

CSM—17/23
PART—II/PAPER—VII
BOTANY
PAPER—II

**Candidate
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write on
this margin.**

Time : 3 Hours

Full Marks : 250

*The question paper contains **18 (Eighteen)** questions
in **GROUP—A (12)** and **GROUP—B (06)** together.*

GROUP—A

*Candidates to attempt **10 (ten)** questions within word limit of **250**.
Each question carries **15** marks.*

1. Describe the ultrastructure of extracellular matrix and its function.
2. Discuss the mechanism of active and passive transport of solutes across the cell membrane.
3. Give an account of structure and function of mitochondria. Discuss its semi-autonomous nature.
4. What is chromatin? Discuss its molecular organization in detail.
5. Describe polygenic inheritance (quantitative genetics). How is it fulfilled in the kernel colour of wheat?
6. What is sex chromosome? Discuss sex-linked inheritance with examples.
7. What is cytoplasmic inheritance? Explain the chloroplast inheritance of male sterility.
8. Discuss the structure and biosynthesis of nucleic acids (DNA and RNA).

9. Give an account of various hybridization techniques. How is hybridization helpful in crop improvement programs?
10. What is apomixis? Discuss the mechanism of apomixis and its application in plant breeding.
11. Describe the process of direct gene transfer through *Agrobacterium*-mediated gene transfer.
12. Describe the role of selectable markers and reporter genes in screening of recombinant DNA.

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this margin.**

GROUP—B

*Candidates to attempt 05 (five) questions within word limit of 300.
Each question carries 20 marks.*

13. What is mineral nutrition? Discuss the macro and micro nutrients and their deficiency symptoms.
14. What is photophosphorylation? Describe non-cyclic and cyclic photophosphorylation and the electron transport system.
15. Describe the chemical structure of phytochrome and its role in photoperiodism and flowering.
16. What is vernalization? Describe its mechanism and the factors responsible for vernalization.
17. What is plant succession? Discuss the different types of plant succession. Add a note on climax concept.
18. Discuss briefly on various types of forest of India, their importance and conservation strategies.

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