

(Pages : 3)

N – 4014

Reg. No. : .....

Name : .....

**First Semester B.Sc. Degree Examination, June 2022**

**First Degree Programme under CBCSS**

**Biochemistry**

**Complementary Course I : for Botany and Zoology**

**BC 1131 : BIOPHYSICAL CHEMISTRY**

**(2014 – 2019 Admission)**

Time : 3 Hours

Max. Marks : 80

SECTION – I

Very short answer type- maximum **two** sentences. Answer **all** questions.

1. Define Beer Lamberts law
2. Write the chromatographic techniques in which protein can be separated with different molecular size.
3. Name an anion exchange resin used for the separation of proteins
4. Define  $R_f$  value.
5. What are the components of a buffer solution?
6. Define one normal solution.
7. What is solvation of colloids?
8. Name the carbohydrate used for the preparation of density gradient.

P.T.O.

9. What are functional isomers?

10. What is pKa?

**(10 × 1 = 10 Marks)**

### SECTION – II

Short answer questions not exceed one paragraph. Answer **any eight** questions.

11. Write notes on phosphodiester linkage.

12. Why lyophilic sol is more stable than lyophobic sol?

13. Explain the Bronsted and Lewis concept of acid and bases.

14. Write note on osmotic pressure.

15. Write the principle of separation by paper chromatography.

16. What is two-dimensional electrophoresis?

17. Write notes on calorimeter.

18. Differentiate between diffusion and osmosis.

19. Discuss isoelectric focusing.

20. What are ion exchange resins?

21. Write notes on properties of colloids

22. What are emulsions? Discuss their different types with one example of each type.

**(8 × 2 = 16 Marks)**

### SECTION – III

Short essay- not to exceed 120 words. Answer **any six** questions.

23. Explain the principle, procedure and application of gel filtration chromatography.

24. Enlist different types of isomerism.

25. Describe Gibbs-Donnan equilibrium.
26. Write a note on important radioisotopes used in biochemical research.
27. Explain the applications of Henderson Hasselbatch Equation.
28. Differentiate hypertonic, hypotonic and isotonic solutions.
29. What is the normality of the NaOH solution obtained by dissolving in 2.0 g dissolved in 50 mL of solution?
30. Explain in detail principle, working on the spectrophotometer.
31. Explain in detail the sub cellular fractionation.

**(6 × 4 = 24 Marks)**

#### SECTION – IV

Long essay. Answer **any two** questions.

32. Describe the principle, procedure and applications of SDS PAGE.
33. Discuss the principle, instrumentation and applications of HPLC.
34. Discuss different methods for measuring concentration of solution.
35. Explain the principle, procedure and applications of differential centrifugation.

**(2 × 15 = 30 Marks)**

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