

**CENTRAL ACADEMY FOR STATE FOREST SERVICE
COIMBATORE**

**STATE FOREST SERVICE
INDUCTION TRAINING COURSE PLAN**

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I. Introduction

The Induction Training Course for State Forest Service (SFS) Officers is a critical component in shaping competent and future-ready forestry professionals. The foundational syllabus for this training was notified by the Ministry of Environment, Forest and Climate Change (MoEF&CC) under the *Entrance and Training Rules (Revised), 2004* for State Forest Service Officers. The syllabus was prepared by the Syllabus Committee in consultation with State and Union Territory Governments and continues to serve as the core academic framework for this training programme.

This Course Plan builds upon the 2004 syllabus by incorporating a variety of academic enrichments and field-based interventions to better align with evolving forestry challenges and emerging technologies. The training now includes a comprehensive suite of the prescribed subjects, complemented by special modules, guest lectures, hands-on field visits and five thematic study tours across different ecological and administrative landscapes in the Country.

Classes are conducted by a team of experienced in-house faculty members, as well as external resource persons drawn from leading research institutes, forest departments, academia, and civil society. The inclusion of special lectures and expert-led modules covering topics such as Biodiversity Conservation, GIS Applications, Cyber Security and Environmental Law to name a few, which provides the trainees with exposure to cutting-edge knowledge and best practices.

This Course Plan has been thoughtfully designed to make the training more practical, participatory, and responsive to current trends. It ensures that trainees are not only well-versed in theoretical concepts but are also familiar with the latest tools, policies and field applications. Through interactive sessions, cross-regional learning and problem-solving based field experiences, the training equips SFS officers to meet the complex demands of contemporary forest governance and sustainable natural resource management.

II. The Course

Course Duration and Structure

The total duration of the Induction Training Course for State Forest Service Officer Trainees is two years. The training is divided into two academic phases interspersed with a mandatory field training attachment in the respective State cadres.

- The First Phase of institutional training spans 16 months, during which trainees undergo rigorous academic and practical training at the academy.
- Upon completion of this phase, the Officer Trainee shall return to their respective State/UT cadres for a period of four months of Field Training. During this time, the trainee is attached to various functionaries and operational units of the State Forest Department to gain hands-on exposure to the day-to-day workings of forest administration and field-level implementation.
- After field training, the trainee reports back to the academy for the Second Phase of training, which spans a further four months, with a focus on consolidation, advanced topics and applied forestry practices.

A term break of 30 days is provided during the course, the timing of which is to be decided by the Principal. This period is treated as part of Earned leave.

In addition to the listed subjects and modules, the course includes study tours and extensive field exercises aimed at reinforcing classroom learning with real-world applications. The study tours are planned across various geographical regions of the country and are intended to familiarize trainees with the practical dimensions of forest management, biodiversity conservation, policy implementation and administrative practices.

The course also includes specialized field exercises in:

- Road alignment
- Forest engineering
- Preparation of working plans
- Ecological census techniques

Practical and field exercise manuals will be prepared for all major technical exercises to ensure uniformity in the conduct of field activities and to provide clear guidance on methodology and expected learning outcomes. These manuals will help standardize the training experience and ensure that all Officer Trainees receive comprehensive exposure to essential topics without omissions.

Furthermore, to ensure well-rounded preparedness, trainees are imparted basic training in:

