



'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 5th Semester Examination, 2022

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** from the following: 1×5 = 5
 - (a) Define Beer's Law.
 - (b) What does FISH stand for?
 - (c) What do you mean by Astigmatism?
 - (d) Who invented phase contrast microscope?
 - (e) What do you mean by Isotope?
 - (f) What is the full form of HPLC?
 - (g) What is the use of X-ray crystallography?
 - (h) What is mean deviation?

2. Answer any **three** from the following: 5×3 = 15
 - (a) Write a note on application of UV-Vis spectroscopy. 5
 - (b) Write a short note on Chi-square test. 5
 - (c) Write a short note on SEM and TEM. $2\frac{1}{2} + 2\frac{1}{2}$
 - (d) What are the precautions should be taken during use of centrifuge? 5
 - (e) Write a note on column chromatography. 5

3. Answer any **two** from the following: 10×2 = 20
 - (a) Write in detail about protein separation by Sodium Dodecyl Sulphate-Polyacrylamide Gel Electrophoresis (SDS-PAGE). 10
 - (b) Give detailed account on extraction of plant constituents. 10
 - (c) Give detailed account of Fluorescence microscope with suitable diagram. 10
 - (d) Write in detail about Nucleic acid blotting. 10

PAPER-II

PLANT BIOTECHNOLOGY

1. Answer any **five** from the following: 1×5 = 5
- (a) What are plasmids?
 - (b) Name the organism from which Bt toxin was reported.
 - (c) What are markers?
 - (d) What do you mean by transgenic plant?
 - (e) What are planti-bodies?
 - (f) What is tolerance of herbicide?
 - (g) What is antisense technology?
 - (h) Write the full form of PTGs.
2. Answer any **three** from the following: 5×3 = 15
- (a) Describe Ti plasmid. 5
 - (b) Illustrate insertion mutagenesis. 5
 - (c) What do you mean by gene silencing? Explain. 1+4
 - (d) Write about the applications of planti-bodies and plant vaccines. 5
 - (e) What are the ethical issues in biotechnology? 5
3. Answer any **two** from the following: 10×2 = 20
- (a) With suitable diagram explain the method of gene transfer through *Agrobacterium*. 10
 - (b) Write about the development of insect resistant crop, citing suitable example. 10
 - (c) What are biochemical and molecular marker? Explain their types. 3+7
 - (d) Write short notes on: 5×2 =10
 - (i) Intellectual property right
 - (ii) Biotechnology for biodiversity conservation.

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