



'समानो मन्त्रः समितिः समानी'

**UNIVERSITY OF NORTH BENGAL**

B.Sc. Honours 6th Semester Examination, 2023

**CC14-BOTANY**

**PLANT BIOTECHNOLOGY**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.*

**GROUP-A**

1. Answer any **five** questions from the following: 1×5 = 5
- (a) What is meant by callus? 1
  - (b) What is cybrid? 1
  - (c) Define cosmid and mention its application. 1
  - (d) Give two examples of Reporter genes. 1
  - (e) FLAVR SAVR tomato was developed by which biotechnology company? 1
  - (f) What are edible vaccines? 1
  - (g) What is genetic erosion? 1
  - (h) What is cDNA library? 1

**GROUP-B**

2. Answer any **three** questions from the following: 5×3 = 15
- (a) What is somatic hybrids? Enumerate its characterization. 2+3
  - (b) Write short notes on: 2½ + 2½
    - (i) Molecular breeding
    - (ii) Molecular farming.
  - (c) Describe in brief, the gene transfer methods using electroporation and particle gun bombardment. 2½ + 2½
  - (d) Describe the role of growth regulators in plant tissue culture. Give examples of any two commonly used auxin and cytokinin each. 3+2
  - (e) Differentiate between: 2½ + 2½
    - (i) BAC and YAC
    - (ii) Somatic embryo and Zygotic embryo.

**GROUP-C**

3. Answer any *two* questions from the following: 10×2 = 20
- (a) What is meant by disarming of Ti plasmid? With suitable diagram, show the organization of Ti plasmid. Explain the process of gene transfer of Ti plasmid using cointegrate and binary vector. 1+3+6
- (b) Briefly describe the various approaches to produce virus resistant transgenic plant citing one example. How GUS gene is used in plant transformation? 4+6
- (c) Discuss the role of biotechnology for industrial production of enzymes. Give outline for the production of any two industrially important enzymes. 6+4
- (d) Write short notes on:  $2\frac{1}{2} \times 4 = 10$
- (i) pBR322
- (ii) Complementation
- (iii) Restriction mapping
- (iv) Expression and importance of Totipotency.

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