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Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, September 2023

Career Related First Degree Programme under CBCSS

Botany and Biotechnology

Foundation Course – II

BB 1221 : BIOPHYSICS AND INSTRUMENTATION

(2019 Admission Onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** the questions in a word or **one** or **two** sentences. **Each** question carries **1** mark.

1. What is myopia?
2. Give note on phase contrast microscopy.
3. What is native gel electrophoresis?
4. Comment on hearing aids.
5. What are isotopes?
6. Expand SEM.
7. Define numerical aperture.

P.T.O.

8. Comment on Geiger muller counter.

9. What is isoelectric point?

10. Who invented electron microscope?

(10 × 1 = 10 Marks)

SECTION – B

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

11. Explain auto radiography.

12. Give a note on first law of thermodynamics.

13. Identify the applications of confocal microscopy.

14. What is a colorimeter?

15. Comment on MALDI-TOF.

16. Write a short note on SDS-PAGE.

17. What is submarine electrophoresis?

18. Give note on IR spectroscopy and its applications in biosciences.

19. What is dark-field illumination?

20. Explain the components of PAGE.

21. Give note on calomel electrode.

22. Identify the applications of an inverted microscope.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. **Each** question carries **4** marks. (Answer not to exceed **120** words)

23. Discuss on applications of radio active isotopes in biology.

24. Explain chemiosmotic hypothesis.

25. Briefly discuss the principle and applications of TEM.

26. What is Beer-Lambert law? Explain its applications.

27. Explain X–ray crystallography.

28. What is immuno electrophoresis?

29. Explain the structure of ATP synthase.

30. What is density gradient centrifugation? Write it's applications.

31. Discuss the applications of NMR.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. **Each** question carries **15** marks. (Answer not to exceed three pages)

32. Write an essay on oxidative phosphorylation and explain respiratory electron transport chain.

33. Explain the principles and optics of microscopy with suitable illustrations.

34. Briefly describe different techniques/instrumentation available for study of macromolecular structures.

35. Discuss different tracer techniques for radioisotopes.

(2 × 15 = 30 Marks)
