CSM – 15/20
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

1. Answer any **three** of the following in not more than **200** words each : 20×3 = 60

   (a) Polymorphism in Lysosomes

   (b) Plastids and their types

   (c) Linkage is an exception to Mendel's Second Law

   (d) Molecular basis of Somaclonal variations

2. (a) Why Cytosol is considered as an important place for the intermediary metabolism ? Explain. 20

(b) What are lethal genes ? Describe lethal genes by considering at least two examples from a plant system. 20

(c) Why the presence of compatible cohesive ends in both plant vector and DNA insert are a primary concern ? Explain. 20

3. (a) Justify the statement that histones are amongst the most highly conserved proteins. 20

(b) Why monoploids are important in a plant system ? Describe important techniques for their production and uses. 20

(c) How will you explain glyphosate action ? Highlight the issues and strategies for glyphosate resistance in developing transgenic plants. 5+15 = 20

4. (a) How does mitotic spindle determine the site of cytoplasmic cleavage during cytokinesis ? Describe. 20

(b) What is a genetic code ? Explain that the minimum size of a code word should be a triplet. 20

(c) What is a molecular evolution ? Justify the statement that neutral theory of evolution can be referred to as non-Darwinian theory of evolution. 5+15 = 20

SECTION – B

5. Answer any **three** of the following in not more than **200** words each : 20×3 = 60

(a) Polarity of water and its significance

(b) Phytochrome regulates certain daily rhythms

(c) Environmental factors control the release from seed dormancy

(d) Organic and abiotic phases of Geochemical cycles

6. (a) How will you differentiate physical and physiological dryness ? Discuss about the factors regulating water movement in plants. 5+15 = 20

(b) Why the chemical structure of ABA is so important in determining its acitivity ? Write a note on ABA caused physiological responses in higher plants. 5+15 = 20

(c) What are biotic factors ? Describe the nature of interaction between plants and microorganisms giving suitable examples. 5+15 = 20

7. (a) Describe the protection of PS (photosystem) II reaction centre against photoinhibition and its repair mechanism. 20

(b) What is the significance of a heat stress ? Discuss the mechanism of high temperature tolerance in plants. 5+15 = 20

(c) Describe the term 'Ecosystem' and its various characteristics. 5+15 = 20

8. (a) How will you explain the distribution of plant enzymes ? Write a note on the chemistry of enzymes and its significance. 10+10 = 20

(b) What are the various sources of Nitrogen to the plants ? Write a note on the sites of Nitrate and Nitrite Reduction in the leaves of higher plants. 10+10 = 20

(c) How air pollution is affecting weather, climate and the atmospheric processes ? Describe. 20