- Use of firearms
- Motor mechanics, and
- First-aid

Subjects for State Forest Service Officers Induction Training Course

Phase – I

1. General Botany/ Mathematics
2. Application of Modern Tools and Technology
 - Part A: Remote Sensing Techniques in Forestry
 - Part B: Computer Application in Forestry
 - Part C: Application of Geographical Information System
3. Silviculture – I
 - Part A : General Silviculture
 - Part B : Silvicultural Practices
4. Silviculture – II
 - Part A: Silviculture of Indian Trees
 - Part B: Silvicultural Systems
5. Forest Resource Assessment
 - Part A: Tree Measurements
 - Part B: Forest Biometry
6. Forest Survey
7. Forest Policy and Law
8. Forest Engineering
9. Ecology and Environmental Science
 - Part A: Ecology
 - Part B: Environmental Conservation and Management
10. Adverse Influence on Forests
11. Forest Utilization – I
12. Forest Utilization – II
 - Part I: Non-wood Forest Products
 - Part II : Medicinal Plants in India
13. Forest Resource Management
14. Natural Resource Management
 - Part A: Geology and Soil Science
 - Part B: Land Use & Watershed Management
15. Environmental Economics

Phase – II

1. Bio-diversity Conservation and Management
2. Joint Forest Management, Rural and Tribal Development
3. Human Resource Development and Management
4. Forest Accounts & Procedure

III. Syllabus

1. GENERAL BOTANY / MATHEMATICS

1. GENERAL BOTANY

Theory: 20

Practical: 20

Field Exercise: 2 days

Sl. No.	LEARNING OUTCOMES
LO-1	Classify the plant kingdom into major groups (cryptogams and phanerogams) and explain their basic characteristics relevant to forestry.
LO-2	Identify and describe the external morphology of roots, stems, leaves, flowers, fruits, and seeds for plant recognition and field application.
LO-3	Explain plant cell structure, tissue systems, and secondary growth processes in relation to tree growth and wood formation.
LO-4	Perform practical identification of plant organs, inflorescences, fruits, seeds, and tissue sections, and use floras for field identification.

THEORY

1. Importance and objectives of teaching Botany to a Forest Officer; different branches of Botany (1)
2. Classification of plant Kingdom (3)
 - 1.1 Cryptogams – Main divisions under cryptogams–bacteria, algae, fungi, lichens, bryophyta and pteridophyta.
 - 1.2 Phanerogams-Gymnosperms and Angiosperms
2. External Morphology (broad characters, details to be taught in practical) (6)
 - 2.1 Root characteristic, functions, form and habit
 - 2.2 Stem functions, form, different types of branching, stem modifications.
 - 2.3 Leaf structure and functions, modifications
 - 2.4 Flower:
 - 2.4.1 Structure and terms for describing flowers
 - 2.4.2 Bracts
 - 2.4.3 Calyx
 - 2.4.4 Corolla
 - 2.4.5 Androecium and Gynoecium
 - 2.4.6 Floral diagrams and floral formulae

- 2.4.7 Inflorescence
- 2.4.8 Pollination
- 2.4.9 Fertilization
- 2.5 Fruit Morphology:
 - 2.5.1 Dehiscence
 - 2.5.2 Classification
- 2.6 Seed:
 - 2.6.1 Morphology
 - 2.6.2 Types
- 3. Histology (10)
 - 3.1 Cell structure, physical and chemical nature of protoplasm, cytoplasm, differences between plant and animal, prokaryotic and Eukaryotic cell.
 - 3.2 Types of Cell Division (basic idea).
 - 3.3 Tissues and their types
 - 3.4 Tissue System of stems
 - 3.5 Secondary growth, annual ring formation etc.

PRACTICALS (20)

- ★ Modification of stem (rhizome, tuber, bulb, corn etc.)
- ★ Leaf -types, shape, margin venation, phyllotaxy, stipules and leaf modifications.
- ★ Inflorescence types.
- ★ Floral Morphology–Parts of Flower
- ★ Types of fruits – Classification, dehiscence etc.
- ★ Types of Seeds
- ★ Transverse section of root, shoot system with particular reference to tissue system and secondary growth.

FIELD EXERCISE (2 Days)

Field visit: General instructions regarding using flora in the field identification.

