

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. Answer any three of the following in not more than 200 words each: **20×3=60**
- (a) Name three enzymes commonly used for the isolation of plant protoplasts. Which of the following tissues would give a better yield of enzymatically isolated protoplasts and why?
(i) Aerenchyma (ii) Mesophyll
- (b) What cellular/subcellular changes would demonstrate polarity induction in cell suspensions? How can these changes be demonstrated?
- (c) Compare the methods of asexual and sexual reproduction in Zygomycota, Ascomycota and Basidiomycota.
- (d) Compare the nature of photosynthetic pigments and carbohydrate reserves in Euglenophyta, Bacillariophyta and Phaeophyta.
2. Comment on the following (in about 200 words each): **20×3=60**
- (a) Heterotrichous habit of growth in moss protonema
- (b) Differences between hydroids and leptoids
- (c) Structure of chloronema and caulonema cells in mosses
3. Write brief notes on the following (in not more than 200 words each): **20×3=60**
- (a) Semi-moist preservation of food
- (b) Fructifications in cup-fungi
- (c) Microbes in the control of water pollution
4. Write brief notes on the following (in not more than 200 words each): **20×3=60**
- (a) Iron bacteria
- (b) Cleavage polyembryony
- (c) Thallus organisation in Chlorophyceae

SECTION 'B'

5. Answer any three of the following in not more than 200 words each:

20×3=60

- (a) Diagrammatically explain the structure-function relationship of plasmodesmata.
- (b) Comment on the formation of amphivasal vascular bundles in *Dracaena*.
- (c) Name the genera belonging to phylum Gnetophyta. Mention their angiosperm-like features, types of tracheary elements and leaves.
- (d) What are the salient features of Bennettitales?

6. With the help of well-labelled diagrams, explain the distinguishing features of the following:

20×3=60

- (a) Porogamy and Chalazogamy
- (b) Flower of *Dolichos* and *Caesalpinia*
- (c) Ovule of *Gnetum* and *Pinus*

7. Write critical notes on the following:

20×3=60

- (a) Plants as sources of insecticides (Pyrethrin and Rotenone)
- (b) Contributions of the following scientists in plant systematics: (i) A. P. de Condolle (ii) Carl Linnaeus (iii) Theophrastus
- (c) Significance of Energy Plantations

8. Discuss the following:

30×2=60

- (a) Tetrasporic embryo sac
- (b) Omega taxonomy with reference to chemical substances