

Reg. No. :

Name :

Fourth Semester B.Sc. Degree Examination, May 2021.

First Degree Programme under CBCSS

Chemistry

Complementary Course for zoology

CH 1431.4 PHYSICAL CHEMISTRY

(2019 Admn Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

(Answer all questions, each question carry 1 mark)

1. Write one example for first order reaction
2. What is an emulsion?
3. Name one example for Lewis acid
4. What is meant by pH
5. Write one Example for chromophore.
6. Define CST.
7. What are azeotropic mixture?
8. What is meant by chemical shift?

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9. Write one example for purification of colloid
10. What is the unit for second order reaction?

(10 × 1 = 10 Marks)

SECTION – B

(Answer **any eight** question, each question carries **2** mark)

11. What are different types of electronic transition?
12. Describe Hollow Cathod Lamp.
13. Explain zeta potential
14. Define zero order reaction.
15. What is meant by sol, explain with example?
16. Explain the term Degree of Hydrolysis
17. What is meant by order of a reaction, give example
18. Explain the mechanism of buffer action.
19. Describe Henderson equation
20. How can you define a colloidal state?
21. What is meant by critical micelle concentration?
22. Differentiate between hypochromic and hyperchromic shift
23. What is the reference used in NMR spectroscopy and why it is used as reference?
24. What are the application of AAS?

25. Explain Raoult's law.
26. What are azeotropic mixtures, explain with example.

(8 × 2 = 16 Marks)

SECTION – C

(Answer **any six** question, each question carry **4** marks)

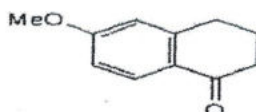
27. Derive equation for first order kinetics with an example.
28. A buffer solution contains 0.30 mole of NH_4OH and 0.45 mole of NH_4Cl per litre, Calculate the pH of the solution if 0.5ml of 1M HCl added to it. Dissociation constant of NH_4OH is 1.81 at room temperature.
29. Explain red and blue shifts in UV-Vis spectroscopy with suitable example.
30. Explain the effect of temperature on reaction rate
31. Explain Lowry-Bronstead and Lewis concept of acids and bases
32. Illustrate on different properties of colloids
33. What are the application of colloids?
34. Briefly explain principle of NMR spectroscopy
35. Describe Gas Chromatographic technique.
36. What are the deviations observed for real gases satisfying Raoult's law
37. What are the applications of UV spectroscopy?
38. Explain intermediate compound formation theory

(6 × 4 = 24 Marks)

SECTION – D

(Answer **any two** question, each question carry **15** marks)

39. (a) Explain Collision theory
(b) Describe how catalyst increase reaction rate. (7.5+7.5)
40. Illustrate on various methods for the preparation and for purification of colloid solution. (15)
41. (a) Derive the relation between K_h , K_w and K_a .
(b) Explain principle and application of TG. (15)
42. (a) Why salt of strong acid and strong base does not undergo hydrolysis explain.
(b) Explain Henderson equation. (7.5+7.5)
43. (a) Describe different types of electronic transitions.
(b) Calculate the λ_{max} of the following compound. (7.5+7.5)



44. Briefly explain the Instrumentation, principle and application of HPLC technique. (15)

(2 × 15 = 30 Marks)