

D-GT-M-GSA

FORESTRY

Paper—I

Time Allowed : Three Hours

Maximum Marks : 200

INSTRUCTIONS

*Candidates should attempt Question Nos. 1 and 5 which are compulsory, and any **THREE** of the remaining questions, selecting at least **ONE** question from each Section.*

All questions carry equal marks.

Marks carried by sub-parts of a question are indicated against each.

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

Neat sketches to be drawn wherever required.

Important Note :—

All parts/sub-parts of a question being attempted must be answered contiguously. That is, where a question is being attempted, all its constituent parts/sub-parts must be answered before moving on to the next question.

Pages left blank in the answer-book(s), if any, must be clearly struck out. Answers that follow pages left blank may not be given credit.

SECTION—A

1. Comment critically on the following. (each in about 75 words) :— $8 \times 5 = 40$

- (a) Failure of Forest plantations.
- (b) Recycling of nutrients in natural forests.
- (c) How are mangrove forests managed in India ?
- (d) Successful regeneration in a forest depends upon silvicultural system.
- (e) Basis of forest classification and why there is need for such classification.
- (f) How snow affects the forest vegetation ?
- (g) Importance of plant succession in forestry practices.
- (h) Reasons of dying *Dalbergia sissoo*.

2. (a) How will you classify a silvicultural system ? Discuss important features of uniform system with reference to *Pinus roxburghii* and give its merits and demerits. $4+8+4=16$

- (b) Give distribution, phenology, method of regeneration and brief silvicultural management of two tree species belonging to each family below :

(a) Meliaceae (b) Papilionaceae, grown in India.

$4 \times 4 = 16$

- (c) Briefly discuss :— $2 \times 4 = 8$
- (i) Canopy architecture in forestry
 - (ii) Lopping management.
3. (a) Differentiate between the following :— $5 \times 4 = 20$
- (i) Agroforestry and silviculture
 - (ii) Growth and development of trees
 - (iii) NTFPs and MPTs
 - (iv) CAI and MAI
 - (v) Ectomycorrhizae and endomycorrhizae.
- (b) What are ecological aspects for selecting the tree species ? Discuss. 8
- (c) Comment on the view that after deforestation forest fires are most important cause of forest destruction. Also give different types of forest fires and their causes, and preventive measures for forest fires. 8
- (d) 'Gregarious flowering is an indicator of drought in the area.' Do you agree with this statement ? 4
4. (a) Differentiate clearly between natural and artificial regeneration of forests. Describe the manner in which natural regeneration of Teak, Sal and Deodar takes place. $4+4+4+4=16$

- (b) Briefly describe the clear felling silvicultural system with reference to :
- (i) Nature of crop produced
 - (ii) Felling system
 - (iii) Tending
 - (iv) Regeneration
 - (v) Advantages and disadvantages. 10
- (c) Discuss in brief the silviculture of the following species :
- (i) *Shorea robusta*
 - (ii) Bamboo species. 2×4=8
- (d) Highlight the salient features of :
- (i) Aerial seeding
 - (ii) Stump planting. 2×3=6

SECTION—B

5. Answer **ALL** the following parts (each in about 75 words) :— 8×5=40
- (a) How shelterbelt and wind breaks are helpful in sand dune stabilization and desert control ?
 - (b) Discuss the role of forests in interception, surface runoff, infiltration of rainfall, regulation of stream flow and maintaining soil fertility.

- (c) Do forests influence the rainfall ? If so, how ?
 - (d) Describe the extent, method of cultivation and effects of shifting cultivation. Suggest some suitable alternatives to shifting cultivation.
 - (e) Discuss afforestation of inland sand dunes by giving their distribution, site conditions, planting techniques and species suitable in such areas.
 - (f) Describe briefly the afforestation techniques adopted for Ravinous lands of Yamuna giving suitable species.
 - (g) What do you know about recent progress in Agroforestry research and development in our country for sustainable development ?
 - (h) Discuss the use of tree improvement in natural forest and stand improvement.
6. Answer **ALL** the following parts (each in about 75 words) :— 8×5=40
- (a) What are the main reasons for decline of the forest cover in our country ?
 - (b) Give suitable forestry techniques for the reclamation of salt affected soils.
 - (c) What are major ecological considerations in afforestations ?

- (d) Describe the afforestation in an undulating community land situated in the catchment of a small water reservoir.
 - (e) Distinction between Potential and Deferred Grazing.
 - (f) How social forestry differs from other types of forestry ?
 - (g) What is the role of different techniques involved in connection with conservation and multiplication of threatened species ?
 - (h) What are the causes of forest fire ? Discuss in brief the damage caused to forest by fire along with its control.
7. (a) What is D and D ? Who can make use of D and D and how ? 10
- (b) Explain the different processes of soil erosion. Briefly describe them giving examples as to how the vegetation including trees can help in conserving soil and water. 10
- (c) Discuss in detail the protective role of National Forests in India. 10
- (d) Describe the economic importance of *Acacia nilotica*, *Terminalia belerica*, *Vitex negundo* and *Madhuca latifolia* in detail. 10

8. Write short notes on :—

8×5=40

- (a) Source-sink relationship with respect to carbon cycle.
- (b) Breeding arboratum.
- (c) Seed orchards.
- (d) Distinction between selection intensity and heritability.
- (e) Energy flow model in ecosystem.
- (f) Ex-situ and in-situ conservation.
- (g) Heartwood and sapwood.
- (h) Exotics in Indian Forestry.