

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
- Why do forest plantations fail ? Cite relevant examples.
 - Briefly discuss a silvicultural system in which equal or equiproductive areas of mature crops are successfully felled.
 - What are the different types of containers used in raising forest nurseries ? List their advantages and disadvantages.

- (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.

- (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 pelleting

(g) Strategies for conventional tree improvement programme

(h) Nutrient cycling in natural forests.

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

No 002269

B-JGT-K-GPB

FORESTRY
Paper II

Time Allowed : Three Hours

Maximum Marks : 200

INSTRUCTIONS

Candidates should attempt questions 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 allotted to parts of a question are indicated against each.*

Answers must be written in ENGLISH only.

SECTION A

1. Answer any five parts from the following : $8 \times 5 = 40$
- Discuss the significance of normality in sustained management of forest.
 - What are the different regeneration categories that are observed and recorded during sal regeneration survey ?
 - How is De Liocourt's principle utilised to ensure normality concept in selection forest ?
 - How do variation in density and quality of a forest influence annual yield estimation ?
 - How are yield table data used for assessment of normal growing stock ?

- (f) Describe methods of using prismatic compass in forest surveys.
2. (a) Comment on the comparative significance of calliper and tape for d.b.h. measurement. 8
- (b) What is working circle ? How is it decided in working plan exercise ? 8
- (c) Write down the methods for laying out sample plots for periodic recording of growth data. 8
- (d) Briefly discuss the relative importance of physical and silvicultural rotations in respect of existing forest resources of India. 8
- (e) Distinguish between Irish bridge, suspension bridge and cantilever bridge. 8
3. (a) What are the pictorial elements used for interpretation of aerial photographs ? 10
- (b) Describe the procedure for allotting different types of periodic blocks in a forest. 10
- (c) Explain the principle and use of Abney's Level. 10
- (d) Explain the components of compartment description. 10
4. (a) How is the soil expectation value helpful for deciding financial rotation ? 10
- (b) How does the flying height influence the scale of aerial photographs in hilly areas ? 10
- (c) Write principle of Christen hypsometer and its use. 10
- (d) What is intermediate yield ? How does it differ from final yield ? 10

SECTION B

5. Answer any *five* parts from the following : 8×5=40

- (a) What are the keys to identify timbers for construction purpose ?
- (b) List five each of the important resident and migratory birds noticed in Indian forests.
- (c) Name five important tree species used for axle and wheels of different carts. In which regions of the country is this sort of transportation more prevalent ? State the reasons.
- (d) List merits of Bentham and Hooker system of plant classification used in Dendrology.
- (e) Illustrate the succession of mangrove vegetation in sea coast.
- (f) What are fire-prone areas ? How are these detected ? What precautionary measures need to be taken to overcome this problem ?

6. (a) What morphological, anatomical and physiological features are suited in xerophytic plants ? 10

(b) How is damage due to teak defoliator and stem borer managed in the plantations ? 10

(c) What are live fences ? Name five plant species most commonly used as live fences. How do these differ from other types of fences ? 10

- (d) How is Forest Certification done in developed countries ? Comment on its present status in India. 10
7. (a) How are ectomycorrhizal fungi beneficial in managing soil borne diseases of forest nurseries ? Give examples. 10
- (b) What are the different types of water soluble wood preservatives ? 10
- (c) How and why should cold desert forest ecosystem be conserved ? 10
- (d) What are the functions of "Indian Board for Wildlife" with regard to conservation of wildlife ? 10
8. (a) Write causal pathogens of important diseases of Poplar and *Gmelina arborea*. Write integrated management of any one disease in each species. 10
- (b) How are different parameters used in System Ecology ? 10
- (c) Name five aromatic grasses with their uses and methods of extraction. 10
- (d) "There is no replacement for rattans in forest based industry." Justify this statement and list five important species reported from different parts of the country. 10