

U.G. 5th Semester Examination - 2024**BOTANY****[HONOURS]****Discipline Specific Elective (DSE)****Course Code : BOTH-DSE-T-01A****(Analytical Techniques in Plant Sciences)****Full Marks : 40****Time : 2½ Hours***The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.***1. Answer any five of the following questions: 2×5=10**

- a) Name the gases used in GLC with FID detector.
- b) What is freeze etching?
- c) Write down the principles of flow cytometry.
- d) What is cryofixation?
- e) What is meant by mobile phase?
- f) Write full form of HPLC and NMR.
- g) What is marker enzyme? Write an example.
- h) What is autoradiography?

[Turn over]

2. Answer any two of the following questions: $5 \times 2 = 10$

a) Compare between agarose gel electrophoresis and polyacrylamide gel electrophoresis. 5

b) Explain how is fluorescence microscopy used in chromosome banding and chromosome painting. $2\frac{1}{2} + 2\frac{1}{2}$

c) Define mean deviation and standard deviation and write down the formula of each of them. 5

d) Write down the differences between scanning electron microscopy and transmission electron microscopy. 5

3. Answer any two of the following questions: $10 \times 2 = 20$

a) Write down the principle and role of spectrophotometry in biological research. $2 + 8$

b) Write in detail the sample preparation of scanning electron microscopy. 10

c) Write down the differences between TLC and GLC. Write in brief the principles and uses of affinity chromatography and molecular sieve chromatography. $4 + 3 + 3$

d) What is sampling? Why sampling is essential in biostatistics? Calculate the Arithmetic Mean and Standard Deviation from the following data:

$2 + 2 + 6$

Plant height (cm.)	0-10	11-20	21-30	31-40	41-50	51-60
No of cultivars	10	8	22	28	16	12

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