. (8)

(ii) Explain sacrificial anodic protection method. (8)

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

(ii) What are the characteristics of catalysis? (8)

Or

(b) (i) What are the differences between physisorption and chemisorptions? (8)

(ii) What are the applications of adsorption? (8)

15. (a) (i) Explain the principle and application of flame photometer. (8)

(ii) A solution of thickness of 2 cm transmits 40% of the incident light. Calculate the concentration of the solution given $\Sigma = 6000 \text{ dm}^3 \text{ mole}^{-1} \text{ cm}^{-1}$. (8)

Or

(b) (i) Explain the important applications of UV spectroscopy. (8)

(ii) Explain the principle and applications of XRD. (8)