Reg. No ..... Name **23P4040**

M. Sc. DEGREE END SEMESTER EXAMINATION : MARCH 2023

SEMESTER 4 : BOTANY

COURSE : **21P4BOTT16 : BIOSTATISTICS, MICROTECHNIQUES AND BIOPHYSICS**

(For Regular - 2021 Admission)

Duration : Three Hours Max. Weights: 30

PART A

Answer any 8 questions **Weight: 1**

1.	Compare stage and ocular micrometers.	(R, CO 1, CO 2, CO 4)
2.	What is double staining? Give an example.	(R, CO 1, CO 4)
3.	Explain goodness of fit.	(U, CO 1, CO 5)
4.	What are the properties of a dehydrating agent? Give an example.	(R, CO 1, CO 4, CO 6)
5.	What is ultramicrotomy?	(R, CO 1, CO 4)
6.	What are the principles of experimental design?	(U, CO 1)
7.	Write a note on ultracentrifuge.	(U, CO 2, CO 3, CO 4)
8.	Explain a scatter plot.	(U, CO 3, CO 5)
9.	Explain briefly about measures of dispersion.	(U, CO 3)
10.	What is a gray filter ring?	(U, CO 4)

(1 x 8 = 8)

PART B

Answer any 6 questions **Weights: 2**

11.	Explain the different dehydration methods used in plant microtechnique.	(U, CO 1, CO 4, CO 6)
12.	Write the composition and uses of FAA, FPA, and Carnoy's Fluid.	(R, CO 1, CO 4)
13.	What is maceration? Discuss different methods of maceration.	(E, CO 1, CO 4)
14.	What are the types of random design in biological experiments? Explain the advantages and disadvantages of each designs.	(An, CO 1)
15.	Evaluate the use of various types of graphs in representing results of statistical analysis. State the significances of graphical representation of data.	(E, CO 1, CO 6)
16.	What is F-test? When do you use F-test in biostatistics?	(U, CO 3, CO 5, CO 6)

17.	Write a note on different centrifugation techniques.	(U, CO 1, CO 3)
18.	What are the parts of a compound microscope? Explain each of its significance.	(U, CO 2, CO 4, CO 6)

(2 x 6 = 12)

PART C

Answer any 2 questions **Weights: 5**

19.	Discuss various natural and synthetic stains used in plant microtechnique. Explain the principle of staining.	(E, CO 1, CO 4)
20.	What is microscopy? Discuss on working principle and applications of Phase contrast microscope and Confocal microscope.	(E, CO 1, CO 2, CO 4)
21.	Write an essay on ANOVA. What are the significances of ANOVA in testing hypothesis?	(An, CO 1, CO 3)
22.	Write an essay on the applications of probability statistics.	(U, CO 1, CO 3)

(5 x 2 = 10)

OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.
CO 1	Define the principles and phenomena in biostatistics, biophysics and microtechnique.	U	1, 2, 3, 4, 5, 6, 11, 12, 13, 14, 15, 17, 19, 20, 21, 22	38
CO 2	Explain the tools and techniques available for studding biochemical and biophysical nature of life.	A	1, 7, 18, 20	9
CO 3	Solve problems and research analysis with precision by applying biostatistical tools.	A	7, 8, 9, 16, 17, 21, 22	17
CO 4	Apply microtechniques and microscopic examination in histochemical studies.	A	1, 2, 4, 5, 7, 10, 11, 12, 13, 18, 19, 20	24
CO 5	Analyse various statistical tools and its applications in data processing	An	3, 8, 16	4
CO 6	Develop skill in statistical analysis, microtechnique and biophysics	A	4, 11, 15, 16, 18	9

Cognitive Level (CL): Cr - CREATE; E - EVALUATE; An - ANALYZE; A - APPLY; U - UNDERSTAND; R - REMEMBER;