

M.Sc. (Previous) EXAMINATION - 2022

Botany

Second Paper

[Cytology, Genetics & Cytogenetic]

Time Allowed: Three Hours

Maximum Marks: 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 carry 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 different places in the answer book.

PART - A

1. Short answer types questions-

2×10=20

- (a) What is RecA enzyme and its function.
- (b) Explain duplication and its effects.
- (c) Define Cis - trans test.
- (d) Write about Introns and its significance.
- (e) What is Genome.
- (f) Define linkage group.
- (g) What are Genetic Markers?
- (h) Write about Xeroderma pigmentosum and its causes.
- (i) What are Proto-oncogenes?
- (j) Explain Polytene chromosomes.

PART - B

2. Write a detailed note on numerical alterations in chromosomes. 20

OR

Write short notes on the following - 10+10=20

- (a) Evolution of hexaploid wheat
- (b) Deficiency

3. Give a detailed note on genetic transformation, conjugation and transduction in bacteria with the help of suitable diagram. 20

OR

Discuss the following - 10+10=20

- (i) Lac operon model
- (ii) Mitochondrial Genetics

4. What are mutation and its types. Discuss physical and chemical mutagens and their effects. 20

OR

Write short notes on the following - 10+10=20

- (i) Transposable elements
- (ii) Translocation and its types

5. What is Restriction Mapping? Give its concept, techniques and applications. 20

OR

Discuss the following - 10+10=20

- (i) Inbreeding and Heterosis
- (ii) Computer assisted Karyotyping