



'সমানো মন্ত্র: সমিতি: সমানী'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 5th Semester Examination, 2023

DSE-P1-TEA SCIENCE

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

**The question paper contains Paper-I and Paper-II.
The candidates are required to answer any *one* from *two* Papers.
Candidates should mention it clearly on the Answer Book.**

PAPER-I

ANALYTICAL TECHNIQUES IN PLANT SCIENCES

1. Answer any **five** questions from the following: 1×5 = 5
 - (a) What is the full form of SDS-PAGE? 1
 - (b) What do you mean by Cryofixation? 1
 - (c) What is the full form of TLC? 1
 - (d) What is standard deviation? 1
 - (e) What do you mean by flow cytometry? 1
 - (f) What is x-ray diffraction? 1
 - (g) What are the two major uses of Chi-square? 1
 - (h) What is the use of UV-Vis spectroscopy? 1

2. Answer any **three** questions from the following: 5×3 = 15
 - (a) Write a short note on chromosome banding technique. 5
 - (b) Write a note on paper chromatography. 5
 - (c) Write a note on mean, mode and median with suitable example. 5
 - (d) Write a note on ion-exchange chromatography. 5
 - (e) Write a note on application of fluorescence microscope. 5

3. Answer any **two** questions from the following: 10×2 = 20
 - (a) Write in detail about centrifugation. 10
 - (b) What is the full form of ELISA? Write a note on ELISA and its application. 1+9
 - (c) What is the full form of NMR? Write about NMR. What are the uses of NMR spectroscopy? 1+7+2
 - (d) Write in detail about electron microscope. 10

PAPER-II

PLANT BIOTECHNOLOGY

1. Answer any *five*: 1×5 = 5
- (a) What is abiotic stress? 1
 - (b) Define Biopolymer. 1
 - (c) What is the full form of PTGS? 1
 - (d) Define transgenic plants. 1
 - (e) What are planti-bodies? 1
 - (f) What is mutation? 1
 - (g) Define molecular marker. 1
 - (h) Define genome. 1
2. Answer any *three*: 5×3 = 15
- (a) Write about Ti plasmid. 5
 - (b) How can biotechnology help in conserving biodiversity — Explain. 5
 - (c) How can herbicide tolerant transgenic crops help in addressing health care issues? 5
 - (d) Write about gene silencing. 5
 - (e) Write about genome organization in higher plants. 5
3. Answer any *two*: 10×2 = 20
- (a) Write about Intellectual property rights and Bioethics in Biotechnology. 10
 - (b) Write about the steps involved in raising insect resistant crop. 10
 - (c) Write about the different methods of gene transfer from prokaryote to eukaryote. 10
 - (d) Write about the importance of male sterile plants through biotechnology. Describe the process. 10

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