

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.** (a) How does bacteria acquire resistance to any antibiotic ? Explain. 8
- (b) Compare the symptoms of wart disease of potato and late blight of potato and name their causal organisms. 6+2=8
- (c) Compare the important features of Sporophytes of *Anthoceros* and *Funaria* with suitable diagrams. 4+4=8
- (d) Describe heterospory and seed habit. Discuss their significance in the evolution of plants. 4+4=8
- (e) Describe female fructifications of Cordaitales and discuss its affinities with Cycads. 4+4=8
- Q2.** (a) Draw and describe the major differences in the cell wall compositions of Gram-positive and Gram-negative bacteria. 15
- (b) Give an account of economic importance of algae with special reference to their uses in : 5+5+5=15
- (i) Food,
- (ii) Industry, and
- (iii) Biofertilizers.
- (c) Discuss the general characters that evolved in Bryophytes for terrestrial habitats. 10
- Q3.** (a) What are the major objectives behind studying plant pathology ? Describe the different types of classification of plant diseases. 5+10=15
- (b) Give a comparative account of the development of female gametophytes of *Pinus* and *Gnetum*. Comment on the affinities of *Gnetum* with Conifers and Angiosperms. 15
- (c) Discuss the significance of heterothallism in fungi. Differentiate between morphological and physiological heterothallism. 5+5=10
- Q4.** (a) Describe the symptoms, causal organism, disease cycle and management of ergot disease of pearl millet. 15
- (b) Describe the various stages of evolution of sporophyte in Bryophytes with reference to the progressive sterilization of potential sporophytic tissue. 15
- (c) Draw and label the flagellum of a Gram-negative bacteria. Describe the different types of arrangements of flagella. 5+5=10

SECTION B

- Q5.** (a) Describe the merits and demerits of Hutchinson's system of classification. 8
- (b) What is Periderm ? Discuss the major components of periderm. $2+6=8$
- (c) What are the important agents which help plants in their pollination ? 8
- (d) Give four examples of old world plant species with their botanical names, which have been cultivated for : $4+4=8$
- (i) over 4000 years.
- (ii) over 2000 years.
- (e) Explain somaclonal and gametoclonal variants and their applications. 8
- Q6.** (a) Differentiate between the following : $7+8=15$
- (i) Liliaceae and Orchidaceae
- (ii) Cucurbitaceae and Euphorbiaceae
- (b) Mention the botanical name, family and the parts used of two plants of each of the following categories : $5+5+5=15$
- (i) Timber
- (ii) Millets
- (iii) Spices obtained from below ground parts
- (c) Differentiate between Intraxylary phloem and Interxylary phloem with the help of suitable diagram and examples. 10

- Q7.** (a) Describe the floral features of the family Asteraceae with floral formula and floral diagrams. Explain why this family is considered as highly evolved among Angiosperms. 10+5=15
- (b) Distinguish between bisporic embryo sac and tetrasporic embryo sac. Explain with suitable diagrams the various types of tetrasporic embryo sacs. 5+10=15
- (c) What are the factors that affect the yield and viability of protoplast during protoplast culture ? 10
- Q8.** (a) Classify fibers with examples based on : 7+8=15
- (i) origin and structure.
- (ii) their commercial uses.
- (b) What are the different methods of micropropagation ? Discuss the advantages and disadvantages of *in vivo* and *in vitro* micropropagation. 5+10=15
- (c) What are hallucinogens ? Explain giving examples of Marijuana and its bioactive compounds. 10