

CSM – 15 / 15

Botany

Paper – II

Time : 3 hours

Full Marks : 300

The figures in the right-hand margin indicate marks.

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

Section – A

1. Answer any **three** of the following : $20 \times 3 = 60$
- (a) Cell signalling and receptors
 - (b) Distinguish between vesicular and membrane transport
 - (c) Structure and significance of Lampbrush chromosomes

- (d) Role of Selectable markers and reporter genes**
2. (a) Discuss the different types of direct gene transfer methods. 20
- (b) Explain briefly the structure and synthesis of any one of the nucleic acids and proteins. 20
- (c) Give an illustrated account of structure and function of extracellular matrix with a suitable example. 20
3. (a) Explain, in brief, about sex chromosomes and sex linked inheritance. 20
- (b) Give an account of the structure and function of cell organelles with a neat sketch. 20
- (c) Briefly explain method of electroporation. 20
4. (a) What is the biology of "crown gall" and "hairy root" diseases ? 20
- (b) Explain the theories of evolution. 20
- (c) Distinguish between mitosis and meiosis. 20

Section – B

5. Answer any **three** of the following in about **200** words each : **20×3 = 60**
- (a) What are secondary metabolites ? Briefly mention about their importance.
 - (b) Explain about afforestation. How are they ecologically important ?
 - (c) What is the mechanism of nitrogen fixation ?
 - (d) Write briefly about the classification of enzymes.
6. (a) What are the differences between Calvin cycle and Hatch and Slack cycle ? **30**
- (b) What is an ecosystem ? How many types are there ? How will you conserve forest ecosystem ? **30**
7. (a) Explain briefly about electron transport chain and oxidative phosphorylation. **30**
- (b) Give an illustrated account on Global Warming. Give an account on endangered plant species with an example. **30**

8. (a) Explain briefly the fruit ripening and its molecular basis. 20
- (b) Illustrate the chemiosmotic theory and ATP synthesis. 20
- (c) Write an account on Intellectual Property Rights (IPR). 20

