

Forestry

DEGREE STANDARD (two papers)

1. Principles and Practices of Silviculture:

Factors of locality - Forest types of India - Revised Classification - Pure and Mixed stands - Forest Regeneration - Natural and Artificial methods - tending and thinning operations.

2. Silvicultural systems:

Classification of Silvicultural systems - clear falling, uniform systems - Group system - Shelterwood Systems - Selection system - Coppice systems - Conversions.

3. Silviculture of Economic trees:

Conifers : *Abies pindrow*, *Cedrus deodora*, *Pinus roxburghii* - *Pinus wallichiana*, *Pinus patula*
Broadleaved Species : *Acacias* (*A. nilotica*, *A. catechu*,) *Dipterocarpus* spp (*Shorea robusta*, *Dalbergia latifolia*, *Dalbergia sissoo*) *Santalum album*, *Tectona grandis*, *Terminalia*, spp *Hardwickia binata*, *Ailanthus excelsa*. Exotics: *Acacia auriculiformis*, *Casuarina equisetifolia*, *Eucalyptus* spp (*E. tereticornis*, *E. grandis*, *E. globulus*) *Wattles*, *Poplars*, *Prosopis juliflora*

4. Forest Mensuration:

Methods of Measuring-Diameter-Girth-Height-Crown and volume of Trees-Form Factor-volume estimation of stand-sampling methods-sample plots-Yield Calculation-Yield and Stand Tables-Determination of age of trees-Forest Cover monitoring through remote sensing.

5. Forest Management:

Forest organisation-sustained yield-rotations-Normal Forests-Yield regulation -Von Mantel's formula and its-modifications. Managing for Wildlife recreation-Multiple use forests-GIS for forest management and modelling

6. Tree Breeding :

General concepts of tree breeding-variation and its use-provenance and seed sources-exotics-selection methods- Seed production and seed orchards -progeny testing-in situ and ex situ gene conversion. heterosis exploitation

7. Forest working Plan:

Objectives and scope-constitution of working plan division-enumeration and sampling -regeneration, survey-yield regulation in selection and regular forests-Plantation Journal-Divisional Working Plans-Annual Plan of operations.

8. Agroforestry and Social Forestry :

Scope and necessity of Agroforestry-primary systems and subsystems-Windbreaks and shelterbelts-constraints in agroforestry-Interference effects-Wastelands-Classification, reclamation.. Social forestry-objectives, scope and necessity-peoples participation-Joint Forest Management-principle objectives methodology.

9. Forest Ecology and conservation :

Forestry

Basic concepts in ecology -biotic and abiotic components-forest ecosystems-Forest Community concepts-vegetation concepts. Plant succession and climax-Primary productivity-nutrient cycling-restoration ecology- Global warming and green house effects-Ozone layer depletion-Acid rain-Role of trees in environmental conservation-Biodiversity: concept and need.

10. Forest soils and Watershed Management :

Forest soils-Classification-factors affecting soil formation -physical, chemical and biological properties-soil conservation-definition-causes for erosion-types- role of micro organisms in soil amelioration. Watershed concepts-methods of forest treatment streamflow regulation -Water harvesting and conservation-Ground water recharge.

PAPER II

1. Forest Utilization:

Trading of timber - Structure and specialized uses of wood - Nonwood forest products - (fibres and flosses, bamboos and Canes , Katha and bidi leaves, essential oils - oilseeds - tans and dyes - gums and resins - drugs - insecticides. Physical and mechanical properties of wood - Classification of defects - Wood seasoning and preservation - forest products (Plywood, particle board , harboard and insulation board - paper and rayon)

2. Forest seed Management:

Seed and its importance - Characteristics of good quality seeds - Seed dormancy - types and causes of breaking dosmany - Seed treatment - principles and methods - seed fortification - pelletisation - synthetic seed - germination test - Quick viability test - seed health test - seed storage - causes for deterioration - packaging containers - Certification procedure for pure seed - seed standards . Seed Act - rules - legislation and control.

3. Forest policy and Legislation :

History of forest development - Indian Forest Policy 1894, 1952 and 1990. National Forest Policy 1988 - Forest Laws - necessity. general Principles - Indian Forest Act 1927 - Forest Conversation Act 1980 - Wildlife Protection Act 1972 and their amendments. Tamil Nadu Forest Act 1882, Tamil Nadu Forest Timber Transit Rules 1968, Tamil Nadu Hill Act 1985 - Application of Indian Penal Code to Forests. International Timber Trade Organisation, (ITTO) GATT and its relevance to timber export - Rio Summit and its relevance to timber export.

4. Forest Protection:

Injuries to forests - abiotic and biotic destructive agencies - fire - mesurement and management - principles and systems of firecontrol - Bionomics and management of pest insects and mites in forest nurseries and plantations - Integrated Pest Management (IPM) of forest pests - Forest tree dieases and their management - Biological control of forest pests and diseases. Forest encroachments and grazing.

5. Forest Logging:

Logging practices in India - Felling and Conversion - implements used - season for and methods of felling - safety measurements in logging - Conversion season for felling - felling rules - conversion cross cutting system - Sawing - different types - extraction methods - transportation of timber - marketing and sales - Storage - sales depot - management of depot - recent trends in logging - logging practices in other countries.

Forestry

6. Wildlife Management:

Wildlife and wild animals - Food chain - National Parks and Sanctuaries - Biosphere Reserves - Prey and Predator relationship - Man and Biosphere Programme (MAB) - Wildlife Census - Management of captive wildlife - Captive breeding - Diseases of wildlife and their management - Captive breeding.

7. Forest Economics:

Fundamental principles of forest economics - B:C Ratio, NPV and IRR analyses - Estimation of demand and supply - Forest valuation - Valuing stumpage - Price size - gradients - Devastation Value - risk management - Project formulation - Corporate financing - monitoring and evaluation - Elements of time series analysis and forecasting - Socio-economic analysis of forest productivity and attitudes - analysis of trends in national and international markets - Assessment of market structure.

8. Forest Tribal Welfare:

Tribal scenario in India - Forest: tribe - symbiosis - Tribal displacement and repercussions - Tribal schemes in India - stages of tribal economy , education, cultural tradition and customs - Tribal participation in forestry programmes.

9. Forest Surveying:

Principles and scope of surveying - scales - linear measurements - Chain and compass surveying - plane table surveying - Principles and instruments - Levelling instruments - Topographical surveying - maps and map-reading - Computation of areas - errors in different methods of surveying.

10. Forest Engineering:

Basic principles of forest engineering - Building materials and construction - forest road and bridges - general principles , objectives and types design and construction of timber bridges - Cable ropeways and winches.