7388

M.Sc. (Final) EXAMINATION, 2025

Botany

Paper : Tenth Paper

(Biotechnology & Genetic Engineering of Plants & Microbes)

Time Allowed : Three Hours **Maximum Marks: 100**

समय : तीन घंटे **अधिकतम अंक : 100**

Each theory paper will have 9 questions, out of which a student has to attempt 5 questions and the question no. 1 will be compulsory. The question No. 1 will carrry 20 marks and will be of short type of questions with a limit of 20 words.

No supplementary answer book will be given to any candidate. Hence the candidates should write the answer precisely in the main answer book only.

All the parts of one question should be answered at one place in the answer book. One complete question should not be answered at different places in the answer book.

1. Answer the following question in short: [2×10=20]

   (i) What are molecular DNA markers?

   (ii) What is the principle of somatic hybridization?

   (iii) What do you mean by somaclones?

   (iv) Define genome.

   (v) What is the principle of microarray?

   (vi) Write two methods for detrmination of protoplast viability.

   (vii) What do you mean by artificial seed?

   (viii) What is the application of DNA fingerprinting in plant biotechnology?

   (ix) What is an artificial chromosome?

   (x) What you understand by bacterial transformation?

Unit-I

2. What is androgenesis? Discuss the mechanism, technique and applications of androgenesis. [2+18=20]

OR

Give a detailed account of history, scope and applications of biotechnology. [20]

Unit-II

3. Describe the principle, procedure and applications of PCR. [6+8+6=20]

OR

Explain the following: [10+10=20]

(i) cDNA library

(ii) Production of secondary metabolites using plant tissue culture.

Unit-III

4. Write short notes on the following: [10+10=20]

(i) Agrobacterium-mediated gene transfer

(ii) Chloroplast transformation

OR

Discuss in detail about the genetic improvement of industrial and agriculture important microbes. [10+10=20]

Unit-IV

5. Write short notes on the following: [10+10=20]

(i) Functional genomics

(ii) Applications of bioinformatics in biotechnology

OR

What is physical mapping of genes? Describe the principle and procedure of physical mapping. [2+8+10=20]

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