

Code - 03
BOTANY

Time: 3 Hours
Maximum Marks : 150

Note : Attempt *Five* questions in all. All question carry equal marks. Question No. 1 is compulsory. Answer *Two* question from Part-I and *Two* question from Part-II. The parts of the same question must be answered together and must not be interposed between answers to other questions.

1. Write short notes on any four of the following : (4 x 7.5=30)
 - (a) Economic importance of algae .
 - (b) Heterosis in plants
 - (c) Vernalisation
 - (d) Role of parasexual hybridisation 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)

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- (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 C₄ Cycle? Differentiate it from C₃ 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 green house gases in human environment . (10)
- (c) Explain the Term 'Central dogma of Molecular Biology.' Briefly describe the process of transcription and translation. (10)