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P – 1499

Reg. No. :

Name :

Second Semester B.Sc. Degree Examination, September 2022

Career Related First Degree Programme Under CBCSS

Group 2(a) Botany and Biotechnology

BB 1221 : BIOPHYSICS AND INSTRUMENTATION

(2015 - 2018 Admission)

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 magnification of a microscope?
2. Define densitometry.
3. What are otoliths?
4. Name a fluorescent dye used in electrophoresis.
5. What is isoelectric focussing?
6. Define fluorescence.
7. What is time of flight mass analyzer?
8. Mention the use of condenser lens.
9. What is diabetic retinopathy?
10. Define bioenergetics.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

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

11. What is the principle behind Phase contrast microscopy?
12. List the applications of agarose gel electrophoresis.
13. Comment on Atomic Absorption Spectroscopy.
14. What is density gradient centrifugation?
15. State the first law of thermodynamics.
16. What is IR spectroscopy? Add a note on its applications.
17. Differentiate between an isotope and radioisotope.
18. What is sedimentation coefficient?
19. Why buffer is used in electrophoresis?
20. What is proton motive force?
21. Explain the principle behind colorimetry.
22. What is oxidative phosphorylation?

(8 × 2 = 16 Marks)

SECTION – C

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

23. Give a comparison between SEM and TEM.
24. Brief a note on autoradiography.
25. Explain the principle and applications of fluorescence microscopy.
26. Comment on hearing aids.

27. Explain the working of pH meter.
28. What is immunoelectrophoresis? What is its importance?
29. Discuss the mechanism of action potential generation in neurons.
30. Give a brief account on X-ray crystallographic techniques.
31. Explain the structure and function of ATP synthase.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Explain the principle, working and applications of NMR Spectrometer.
33. Describe the mechanism of vision with suitable illustrations.
34. Explain the steps involved in ATP synthesis by Electron Transport Chain.
35. What is SDS PAGE? Explain its principle, working and applications.

(2 × 15 = 30 Marks)
