



'সমানো মন্ত্র: সমিতি: সমানী'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours Part-III Examination, 2022

BOTANY

PAPER-VII

Time Allotted: 4 Hours

Full Marks: 80

The figures in the margin indicate full marks.

1. Answer **all** the questions from the following: 2×8 = 16
 - (a) What do you mean by the term scion and stock? 2
 - (b) Define gene bank. Name one Indian gene bank. 1+1 = 2
 - (c) What is the full form of RFLP? Give one important application of RFLP. 1+1 = 2
 - (d) What is emasculation? Give one example of cross-pollinated plant. 1+1 = 2
 - (e) Name two base analogue. 2
 - (f) Define test cross and back cross. 1+1 = 2
 - (g) Name the PCR enzyme. From which organism this PCR enzyme was isolated? 1+1 = 2
 - (h) What is sex-linked inheritance? Give one example. 1+1 = 2

2. Answer any **two** questions from the following: 16×2 = 32
 - (a) Define operon. Discuss lac-operon genes with a suitable diagram. Explain how lac-operon is subjected to both positive and negative control. 2+8+6 = 16
 - (b) Define germplasm. Discuss the classical and modern approaches of germplasm conservation. Define trisomic. Describe different trisomics with their meiotic configuration. 2+6+2+6 = 16
 - (c) Define epistasis. Discuss two major epistatic interactions with one example of each. Are they called modified hybrid ratio? 2+10+4 = 16
 - (d) Distinguish between genomic and cDNA libraries. Discuss the different steps involved in construction of cDNA library with a suitable diagram. 4+12 = 16

3. Answer any **four** questions from the following: 8×4 = 32
 - (a) Compare the chemical and chain termination methods of DNA sequencing. 4+4 = 8
 - (b) Write short notes on: 4+4 = 8
 - (i) Hybrid vigour
 - (ii) Male sterility in plant breeding.

- (c) State the laws of inheritance as proposed by Mendel. Explain the laws with suitable examples. 2+6 = 8
- (d) What are the different breeding methods used for improvement of self-pollinated crops? 8
- (e) Define Hardy-Weinberg law. Briefly describe the factors affecting gene/genotypic frequencies. 2+6 = 8
- (f) What is southern blotting? Briefly illustrate the procedures of this technique and its importance.

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