

BOTANY
(Paper I)

Time Allowed : Three Hours

Maximum Marks : 300

QUESTION PAPER SPECIFIC INSTRUCTIONS

(Please read each of the following instructions carefully before attempting questions)

There are EIGHT questions divided in two Sections.

Candidate has to attempt FIVE questions in all.

Question Nos. 1 and 5 are compulsory and out of the remaining, any THREE are to be attempted choosing at least ONE question from each Section.

The number of marks carried by a question/part is indicated against it.

Wherever any assumptions are made for answering a question, they must be clearly indicated.

Word limit in questions, wherever specified, should be adhered to.

SECTION 'A'

1. Briefly describe the following in not more than 150 words each: **12×5=60**
- (a) Bipolar and Tetrapolar heterothallism in fungi
 - (b) Cytoplasmic hybrids
 - (c) Fungal Toxins
 - (d) Elaters
 - (e) Plant quarantines.
2. (a) Somaclonal variations can be used for variety of crop development. How? Explain with suitable examples. **15**
- (b) Give an account of Ascus development in fungi with suitable examples. **15**
- (c) Give an illustrated account of range of thallus structure in algae. **15**
- (d) Describe the enzymatic method of isolation of protoplasts taking the example of Carrot. **15**
3. Draw well labelled diagrams of the following: **4×15=60**
- (a) L.S. of sporophyte of Riccia
 - (b) L.S. of sporophyte of Funaria
 - (c) L.S. of strobilus of Selaginella
 - (d) H.L.S. of Marsilea sporocarp.
4. Differentiate between the following: **12×5=60**
- (a) Polarity and Symmetry
 - (b) Prions and Viroids
 - (c) Rust and Smut diseases
 - (d) Eusporangiate and Leptosporangiate ferns
 - (e) Downy mildews and Powdery mildews.

SECTION 'B'

5. Answer the following in about 150 words each: **12×5=60**
- (a) Write the botanical names and the families to which the following plants belong: (i) Flax (ii) Guar (iii) Date Palm (iv) Cocaine (v) Ginseng (vi) Any timber plant
 - (b) Give a brief account of Dwarf shoot in Pinus.
 - (c) Differentiate between interxylary and intraxylary phloems.
 - (d) Make a comparison of Androecium in Malvaceae, Asteraceae and Cucurbitaceae.
 - (e) Give a brief account of polyembryony in Angiosperms.
6. **15**
- (a) Compare the female strobili of Pinus and Ephedra. **15**
 - (b) Compare the development of typical monosporic, bisporic and tetrasporic embryo sacs. **15**
 - (c) Draw a labelled diagram of L.S. of Ovule of Cycas. **15**
 - (d) Why is Ginkgo biloba considered as a living fossil? Explain. **15**
7. **20**
- (a) Vavilov's theory indicates that "a region with the greatest genetic diversity is also the centre of origin of that particular species." This statement is no longer tenable. Explain with any two examples. **20**
 - (b) Draw a cross section of a typical anther and label the parts carefully. **20**
 - (c) "Gymnosperms were perhaps the immediate ancestors of angiosperms." Substantiate the statement, and also give reasons to disprove the statement. **20**
8. **15**
- (a) "Embryology has also played an important role in Taxonomy of angiosperms." Elaborate the statement with the help of some examples. **15**
 - (b) Asteraceae is considered as one of the highly evolved families of angiosperms. Give an account of advanced characters in Asteraceae. **15**
 - (c) Ethnobotany has provided important clues to discovery of modern drugs. Give an account of Ethnobotany taking some suitable examples. **15**
 - (d) Compare and contrast the floral characters of the three sub-families of Leguminosae. **15**