

BOTANY**Paper II**

0000072

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 Nos. **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.

Answers must be written in **ENGLISH** only.

Neat sketches may be drawn, wherever required.

SECTION 'A'

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|-------|---|----------|
| 1. | Write short notes on each of the following : | 8×5=40 |
| 1.(a) | How are membranes arranged in chloroplast to suit its functions ? | 8 |
| 1.(b) | How is cell signal transduction effected ? | 8 |
| 1.(c) | Explain the basis of molecular sex differentiation. | 8 |
| 1.(d) | Comment on nuclear pore complex. | 8 |
| 1.(e) | What are the check points effected during the cell cycle ? | 8 |
| 2.(a) | How genetic code regulates gene expression ? Describe the molecular method of gene mapping. | 10+10=20 |
| 2.(b) | Comment on cytoplasmic genes and explain the cytoplasmic inheritance with different examples. | 5+15=20 |

- 3.(a) Describe different methods of gene transfer in plants. Explain the advantages and disadvantages of transgenic plants. 10+10=20
- 3.(b) Explain the applications of *t* and *z* tests. Discuss the significance of normal, binomial and Poisson distributions of biological data. 8+12=20
- 4.(a) Discuss the role of RNA in evolution. Describe the various modifications that an RNA undergoes ever since its synthesis until it reaches the stage of translation. 8+12=20
- 4.(b) What is the significance of polytene and lampbrush chromosomes? Describe different species of RNA with a note on their functions. 8+12=20

SECTION 'B'

5. Write brief notes on each of the following : 8×5=40
- 5.(a) Describe the methods of conservation of endangered species. 8
- 5.(b) Describe the structure of ATPase. How is it suited to phosphorylation? 8
- 5.(c) Enumerate the roles of Fe, Mg, Mn and K in plants. 8
- 5.(d) Describe the functional roles of plastidial pigments. 8
- 5.(e) Describe the structure of N₂ase. 8
- 6.(a) Discuss the significance of different carbon fixation pathways in plants. 20
- 6.(b) Describe different processes involved in the molecular basis of fruit ripening. 20
- 7.(a) Explain the roles of different co-enzymes in plants with suitable examples. 20
- 7.(b) Discuss the roles of different hormones and enzymes involved in seed germination. 20
- 8.(a) Describe different eco-systems. Comment on forest management program. 10+10=20
- 8.(b) Discuss the role of phytoremediation in the treatment of heavy metal polluted soil. Explain the bioremediation of hydrocarbon. 15+5=20