I.F.S. EXAM-(M)2017

वियोज्य *DETACHABLE*

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 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'

1. Write short notes on each of the following : 8×5=40

1.(a) Complexes in electron transport chain of mitochondria. 8

1.(b) Molecular basis of sex determination. 8

1.(c) Significance of accessory chromosomes. 8

1.(d) Merits and demerits of GM plants in India. 8

1.(e) Chi-square test. 8

2.(a) Describe the number and structural variations in chromosome. Add a note on their significance. 15+5=20

2.(b) Describe with illustrations about chromosomal behaviour during meiosis with translocation, inversion and duplication. 10+10=20

3.(a) Elucidate the role of RNA in the origin and evolution of living organisms. 10+10=20

3.(b) With suitable example, explain the tripartite sex-determination. 20

4.(a) Explain the bio-chemical and molecular basis of mutations. 10+10=20

4.(b) Narrate briefly the various methods of gene transfer in plants. 20

SECTION 'B'

5. Write brief notes on each of the following : 8×5=40

5.(a) Allelopathy 8

5.(b) Intellectual property rights 8

5.(c) Molecular markers in plant breeding 8

5.(d) Role of carotenoids in plants 8

5.(e) Evidences of organic evolution 8

6.(a) "Calvin cycle is said to be autocatalytic" — Justify the statement. Compare the mode of CO_2 assimilation in C_3 and C_4 plants. How does C_4 pathway differ from C_3 pathway in terms of efficiency ? 5+10+5=20

6.(b) Describe the role of phytohormones in agri-horticulture. 20

7.(a) With illustration describe the structure of phytochrome. Explain the role of phytochrome in flower development process. 8+12=20

7.(b) Describe the methods of breaking seed dormancy. Trace the physiological changes involved during seed germination. 8+12=20

8.(a) Phytoremediation is not an ultimate solution to all the maladies of air and water. Explain in detail with specific examples. 20

8.(b) Describe the various phytogeographical zones met within India and add their salient features. In an ideal situation, there will be a high temperature and rainfall with restricted snowfall plus *Rhododendron*, Oaks, Orchids and Ferns – what is your inference ? 15+5=20
