



K24U 2717

Reg. No. :

Name :

**V Semester B.Sc. Degree (CBCSS – OBE – Regular/Supplementary/
Improvement) Examination, November 2024
(2019 to 2022 Admissions)
CORE COURSE IN BOTANY/PLANT SCIENCE
5B09BOT/PLS : Research Methodology, Instrumentation and Biostatistics**

Time : 3 Hours

Max. Marks : 40

PART – A

(Objective Type Questions)

Answer all.

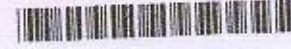
(4×1=4)

1. Which instrument is used to measure the concentration of solutes in a solution ?
 - a) pH meter
 - b) Spectrophotometer
 - c) Microscope
 - d) Autoclave
2. Which of the following is a type of microscopy ?
 - a) PCR
 - b) Spectrophotometry
 - c) Fluorescence microscopy
 - d) Centrifugation
3. What is the main purpose of a buffer solution in biochemical experiments ?
 - a) To measure temperature
 - b) To maintain a constant pH
 - c) To sterilize equipment
 - d) To amplify DNA

P.T.O.

K24U 2717

-2-



4. What is the purpose of using biostatistics in research ?
 - a) To prepare solutions
 - b) To analyze biological data
 - c) To measure light absorption
 - d) To sterilize laboratory tools

PART – B

(Short Answer Questions)

Answer any eight.

(8×2=16)

5. What are the key principles of research methodology ?
6. Describe the role of ethics in scientific research.
7. Differentiate between spectrophotometry and chromatography.
8. Explain the importance of calibration in the use of a pH meter.
9. What are the types of microscopy commonly used in research ?
10. Discuss the role of computers in data analysis for scientific research.
11. What are the different methods of sterilization used in laboratories ?
12. Describe the principle behind the operation of a spectrophotometer.
13. What is the significance of buffers in maintaining the pH of a solution ?
14. Explain the function of a biostatistician in research studies.
15. Describe the role of molecular biology techniques in modern research.
16. What are some common applications of microscopy in plant sciences ?

PART – C

(Essay Questions)

Answer any four.

(4×3=12)

17. Discuss the different methods of sterilization and their applications in a laboratory setting.
18. Explain the process of preparing and using buffers in biochemical experiments.



-3-

K24U 2717

19. Describe the principles of spectrophotometry and its applications in biological research.
20. Explain how molecular biology techniques such as PCR and gel electrophoresis are used in research.
21. Discuss the ethical considerations involved in scientific research.
22. Describe the importance and methods of calibrating a pH meter for accurate measurements.

PART – D

(Long Essay Questions)

Answer any one.

(1×8=8)

23. Write a detailed note on the various types of microscopy. Include their principles, advantages and typical applications in biological research.
24. Discuss the principles and applications of different biostatistical methods used in analyzing scientific data.
25. Explain the steps involved in the scientific research process from hypothesis formation to publication.