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Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, July 2019

(First Degree Programme under CBCSS)

Complementary Course for Physics

CH 1431.1 : PHYSICAL AND INORGANIC CHEMISTRY

(2013 - 2016 Admns)

Time : 3 Hours Max. Marks : 80

Section A 1mark (answer in one word/sentence)

Answer all questions

1. Acid catalyzed hydrolysis of methyl acetate is a ———— reaction.
2. The rate of reaction ———— with increase of temperature.
3. What is the unit of second order rate constant?
4. What is critical solution temperature?
5. Quantum yield is ————
6. Name one law of photochemistry
7. The process of producing Cold light is called—

8. The primary process in the hydrogen chlorine reaction is called the ————————

9. For an ideal solution the values of ΔH mixing and ∇V mixing are ————————and ————————

10. Alum purifies muddy water by ————————

(10 × 1 = 10 Marks)

Section B, 2 marks (short answer type)

Answer any **eight** questions

11. Why most of the reactions does not occur at room temperature?

12. Define half life period of a reaction.

13. Define activation energy.

14. What do understand by photosensetisation?

15. Define the term critical miscellar concentration.

16. Define distribution law.

17. What is the effect of impurities on the critical solution temperature of phenol-water system.

18. Write the formula of stable hydrates in ferric chloride —water system

19. What are azeotropes?

20. What is reverse osmosis?

21. What is the condition for the formation of low spin complexes?

22. What is the equation for Beer-Lambert's law? Explain the terms.

(8 × 2 = 16 Marks)

Section C 4 Marks (Short essay)

Answer any **six** questions

23. Explain the collision theory of reaction rates.

24. Derive the expression for the rate constant of a first order reaction.

25. Explain the different types of catalysis.

26. Explain the terms stable equilibrium and metastable equilibrium

27. Explain how Raoult's law is used for determination of molecular mass of non volatile solute?

28. Explain the $H_2 - C1_2$ reaction in photochemistry.

29. Explain the determination of Avogadro number by using Brownian movement.

30. Explain the valence bond theory of octahedral complexes.

31. Write a note on fractional distillation.

(6 × 4 = 24 Marks)

Section D 15 Marks (long essay)

Answer any **two** questions

32. (a) Briefly explain different laws of photochemistry. **8**

    (b) Discuss the various factors affecting the rate of a reaction. **7**

33. (a) Explain the intermediate compound formation theory and adsorption theory of catalysis. **7**

    (b) Explain the application of co-ordination chemistry in qualitative analysis. **8**

34. (a) Explain the vapour pressure- composition curve for non ideal solutions. 8

(b) Explain the crystal filed theory of tetrahedral complexes. 7

35. (a) Explain the different applications of colloids. 8

(b) Explain the phase diagram of KI - water system. 7

(2 × 15 = 30 Marks)
