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.

Section—A

1. Answer any *four* of the following (the answer should not exceed *150* words for each) :

    10×4=40

    (a) Why are locality factors considered important for any silvicultural operation?

    (b) Explain the role of fire in silviculture of *Shorea robusta*.

(c) Suggest measures to rehabilitate degraded mangrove forests.

(d) What is a regeneration stock map? How is it prepared?

(e) How do we calculate the seed requirement of a species while raising nursery? Also explain the method of calculating the number of plants required per hectare for plantation.

2. (a) Define forest conversion. Explain the various situations under which conversion is advisable. Write in brief the general techniques of forest conversion.   2+4+4=10

(b) Explain the following points in relation to nursery management :   4×5=20

(i) Site selection and layout

(ii) Soil working

(iii) Methods of raising nursery stock

(iv) Plant protection measures

(v) Nursery register

(c) Briefly describe the selection system with particular reference to the following : 2×5=10

    (i) Character of crop produced

    (ii) Felling cycle

    (iii) Tending

    (iv) Regeneration

    (v) Advantages and disadvantages

3. (a) Define a forest type. Discuss the different forest types found along tidal swamp forests with their species composition. Give a note on how *Rhizophora racemosa* is managed in mangrove forests of Sunderban.

                                  3+12+5=20

(b) Write short notes on : 5×2=10

    (i) Interrelationship between CAI and MAI

    (ii) Cultural operations

(c) Differentiate between : 5×2=10

    (i) Exogenous dormancy and Endogenous dormancy

    (ii) Artificial regeneration and Natural regeneration

4. *(a)* Describe the silvics of *Tectona grandis* under the following heads : 5×4=20

    (i) Distribution and morphology

    (ii) Silvicultural characters

    (iii) Silvicultural system and management

    (iv) Utilization

(b) Describe the silvics of *Casuarina equisetifolia* under the following heads : 5×4=20

    (i) Ecology and distribution

    (ii) Propagation and management

    (iii) Functional uses

    (iv) Pests and diseases

Section—B

5. Answer any *four* of the following (the answer should not exceed *150* words for each) : 10×4=40

(a) While selecting the species for agroforestry, the below-ground and above-ground interactions between the component species need to be considered. Discuss.

(b) Write short notes on :

    (i) Tribal economy

    (ii) Chola Naickans

    (iii) Gujjars

    (iv) Gonds

(c) Explain the various applications of geo-textiles for soil conservation.

(d) Discuss the direct use value of biodiversity.

(e) Discuss the importance of tissue culture techniques as a tool in tree improvement.

6. (a) Write short notes on :   2½×4=10

    (i) Aquaforestry

    (ii) Sacred groves

    (iii) Water-use efficiency

    (iv) Home gardens

(b) Explain the various components of a hydrological model for an agroforestry system.   10

(c) Management challenges in urban forestry are unique as compared to other social forestry programmes. Discuss. 10

(d) Discuss the characteristics which are shared by the diverse tribal groups all over India. 10

7. (a) Compare nutrient cycling in a natural forest, an agroforestry system and an agricultural field. Discuss how it helps to sustain soil fertility. 10

(b) Differentiate between ectomycorrhizae and endomycorrhizae with respect to structure and function. 10

(c) Write short notes on : 2½×4=10

   (i) Carbon sequestration

   (ii) Riparian buffers

   (iii) Forest decline

   (iv) Nitrate pollution

(d) Name the biodiversity hot spots in India. Discuss the major threats to biodiversity. 10

8. *(a)* Describe the regression selection method for plus tree selection in uneven-aged stands. 10

(b) Describe the various approaches for obtaining genetically superior seed, giving advantages of each. 10

(c) Discuss the statement, "Even in large experiments with many families, heritabilities are not estimated without error". 10

(d) Discuss the factors to be considered for efficient recycling of harvested water. 10

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