

**BOTANY**  
**Paper—II**

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.

Question 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 chronological 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 answer book 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**

- Q.1. Write short notes on each of the following : 8×5=40
- |   |          |
|---|----------|
| Q. 1(a) Freeze-fracture technique   | 8        |
| Q. 1(b) Heterosis   | 8        |
| Q. 1(c) Extrinsic and Intrinsic proteins  | 8        |
| Q. 1(d) 't' test  | 8        |
| Q. 1(e) Ultrastructure of Golgi apparatus and its chemical constituents   | 8        |
|   |          |
| Q. 2(a) What is the role of cytoplasm in inheritance ? Briefly describe the genetics of cytoplasmic male sterility. | 5+15=20  |
| Q. 2(b) How does the InsP <sub>3</sub> /DAG pathway participate in the process of cellular signal transduction ?    | 20       |
|   |          |
| Q. 3(a) Compare the behaviour and significance of Polytene chromosome with those of Lampbrush chromosome.           | 10+10=20 |
| Q. 3(b) Compare between different types of Restriction endonucleases. How do they help in gene cloning ?            | 10+10=20 |

- Q. 4(a) Describe the structure and functions of endoplasmic reticulum. 10+10=20  
Q. 4(b) What are the changes that occur in newly synthesized RNA prior to participation in translation ?  
20

**SECTION—B**

- Q.5. Write short notes on each of the following : 8×5=40
- Q. 5(a) ATP synthase 8  
Q. 5(b) Senescence 8  
Q. 5(c) Endangered species 8  
Q. 5(d) Apoenzyme 8  
Q. 5(e) Phytochrome 8
- Q. 6(a) Describe the process of biological nitrogen fixation with special emphasis on the Dinitrogenase. 15+5=20  
Q. 6(b) How do the plastoquinone and plastocyanine carry electrons between photosystem II and I ? Explain the herbicidal blockage in photosynthetic electron flow. 10+10=20
- Q. 7(a) What are the characteristics of Phytochrome-induced responses in flowering of higher plants and how do they control flowering ? 10+10=20  
Q. 7(b) Describe the role of Rubisco in Carbon cycle. 20
- Q. 8(a) Distinguish between Natural forest and Social forest. Categorically mention the objectives of Social forestry. 10+10=20  
Q. 8(b) Name the principal phytogeographical regions of India and describe any four of them. 5+15=20