IFoS 2010

Serial No. 5901 B–JGT–K–GPA

FORESTRY

Paper—I

Time Allowed : Three Hours *Maximum Marks : 200*

INSTRUCTIONS

*Candidates should attempt questions no. **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 parts of a question are indicated against each.

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

SECTION—A

1. Answer all the following (each in about 75 words) : 8×5=40

   (a) Why do forest plantations fail ? Cite relevant examples.

   (b) Briefly discuss a silvicultural system in which equal or equiproductive areas of mature crops are successfully felled.

   (c) What are the different types of containers used in raising forest nurseries ? List their advantages and disadvantages.

(Contd.)

(d) Give the zonation of land-sea interface in a typical mangrove eco-system with its characteristics.

(e) Explain the role of growth regulators in rooting of cuttings.

(f) "Tropical regions are rich in floral biodiversity as compared to temperate regions." Do you agree ?

(g) Briefly discuss low temperature injuries in forest trees.

(h) *Acacia Catechu* and *Prosopis juliflora* have emerged as important species for marginal lands. Discuss briefly.

2. (a) Briefly describe the merits and demerits of 'high density short rotation' forestry. Enlist suitable species in this regard along with their productivity potential. 10

(b) What do you understand by the term locality factors ? How these affect the decision of plantations undertaken by the silviculturist ? 10

(c) Why is LAI important in deciding the productivity of forest trees ? Explain the concept of optimum LAI and how it varies with type of forest and climate. 10

(d) Successful regeneration in a forest stand depends upon judicious choice of a silvicultural system. Comment. 10

3. (a) Differentiate between the following : 5×4=20

(i) Shelter belts and wind breaks

(ii) Photosynthetic efficiency and nutrient use efficiency

(iii) Site quality and site index

(iv) Net primary production and yield

(v) Gregarious flowering and sporadic flowering in bamboo.

(Contd.)

(b) "Indian Sandalwood (*Santalum album*) is the most valuable wood in India. However, silvicultural production of this species is not satisfactory."

Discuss the above in relation to the phenology of *Santalum album* and the forest laws governing its cultivation and trade. 20

4. (a) Comment on following statements : 4×5=20
   (i) 'Pure stand of forests result incomplete utilization of the site.'
   (ii) 'Mangrove ecosystems have physiologically dry soil.'
   (iii) 'Planted forestry has high production potential but low conservation value.'
   (iv) ' "Conversion" is an accepted silvicultural system.'

   (b) Give climatic requirement, rotation age, spacing, tending operations and yield of the following forest species :
   (i) *Populus deltoides*
   (ii) *Casuarina equisetifolia.* 10

   (c) Distinguish between 'tending operations' and 'cultural operations' in forestry. 10

SECTION—B

5. Write short notes on all the following (each answer to be in about 75 words) : 8×5=40
   (a) Management of urban forestry
   (b) Canopy architecture
   (c) Diagnosis and design in agroforestry
   (d) Lopping management
   (e) Radiation absorption and energy balance in forests
   (f) Seed coating and pelletting
   (g) Strategies for conventional tree improvement programme
   (h) Nutrient cycling in natural forests.

(Contd.)

6. (a) Discuss the following : 4×5=20
   (i) Selection as a method of tree improvement
   (ii) Selection intensity affects the genetic gain
   (iii) Rio conference
   (iv) Drawbacks of social forestry programmes in India.

   (b) (i) How can we make use of the traditional knowledge of the major tribes of India in forest conservation (both flora and fauna) ? 10

   (ii) What is integrated land use management ? Give a plan of integrated land use management for 10 ha. of land in tropics and sub-tropics parts of India. 10

7. (a) What do you understand by the term 'hot spot' in relation to floral biodiversity ? Explain methods of ex-situ and in-situ conservation. 10

   (b) (i) "Among the causes of soil erosions some are manageable." Comment.

   (ii) Comment on the Need of Research in agroforestry in India. 2×5=10

   (c) (i) Write on Tree species for smoke and dust pollution control.

   (ii) Differentiate between erodability and erosivity. 2×5=10

   (d) (i) What are saline and sodic soils ?

   (ii) Mention ten species (scientific name) of trees tolerant to salinity. 2×5=10

8. (a) What do you understand by the term "provenance trial" ? Explain the stepwise procedure for this trial followed in a forest species. 10

   (b) Discuss the possibilities of biotechnological interventions in tree improvement programmes. 10

   (c) How can NGOs, schools, banks and industry help to carry out an afforestation programme ? 20