

2011

## BOTANY (Optional) Paper – II

380076

Standard : Degree

Total Marks : 200

Nature : Conventional (Essay) type

Duration : Three Hours

**N.B. :**

- 1) Answers must be written in English only.
- 2) Question No. 1 is **compulsory**. Of the remaining questions, attempt **any four** by selecting one question from **each** Section.
- 3) Figures to the **RIGHT** indicate marks of the respective question.
- 4) Number of optional questions upto the prescribed number in the order in which they have been solved will only be assessed. Excess answers will not be assessed.
- 5) Credit will be given for **orderly**, concise and **effective** writing.
- 6) Candidates should not write roll number, any name (including their own), signature, address or any indication of their identity anywhere inside the answer book otherwise he/she will be penalised.

Marks

1. Answer **any four** of the following :

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|--|----|
| (a) Describe the numerical and structural variations in chromosomes. Add a note on their significance. | 10 |
| (b) What are sex chromosomes ? Explain the process of sex determination.                               | 10 |
| (c) What is apomixis ? Explain its role in plant breeding.   | 10 |
| (d) Describe the importance of secondary metabolites.  | 10 |
| (e) Explain the role of computer application in plant science.   | 10 |

## SECTION – A

2. Answer the following sub-questions :

- |   |    |
|---|----|
| (a) Describe the structure and functions of cell organelles.    | 20 |
| (b) Match the stages of mitosis with the events they encompass. | 20 |

3. Answer the following sub-questions :

- |  |    |
|--|----|
| (a) Describe the structure and function of extra-cellular matrix.        | 20 |
| (b) Describe the ultra structure of nucleus. Add a note on its function. | 20 |

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## SECTION – B

4. Answer the following sub-questions :
- (a) Explain the linkage and crossing over. Add a note on its application. 15
  - (b) Describe the structure and synthesis of nucleic acids. 15
  - (c) Explain the role of RNA in evolution. 10
5. (a) Explain Mendel's laws of inheritance. 15
- (b) What is genetic code ? Add a note on regulation of gene expression. 15
  - (c) Explain with evidences the process of organic evolution. 10

## SECTION – C

6. Answer the following sub-questions :
- (a) What are the different hybridization methods for self and cross-pollinated crops ? 15
  - (b) Explain the method of micropropagation for the production of somatic hybrids and cybrids. 15
  - (c) Explain the test of significance. Add a note on chi-square test. 10
7. Answer the following sub-questions :
- (a) Explain the applications of polyploidy in crop improvement. 15
  - (b) Describe the methods of gene transfer and transgenic crops. 15
  - (c) ANOVA. 10

## SECTION – D

8. Answer the following sub-questions :
- (a) Explain phosphorylation. 10
  - (b) Describe the methods of fruit ripening. 10
  - (c) Explain the concept of plant succession. 10
  - (d) Endemism. 10
9. Answer the following sub-questions :
- (a) Explain the CAM pathways in plants. 10
  - (b) Describe photoperiodism in plants. 10
  - (c) What are the causes of soil pollution ? 10
  - (d) Intellectual property right. 10
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