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FOUR YEAR B.Sc. (Honours) (CBCS) DEGREE EXAMINATION, APRIL/MAY 2025.

FOURTH SEMESTER

Chemistry — Minor

Paper 4 — GENERAL AND PHYSICAL CHEMISTRY

(w.e.f. 2023-24 Regulation)

Time : Three hours

Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE questions.

1. Define enantiomers and Diastereomers with examples.
2. Explain optical isomerism of Alanine.
3. Discuss about toxicity of cadmium ions.
4. Explain the biological significance of carbonic anhydrase and carbonic peptidase.
5. What is buffer solution? Write the Henderson equations for both acid buffer and basic buffer solutions.
6. Explain the selection of indicators in acid base titrations.
7. What is rate of reaction? Discuss the effect of catalyst and temperature on rate of reaction.
8. What is molecularity? Discuss the differences between order and molecularity.
9. What is zero order reaction? Derive rate constant for zero order reaction
10. What are inhibitors of enzymatic catalytic reactions? Give two examples.

SECTION B — (5 × 10 = 50 marks)

Answer ALL the following questions.

11. Explain the optical isomerism of Tartaric acid.

Or

12. Give a brief account on molecular representations of Newmann projections and saw-Horse formulae.

13. Explain the toxicity of lead and arsenic mercury ions.

Or

14. Explain the storage and transfer of iron mechanism of myoglobin.

15. Explain the theories of acid-base indicators.

Or

16. Discuss :

(a) Common ion effect

(b) Solubility product

17. What is first order reaction? Give two examples. Derive the rate constant for first order reaction.

Or

18. Discuss the general methods for determination of order of reaction.

19. Explain :

(a) Collision theory of rate of reaction

(b) Activated complex theory.

Or

20. What is enzymatic catalysis? Give two examples. Explain the factors affecting enzymatic catalysis.
