

5642

M.Sc. (Previous) Examination, 2024

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 at different places in the answer book.

PART-A

1. Answer the following questions in short - [2×10=20]
- (i) Define oncogene.
 - (ii) What is the significance of cot-curve analysis?
 - (iii) What is chromatin?
 - (iv) Where does rRNA synthesis occur?
 - (v) What are autopolyploids?
 - (vi) What is the significance of introns in eukaryotes?
 - (vii) Write two examples of sex-linked inheritance.
 - (viii) Define genome.
 - (ix) Draw the labelled diagram of Lampbrush chromosome.
 - (x) Differentiate between monosomics and trisomics.

PART-B

UNIT-I

2. Explain the following - [10+10=20]
- (i) Origin and production of euploids
 - (ii) Molecular basis of chromosome pairing

OR

Explain the following -

[10+10=20]

- (i) Karyotype analysis
- (ii) Molecular organization of centromere and telomere

UNIT-II

3. Describe the processes of genetic transformation and transduction in bacteria.

[20]

OR

Describe the following -

[10+10=20]

- (i) Panoply of operon
- (ii) Construction of molecular map

UNIT-III

4. Explain the following -

[10+10=20]

- (i) Sex reversal
- (ii) Breeding behaviour and genetics of structural heterozygotes

OR

What is mutation? Describe the physical and chemical mutagens and also discuss the molecular basis of mutagenesis.

[20]

UNIT-IV

5. What is alien gene transfer? Discuss the whole genome transfer from Wheat and Brassica.

[2+9+9=20]

OR

Explain the following -

[10+10=20]

- (i) Computer assisted chromosome analysis
- (ii) Multigene families and their evolution
