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Reg. No. : ....

Name : ....

Third Semester B.Sc. Degree Examination, January 2023

First Degree Programme under CBCSS

Chemistry

Complementary Course for Botany

CH 1331.3 : PHYSICAL CHEMISTRY

(2017 – 2018 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer all questions, each question carries 1 mark.

1. What is an Ideal Solution?

2. What is meant by critical solution temperature?

3. Define Van't Hoff factor.

4. Example for an emulsion system.

5. Why TMS is used as standard in NMR Spectroscopic analysis?

6. Give an example for auxochrome.

7. Write the Arrheinius equation.

8. Define Kw?

9. Give one example of immiscible liquid pairs.

10. Define the term molarity.

SECTION – B

Short Answer type, Answer any **eight** questions, each carries **2** marks.

11. What is meant by zeta potential?

12. What is mole fraction?

13. Define isotonic solution?

14. Define distribution law.

15. Explain Hardy-Schulz rule?

16. How a compound is separated by fractional distillation?

17. What is the mechanism of buffer action?

18. What is meant by Chemical shift?

19. Define red shift in UV Spectroscopy.

20. What is azeotropic mixture?

21. Explain two colligative properties.

22. What is critical micelle concentration?

(8 × 2 = 16 Marks)

SECTION – C

Short essay type, Answer any **six** questions, each carry **4** marks.

23. Derive integrated rate expression for a first order reaction.

24. Explain collision theory of reaction rate.

25. Briefly explain phenol-water system.

26. What are the applications of solvent extraction? Explain with example.

27. Explain the basic characteristic of electromagnetic radiation and its classification.

28. Illustrate the principle in NMR spectroscopy.

29. Discuss how impurities affect CST and miscibility.

30. Discuss the various applications of colloids.

31. Describe one method to determine osmotic pressure.

(6 × 4 = 24 Marks)

SECTION – D

Long essay type, Answer any **two** questions, each carries **15** marks.

32. (a) How UV spectroscopy can be used to find conjugation and functional group in molecule.   **8**

     (b) Describe on different types of colloid system with suitable example.   **7**

33. (a) Derive the equation for activation energy.   **8**

     (b) Explain different types of catalysis taking suitable example.   **7**

34. (a) Explain the Principle of MRI.   **7**

     (b) Write short note on abnormal colligative properties and Van't Hoff factor.   **8**

35. (a) Describe different properties of colloids.   **8**

     (b) Discuss the principle and applications of steam distillation.   **7**

(2 × 15 = 30 Marks)

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