

CSM – 15/17
Botany
Paper – II

Time : 3 hours

Full Marks : 300

The figures in the right-hand margin indicate marks.

*Candidates should attempt Q. No. 1 from Section – A and Q. No. 5 from Section – B which are compulsory and any **three** of the remaining questions selecting at least **one** from each Section.*

SECTION – A Techofworld.in

1. Write explanatory notes on any **three** of the following : 20×3 = 60
- (a) Ultrastructure and functions of eukaryotic ribosome
 - (b) Electroporation as a tool for direct gene transfer
 - (c) Cytoplasmic inheritance
 - (d) Apomixis in plant breeding

2. (a) Describe the different types of structural alterations of chromosomes and comment on their significance.
- (b) Describe the biochemical properties of prions. Explain prion hypothesis with suitable example. **Techofworld.In**
- (c) Give an illustrated account of **Agrobacterium** mediated gene transfer in plants. $20 \times 3 = 60$
3. (a) What is a nucleosome ? Describe the ultra-structure of chromosome based on nucleosome concept.
- (b) What is hybridization ? Describe the different steps involved in the process of hybridization for the development of a new crop variety.
- (c) Describe, with diagrams, the different sub-stages of meiotic prophase. Comment on the significance of meiosis. $20 \times 3 = 60$
4. (a) Give an account of the signal transduction system with reference to different signals and receptors.

- (b) Discuss the biotechnological approaches towards the development of insect-resistant transgenic plants.
- (c) What are sex chromosomes ? Describe the different methods of chromosomal sex determination. $20 \times 3 = 60$

SECTION – B **Techofworld.In**

5. Explain any **three** of the following : $20 \times 3 = 60$
- (a) Mechanism of photorespiration
 - (b) Importance of secondary metabolites
 - (c) Molecular basis of fruit ripening
 - (d) Components of ecosystem
6. (a) What are micronutrients ? Describe the role of micronutrients in plant metabolism.
- (b) Define germination of seed. Explain the physio-biochemical processes involved in seed germination.
- (c) Write a detailed account of the measures adopted for the conservation of biodiversity. $20 \times 3 = 60$
7. (a) What do you mean by plant succession ? Describe the various stages of succession in hydrosere.

(b) What is endemism ? Write an account of endemism in India.

(c) What are the main aims of conservation ? Discuss the strategies followed for the conservation of soil and water. $20 \times 3 = 60$

8. Write explanatory notes on the following :

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(a) Chemiosmotic theory and ATP synthesis

(b) Physiology and biochemistry of salt tolerance in plant

(c) Kreb's cycle and its significance

