

This question paper contains 4 printed pages]

**CODE : FS-17**

**BOTANY**

*Time : 3 Hours*

*Maximum Marks : 200*

*Note :—* (1) Attempt any *five* questions including Q. Nos. 1 and 5 which are compulsory. Minimum of *two* questions including compulsory shall be attempted from each part. Be brief and to the point.

(2) Parts of the same question must be attempted together and not to be attempted in between the answers to other questions.

**Part I**

1. Write short notes on the following :

- (a) What are giant viruses ? Give examples. 8
- (b) What is bacterial transduction ? Explain. 8
- (c) Describe the endemic liverworts of Western Himalayas. 8
- (d) Describe the ecological importance of Himalayan gymnosperms. 8
- (e) Write a short note on heterosporous pteridophytes of Himachal Pradesh. 8

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2. (a) What diseases affect apple trees ? Give their causal organisms and disease symptoms. 15
- (b) Write the characters of blue green algae. How do they fix atmospheric nitrogen ? 15
- (c) Why are Bryophytes regarded as amphibians of plant kingdom ? 10
3. (a) Give the botanical names and systematic position of Gymnosperms growing in Himachal Pradesh. 15
- (b) Describe the development, role and types of endosperms in flowering plants. 15
- (c) Differentiate alpha-taxonomy and omega-taxonomy. 10
4. (a) Describe the important characters of the family Cucurbitaceae. 15
- (b) Differentiate between the families Liliaceae and Gramineae. 15
- (c) Describe the inflorescence and flower types of the family Euphorbiaceae. 10

**Part II**

5. Answer the following :

- (a) Define synaptonemal complex. 8
- (b) Hinged DNA and Cruciform DNA. 8
- (c) What is z-scheme of photosynthesis ? 8
- (d) What are *In-situ* and *Ex-situ* conservation strategies ? 8
- (e) Describe *four* medicinal plants growing in Western Himalayas. 8

6. (a) Describe the process of protein synthesis in Prokaryotes. 10
- (b) What is TA cloning ? Give procedure, benefits and drawbacks of TA cloning. 15
- (c) Describe various types of vectors used in gene cloning. 15

7. (a) Describe the phenomenon of photoperiodism in plants. 15
- (b) What is R and K reproductive strategy ? Why are K selected species more vulnerable to extinction ? 15
- (c) What are pseudocereals ? Give the botanical names and families of pseudocereals growing in Himachal Pradesh. 10
8. (a) Define the homologous and analogous structures and their importance in evolution. 10
- (b) What are cytokinins ? Give their biosynthesis, mode of action and uses. 15
- (c) Describe the use and importance of cruciferous vegetables. Give their botanical names. Why are they regarded as cancer killer vegetables ? 15