

(Pages : 4)

N – 4248

Reg. No. :

Name :

First Semester B.Sc. Degree Examination, June 2022
Career Related First Degree Programme under CBCSS
Group 2 (a) – Botany and Biotechnology
Complementary Course – I
BB 1131 : PHYSICAL ASPECTS OF BIOCHEMISTRY
(2020 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions in **one** word or two maximum sentence. Each question carries **1** mark.

1. Write the equation for ionic product of water.
2. What are buffers?
3. Define an isotonic solution.
4. Define Normality.
5. Name an emulsifying agent.
6. State Beer-Lambert law
7. Name the gel used for the electrophoresis of nucleic acids.
8. Why are glass cuvettes not used in uv spectrophotometry?

P.T.O.

9. Define Rf value.
10. Name the macromolecules which have phosphodiester bonds.

(10 × 1 = 10 Marks)

SECTION – B

Answer **any eight** questions not to exceed **one** paragraph. Each question carries **2** marks.

11. Write the equation for the ionization of H_2CO_3 and identify the conjugate acid and base pairs.
12. Show that ionic product of water is a constant.
13. Why is phosphoric acid called triprotic?
14. Spell out any four unique properties of water.
15. Differentiate between diffusion and osmosis.
16. What is the principle of affinity chromatography?
17. Distinguish between lyophilic and lyophobic colloids.
18. What is the difference between oil in water emulsion and water in oil emulsion?
19. What are emulsions? Give two examples.
20. What is a Svedberg unit? What is the value of one Svedberg?
21. What is meant by monochromatic light? How is it produced?
22. What is the principle of cation exchange chromatography?
23. What are the components of a pH meter?
24. What is electroosmosis?

25. How is polyacrylamide gel prepared?
26. Distinguish between peptide bond and glycosidic bond.

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions short essay; Each questions carries **4** marks.

27. Explain the unique properties of water.
28. Discuss the different physiological buffer systems.
29. Explain the fundamental principles of diffusion.
30. Discuss osmotic pressure and its application.
31. Explain emulsions and emulsifying agents with examples.
32. With the help of a neat diagram describe the parts of a single beam spectrophotometer.
33. Discuss the principle and applications of density gradient centrifugation.
34. Explain the principle and applications of TLC.
35. Explain native PAGE and its applications.
36. What are non covalent bonds? Discuss the different types non-covalent bonds.
37. Comment on common functional groups in biomolecules and add a note on their significance.
38. Discuss the most suitable method for separating and detecting amino acids in a given sample of protein hydrolysate.

(6 × 4 = 24 Marks)

SECTION – D

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

39. Explain buffers, buffer action, buffer capacity and biological buffer systems.
40. Write the principle, procedure and applications of gelfiltration.
41. Discuss the biological significance of osmosis, surface tension and viscosity.
42. Explain the principle, procedure and applications of SDS-PAGE.
43. Describe the principle and working of a pH meter.
44. Give an account of inter and intramolecular interactions in biological systems.

(2 × 15 = 30 Marks)
