

## BOTANY

1. Write short notes on any four of the following:

(4x7.5=30)

- (a) Economic importance of algae.
- (b) Heterosis in plants
- (c) Vernalisation
- (d) Role of parasexual hybridization in plant breeding
- (e) Heterospory and Seed habit in Selaginella
- (f) Chi square test in plant Crossings

### PART I

2. (a) What is bacteriophage?

Discuss Lysogenic life cycle of a typical Bacteriophage.

(10)

(b) What is biological nitrogen – fixation. Discuss the role of nitrogen – fixers in the economy of nitrogen in nature.

(10)

(c) What is alternation of generation? Discuss the role of this in the life cycle of Pteris.

(10)

3. (a) What is Black stem Rust of wheat? Discuss the process of infection of the causal organism and its life cycle.

(10)

(b) What is anomalous secondary growth in plants? Discuss the same in Dracaena.

(10)

(c) Illustrate the mature sporophyte of Moss. Distinguish between spores and elaters.

(10)

4. (a) Explain Flora and Vegetation. Give brief account of Botanical Provinces of India.

(10)

(b) Discuss briefly the merits and demerits of Bentham & Hooker's system of Classification

(10)

(c) What is a Virus? Discuss infection, replication and spread and control of TMV.

(10)

### PART II

5. (a) Discuss the phenomenon of Gene Interaction with reference to Complementary and Epistatic genes.

(10)

(b) How does Operon regulate the process of enzyme synthesis in Prokaryota?

(10)

(c) What is mutation? Explain Spontaneous and induced mutations, and their role in plant breeding. (10)

6. (a) What is  $C_4$  Cycle? Differentiate it from  $C_3$  Cycle. Correlate these to the structural features of plants. (10)
- (b) Distinguish between Oxidative and photophosphorylation. Which is more efficient? (10)
- (c) Define Totipotency. Discuss the role of plant growth hormones in plant growth and development. (10)
7. (a) Define Biodiversity. Describe 'Hot Spots' of World Biodiversity. (10)
- (b) What is 'Green House Effect'? Discuss the role of greenhouse gases in human environment. (10)
- (c) Explain the Term 'Central dogma of Molecular Biology' briefly describe the process of transcription and translation. (10)

