

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.

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

Neat sketches may be drawn, wherever required.

SECTION A

Q1. Answer the following keeping your answers brief and to the point. **8×5=40**

- (a) Distinguish between Bacteria and Archaea. 8
- (b) Comment on why *Albugo candida* and *Phytophthora infestans* are not considered as fungi. 8
- (c) Distinguish between Chlorophyta and Rhodophyta. 8
- (d) What is Peristome ? Describe its formation and role. 2+6=8
- (e) What are coralloid roots ? Where are these found and what important role do they play ? 4+1+3=8

- Q2.** (a) Compare loose smut with covered smut of wheat plants on the basis of symptoms, casual organism, disease cycle and disease management. 5+5+5=15
- (b) Describe the evolutionary significance of various stellar structures found in Pteridophytes. Give one suitable example in each case. 10+5=15
- (c) Describe the diversity of photosynthetic pigments found in the major classes of Algae. 10
- Q3.** (a) What are the recent developments in the use of microbes in industrial products ? Why do microbes serve as most ideal organisms in industrial applications ? 8+7=15
- (b) Explain the progressive sterilization of potentially sporogenous tissue found in Bryophyta. Add a note on the role of elaters. 5+5=10
- (c) Describe the structure and chemical composition of TMV. How does it infect the host ? 10+5=15
- Q4.** (a) Describe the organization of female cone in *Pinus*. Discuss on the morphological nature of ovuliferous scale. 10+5=15
- (b) Comment on how far *Selaginella* advances towards seed habit. 10
- (c) What is Systemic Acquired Resistance (SAR) ? Discuss the role of salicylic acid in SAR. 7+8=15

SECTION B

Q5. Answer the following keeping your answers brief and to the point. **8×5=40**

- (a) How do you justify *Asteraceae* as a phylogenetically advanced family in dicotyledons? 8
- (b) Explain 'Nemec phenomenon' and its significance. 8
- (c) What are cortical vascular bundles? How are they formed? 3+5=8
- (d) Discuss the role of Botanical Gardens in conservation of plants. 8
- (e) What is haploid cell culture? How is this technique useful in agriculture? 8

- Q6.**
- (a) Give an account of Cronquist's classification of flowering plants. Add a note on merits and demerits of this system of classification. 10+5=15
 - (b) What is totipotency? Give an experimental evidence to demonstrate it. 5+10=15
 - (c) What is Helobial type of endosperm? Describe the process of its development. 4+6=10

- Q7.**
- (a) What is polyembryony? How is it induced? Discuss its applications. 5+5+5=15
 - (b) Write the botanical name of the plants, their family, economically important plant parts and uses for the following :
 - (i) Cinnamon
 - (ii) Clove
 - (iii) Saffron
 - (iv) Nutmeg
 - (v) Lesser Cardamom 15
 - (c) Compare the floral characters of *Malvaceae* and *Solanaceae*. Give the floral diagrams of the two families. 5+5=10

- Q8.** (a) Name the four types of tea recognized in the trade. What are their properties and methods of processing? 2+6+7=15
- (b) Describe the organization of essential organs of *Asclepiadaceae* family. Discuss the pollination mechanism in it. 6+9=15
- (c) Give an account on hydrocarbon plants and their potential as a source of sustainable energy. 10