

BOTANY

Paper – I

Time Allowed : Three Hours

Maximum Marks : 200

Question Paper Specific Instructions

Please read each of the following instructions carefully before attempting questions :

*There are **EIGHT** questions in all, out of which **FIVE** are to be attempted.*

*Questions no. **1** and **5** are compulsory. Out of the remaining **SIX** questions, **THREE** are to be attempted selecting at least **ONE** question from each of the two Sections A and B.*

Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

All questions carry equal marks. The number of marks carried by a question/part is indicated against it.

Neat sketches may be drawn, wherever required.

*Answers must be written in **ENGLISH** only.*

SECTION A

Q1. Answer the following questions keeping your answers brief and to the point.

- (a) How can algae be used in sewage treatment ? 8
- (b) With a labelled sketch describe the ultrastructure of bacterial flagella. Describe its mechanism of movement. 5+3=8
- (c) Explain in detail the process of fertilization in Angiosperms. 8
- (d) Describe and differentiate heterocyst cell from blue-green algal cell. 8
- (e) Deuteromycotina has been called "Waste Basket Assemblage." — Substantiate. 8

- Q2.** (a) Describe the stelar organization and evolution in Pteridophytes. 15
- (b) Describe the life cycle of the pathogen causing damping-off of seedlings of tobacco and tomato. 15
- (c) Describe the mechanism and benefits of parasexuality. 6+4=10

- Q3.** (a) Discuss the three kinds of mycelia encountered in Basidiomycetes. With suitable diagrams bring out the significance of clamp connection. 10+5=15
- (b) Trace the evolution of sporophytes in Bryophytes with neat labelled sketches only. 15
- (c) What are Antibiotics ? Describe the mode of action of aminoglycosides. 5+5=10

- Q4.** (a) Name the organisms causing black, yellow and brown rust of wheat. Describe the symptoms of black rust of wheat and the life cycle of the pathogen causing it. 6+9=15
- (b) What do you mean by genetic recombination ? Describe different methods of bacterial recombination. 5+10=15
- (c) What is dissemination of disease ? Describe methods of plant virus dissemination in brief. 2+8=10

SECTION B

Q5. Answer the following questions keeping your answers brief and to the point.

- (a) Comment on (i) Totipotency, (ii) Somatic hybrids vs. Cybrids. 4+4=8
- (b) What are Petrocrops ? Name 4 (four) promising petrocrop species with family. 4+4=8
- (c) Enumerate the applications of palynology. 8
- (d) What is plant defence ? Explain different mechanisms of plant defence. 3+5=8
- (e) "Petrified fossils are the marvels of paleobotanical studies." — Substantiate. 8

- Q6.** (a) Define Fumitories and Masticatories. Describe in detail the origin, botanical characteristics and cultivation of one representative each of the above categories. 5+10=15
- (b) Illustrate the floral characters of the family Arecaceae with floral formula and floral diagram. Why is this family economically important ? 10+5=15
- (c) What is tissue culture ? How can this technique help in reviving the endangered plant species ? 4+6=10
- Q7.** (a) Differentiate Heterospory from Homospory. How does heterospory lead to seed habit ? Discuss the biological significance of heterospory with reference to *Selaginella*. 3+6+6=15
- (b) Enlist the botanical names of five plants yielding drugs and mention the plant parts from where the drugs are obtained. 7+8=15
- (c) Describe successive stages of development of cellular endosperm. 10

- Q8. (a) Describe the methods of cultivation of rubber plants. Describe how the latex is processed to get rubber. What precautions are taken while tapping rubber ? 6+6+3=15
- (b) What are the differences between Dicot and Monocot roots ? With suitable diagrams explain secondary growth in dicot roots. 6+9=15
- (c) Mention the botanical name with family of plants yielding the following, with the morphology of the part used : 5×2=10
- (i) Spices
 - (ii) Perfumery
 - (iii) Gums
 - (iv) Sugar
 - (v) Beverages