M. Sc DEGREE END SEMESTER EXAMINATION - APRIL 2021
SEMESTER 4 : BOTANY
COURSE : **16P4BOTT16 : BIOSTATISTICS, MICROTECHNIQUES AND BIOPHYSICS**
(For Regular - 2019 Admission and Supplementary - 2018/2017/2016 Admissions)

Time : Three Hours   Max. Marks: 75

PART A
Answer any 8 (2 marks each)

1. What is the principle behind killing and fixation?
2. What is dioxan? Explain its use.
3. What are acidic, basic and neutral dyes? Which component of cells gets stained by these? Give example.
4. What are the different types of knives used in TEM specimen preparation?
5. Explain glycerol-xylol method of mounting.
6. How can you calculate the magnification of a compound microscope?
7. What is paper chromatography? How will you prepare it?
8. Differentiate between stationary phase and mobile phase with examples.
9. Differentiate standard deviation and standard error.
10. Describe linear and non-linear correlation.
11. What is Latin Square design?
12. Explain goodness of fit.

                                                                                  (2 x 8 = 16)

PART B
Answer any 7 (5 marks each)

13. Explain the different Killing and fixing fluids.
14. What are dehydrating agents? Explain various types of dehydrating agents.
15. Explain the techniques used to localize various chemical substances in the plant material.
16. What is the significance of Haupt's adhesive? How is it prepared?
17. Write a brief account on the principles and aberrations of light microscope.
18. Explain the mobile phase and stationary phase of HPLC.
19. What is data? Explain different types of data and how do you use data for a research work.
20. Explain the formula $y = a + bx + e$
21. Explain different types of distribution of data and their applications.
22. Explain randomization. Discuss the significances of randomization in biological experiments.

                                                                                  (5 x 7 = 35)

PART C
Answer any 2 (12 marks each)

23. What is staining? Explain its principle. What are the different techniques to prepare single, double and triple stains?
                    OR
24. What is microscopy? Discuss on working principle and applications of various microscopes.

25. Review critically the basic principles involved in spectrophotometry. Write a note on the differences between colorimetry and spectrophotometry.
                    OR
26. Write an essay on the assumptions, steps involved and uses of *t*-test

                                                                                  (12 x 2 = 24)