



K24P 3878

Reg. No. :

Name :

I Semester M.Sc. Degree (C.B.C.S.S. – OBE-Reg./Supple./Imp.)

Examination, October 2024

(2023 Admission Onwards)

BOTANY

MSBOT01C04 : Research Methodology, Instrumentation and Biostatistics

Time : 3 Hours

Max. Marks : 60

PART – A

Answer any five questions.

(5×3=15)

1. Define null hypothesis and alternative hypothesis, and explain how they are tested.
2. Discuss the principle and applications of X-ray diffraction in structural biology.
3. Differentiate between Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM).
4. What are the different data collection methods employed in scientific research ?
5. Explain the significance of bioreactors in industrial and pharmaceutical processes.
6. Define the terms skewness and kurtosis in statistical analysis and explain their significance.

PART – B

Answer any three questions.

(3×6=18)

7. Explain the principle behind the use of DNA sequencers and their applications in modern research.
8. What is Intellectual Property Rights (IPR) ? Discuss the process of patenting and its role in research.
9. Provide an overview of statistical software tools used in biological data analysis.

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10. Discuss the different types of research methodologies used in plant science research.
11. Explain how data can be represented through graphs and diagrams and their advantages in research.

PART – C

Answer **any three** questions.

(3×9=27)

12. Discuss the principle and different types of electrophoresis techniques used for protein and DNA analysis.
13. Describe the process of planning a research project, including key components such as objectives, methodology, and timeline.
14. Explain the various types of chromatography techniques (e.g., gas chromatography, liquid chromatography) and their applications.
15. Discuss the ethical and legal challenges faced by researchers, particularly in clinical trials.
16. Write an essay on the different experimental designs used in plant and biological research, with suitable examples.

