

# BOTANY

## Paper - I

Time Allowed : Three Hours

Maximum Marks : 200

### INSTRUCTIONS

*Candidates should attempt questions 1 and 5 which are compulsory, and any THREE of the remaining questions, selecting at least ONE question from each Section.*

*All questions carry equal marks.*

*Marks allotted to parts of a question are indicated against each.*

*Answers must be written in ENGLISH only.*

*Neat sketches may be drawn, wherever necessary.*

### IMPORTANT NOTE :

*All parts/sub-parts of a question must be answered contiguously. That is, where a question is being attempted on the answer-book, all its constituent parts/sub-parts must be attempted before moving on to the next question.*

*Pages left blank in the answer-book(s), if any, must be clearly struck out. Answers that follow pages left blank may not be given credit.*

## SECTION A

1. Answer the following keeping your answers brief and to the point :

8×5=40

- (a) Differentiate between the following :

- (i) Vegetative cell, Heterocyst and Akinetes
- (ii) Sporangiospores, Ascospores and Basidiospores

- (b) Write short notes on the following :

- (i) Unique features of cell wall of Eubacteria
- (ii) VAM fungi as biofertilizer

- (c) Write critical notes on the following :

- (i) Parasexual cycle
- (ii) Quarantines

- (d) Write about the following :

- (i) Cell structure of Bacillariophyta
- (ii) How do toxins help in the development of vascular wilt syndrome ?

(e) Differentiate between the following :

(i) Leaf trace and Leaf gap

(ii) Obligate parasite and Facultative parasite

2. Briefly discuss the following :

10×4=40

(a) Heterospory and seed habit

(b) Telome theory

(c) Sources of mycotoxins during storage of food and their impact on the lives of human beings and animals

(d) Antibiotics in plant disease control

3. Write a brief account of the following :

10×4=40

(a) Mechanisms of spore dispersal in mosses

(b) Epidemiology of wheat rust in India

(c) Algae growing in unusual habitat

(d) Causal organism, symptoms and control of Late Blight of Potato

4. (a) Comment critically on the progressive and regressive theory of evolution in Bryophytes. 15
- (b) Discuss the biochemical defense mechanisms in plants, with reference to quantitative and race-specific resistance. 15
- (c) Describe the stelar system in vascular cryptograms. 10

## SECTION B

5. Answer the following keeping your answers brief and to the point :

8×5=40

(a) Distinguish between the following :

(i) Aggregate fruit and Composite fruit

(ii) Pollination in *Salvia* and *Ficus*

(b) Write short notes on the following :

(i) Important Botanical gardens of India and their role in teaching.

(ii) Verticillaster inflorescence.

(c) Write short notes on the following :

(i) Apomixis

(ii) Polyembryony

(d) Write a brief account of the following :

(i) Role of anatomy in understanding taxonomy

(ii) Ovule of *Ephedra*

(e) Write short notes on the following :

(i) Epidermal appendages

(ii) Polygonum type of embryo

6. Draw scientifically accurate diagrams of the following and label the parts :  $10 \times 4 = 40$

- (a) T.S. of needle of *Pinus*.
- (b) Floral parts of any member of Cucurbitaceae and Musaceae.
- (c) Floral formula and floral diagram of Leguminosae and Solanaceae.
- (d) Types of placenta.

7. Write brief and critical notes on the following :  $10 \times 4 = 40$ .

- (a) Economic importance of Gramineae, Umbelliferae and Rosaceae.
- (b) Distinguishing characters of Asteraceae, Liliaceae and Asclepiadaceae.
- (c) Classification system proposed by Bentham and Hooker as compared to that proposed by Engler and Prantl.
- (d) Plants as sources of latex, gums and dyes.

8. (a) Write the botanical name, family and part useful for each of the following :  $2 \times 10 = 20$

- (i) Hemp
- (ii) Cocoa
- (iii) Nux-vomica
- (iv) Betel nut
- (v) Mahogany
- (vi) Lemon grass
- (vii) Sal
- (viii) Isabgol
- (ix) Walnut
- (x) Celery

(b) What is the role of somatic hybrids in crop improvement ? Discuss. 15

(c) Bring out the role of synergids in fertilisation. 5