

AU-305

M.Sc. (Part-I) Semester-II (CBCS Scheme) Examination**BOTANY****Paper-V****(Cytogenetics and Molecular Biology)**

Time : Three Hours]

[Maximum Marks : 80

Note :—(1) All questions are compulsory and carry equal marks.

(2) Illustrate your answers with well labelled diagrams and suitable examples wherever necessary.

1. Write on :

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|---|---|
| (a) Induction and characterization of trisomics | 6 |
| (b) Heterosis | 5 |
| (c) Male sterility in plant breeding. | 5 |

OR

- | | |
|---|---|
| (d) Production of polyploids | 6 |
| (e) Inbreeding depression | 5 |
| (f) Breeding in cross pollinated crops. | 5 |

2. Write on :

- | | |
|--|---|
| (g) Analysis of nuclear DNA content | 5 |
| (h) Linkage mapping of chromosomal genes | 5 |
| (i) Proteins produced by multigene families. | 6 |

OR

- | | |
|---|---|
| (j) Methods for detection of specific genes | 5 |
| (k) Applications of SNP mapping | 5 |
| (l) Role of Chaperones in gene expressions. | 6 |

3. Describe in detail the mechanism of site specific recombination. 16

OR

Describe regulation of gene expression at transcriptional level. 16

4. Describe restriction mapping and its applications in genetic studies. 16

OR

Describe various PCR based molecular markers and their applications. 16

5. Write on :

(m) Maxam and Gilbert technique of DNA sequencing 6

(n) Methods of sampling 5

(o) Role of computational methods in bioinformatics. 5

OR

(p) Dideoxy method of DNA sequencing 6

(q) Test of goodness of fit (Chi-Square test) 5

(r) Various databases used in bioinformatics. 5