

FORESTRY

PAPER-I

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. Answer the following : 8×5=40
- (a) Comment upon the dieback (dying back) phenomenon in *Shorea robusta*. Is it a problem or an adaptation?
 - (b) Describe the major factors which affect the length of the regeneration period in a Periodic Block.
 - (c) Comment upon the variations practised in the silvicultural system of *Shorea robusta* in the States of UP, Bihar, Odisha and West Bengal.
 - (d) Explain how the knowledge about the silvicultural characteristics of a tree enables us to manage the species in a better way.
 - (e) Discuss the sustainable management of Mangrove forests of India.
2. (a) Describe the methods of pre-sowing treatment of seeds for raising nursery. 10
- (b) Describe in brief the phenology, silvicultural characteristics and artificial regeneration of the following tree species : 10
- (i) *Pinus roxburghii*
 - (ii) *Cedrus deodara*
 - (iii) *Albizia lebbek*
- (c) How can a forest with shade bearer and light demander tree species be managed under Uniform Shelterwood System? 10
- (d) How is the accrual of tangible and intangible benefits of Mangrove forests being affected by their degradation? 10
3. (a) Explain the term 'hardening off'. What are the internal factors affecting frost resistance? 10
- (b) Describe the silvicultural system which is introduced to manage *Shorea robusta* forest after the failure of Uniform System. 10
- (c) Give the scientific names of the following : 10
- (i) Five tree species of Mangrove forest
 - (ii) Five tree/shrub species of the cold desert
- (d) Briefly describe the silvicultural characters and natural regeneration of the following : 10
- (i) *Dendrocalamus hamiltonii*
 - (ii) *Acacia auriculiformis*
 - (iii) *Dalbergia sissoo*

4. (a) Explain how the latitude influences the forest types of the earth. 10
- (b) How is *Tectona grandis* forest managed under clear felling followed by artificial regeneration? 10
- (c) Comment upon the adaptive and survival strategies of the plant species endemic to the cold desert area of the Western Himalaya. 10
- (d) Explain the necessity of grading of seedlings before plantation. 10

SECTION—B

5. Answer the following : 8×5=40
- (a) Discuss the need and scope of agroforestry for the benefit of people.
- (b) Why is a lot of emphasis laid on research relating to soil conservation? Discuss.
- (c) What is the penalty prescribed in Section 15 of the Environment (Protection) Act, 1986 for contravention of the provisions of the Environment Act rules and orders?
- (d) How can magnitude and type of variability be manipulated to obtain good gains in some tree characteristics?
- (e) Elaborate upon the social objectives of agroforestry.
6. (a) Discuss why land-use system is often more appreciated in agroforestry than in pure agriculture. 10
- (b) Describe different textural classes of soil and the way they affect plant growth. 10
- (c) Write the chemistry of ozonosphere and list the adverse effects of ozone layer depletion. 10
- (d) Suggest suitable steps to select exotic species or provenances for plantations. 10

7. (a) Adoption of agroforestry practices by the farming community is the result of increasing human and cattle population. Discuss. 10
- (b) Why is saline-alkali soil considered problematic? Can you suggest any procedure to make it suitable for plant growth? 10
- (c) Briefly explain the process of acid rain formation and its adverse effects on buildings and aquatic bodies. 10
- (d) As a community of interbreeding individuals, what parameters would need to be known to describe a population of forest trees? 10
8. (a) Good watershed management must consider the social, economic and environmental sustainability, and institutional factors. Comment. 10
- (b) Outline the role of tree architecture in agroforestry. 10
- (c) What is arsenic pollution? Discuss the strategies to mitigate it. 10
- (d) Comment upon the relationship of general combining ability and breeding value in forest tree improvement programmes. 10