Reference Books:

Sl. No.	Title
1	Class Book of Botany by A.C. Dutta
2	Plant Ecology by Weaver & Clements
3	Manual of Indian Forest Botany by Norman L.Bor

Special Lectures:

Sl. No.	Title	Resource Person
1	Nomenclature, herbarium sheet preparation, plant genetics	Scientists from BSI or IFGTB, Coimbatore
2	Phenology, phenophases of fruits & flowers	Scientists from BSI or IFGTB, Coimbatore
3	Ecological niche	Dr. P.S. Easa, Director, KFRI (Retd.,)
4	Special Lecture 1	Dr. C. Kunhikannan, Director, IFGTB (Retd.,)
5	Special Lecture 2	Dr. Anbu A, Eco Development Officer, KMTR, TNFD
6	Special Lecture 3	Scientists from BSI, Coimbatore

Field Visits:

Sl. No.	Topic	Place of Visit
1	Visit to Botanical Survey of India	Botanical Survey of India, Coimbatore
2	Visit to Botanical Garden, TNAU	TNAU, Coimbatore
3	Field botany to nearby forest areas	Coimbatore, every Saturday
4	Visit to Walayar-Medicinal plants site	Walayar, Kerala
5	Visit to Thoppur, Dharmapuri Tree Park	During any tour to Dharmapuri
6	Visit to Naduvattom	During any tour to Ooty
7	Arboretum site visits	Arboretums along Bengaluru to Mysuru road during South India Tour (part 2)
8	Botanization within the Campus	CASFOS Coimbatore Resource Persons: Shri Angamuthu, RFO (Rtd.), TNFD Dr. Anbu A, Eco Development Officer, KMTR, TNFD Scientist, BSI- Course Faculty
9	Visit to Karian shola	During Field Forestry Tour

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Field Identification of Important Timbers of India	01:40:08
2	Tree Improvement	04:14:36
3	Nursery Techniques	04:45:00

Exam Pattern:**BOTANY -100 Marks****Theory – 65 Marks (External)**

i)	One Mark Questions (10 questions x 1 mark)	-	10 Marks
ii)	Five Mark Questions (5 questions x 5 marks)	-	25 Marks (5 out of 6)
iii)	Ten Mark Questions (3 questions x 10 marks)	-	30 Marks (3 out of 4)

Internal Concurrent – 35 Marks

i)	Herbarium	-	10 Marks
ii)	Floral Diagram	-	5 Marks
iii)	Identification of species	-	10 Marks
iv)	Quiz	-	5 Marks
v)	Assignment	-	5 Marks

1. MATHEMATICS

Theory: 40

Sl. No.	LEARNING OUTCOMES
LO-1	Perform arithmetic calculations involving approximations, logarithms, ratios, and interest.
LO-2	Solve algebraic expressions and simple, simultaneous, and quadratic equations.
LO-3	Apply progressions, permutations, combinations, and binomial/trinomial theorems in problem-solving.
LO-4	Use trigonometric ratios and triangle solutions to compute angles, distances, and areas.

1. Arithmetic (12)

- 1.1 Approximations
- 1.2 Powers and roots
- 1.3 Logarithms
- 1.4 Ratio and proportion
- 1.5 Simple and compound interest

2. Algebra (14)

- 2.1 Factorization Standard formulae
- 2.2 Equation-simple, simultaneous, quadratic
- 2.3 Arithmetic progression
- 2.4 Geometric progression
- 2.5 Permutations and combination
- 2.6 Binomial theorem
- 2.7 Trinomials theorem
- 2.8 Remainder theorem

3. Trigonometry (14)

- 3.1 The ratios, relations between ratios
- 3.2 Angles more than 90 degree and signs of ratios
- 3.3 Use of tables
- 3.4 Solutions of triangles
- 3.5 Area of triangle

Reference Books:

1	Lecture Notes on Mathematics on Forest Officers, By Ratan Purwar IFS
2	Mathematics A Text Book of Class XI Vol – I, II& III, By Vaidya.A.M, Singh Ajit Iqbal & Husain Izhar
3	Lecture Notes on Maths Hand Book, TNFA

Exam Pattern:**MATHS -100 Marks****Theory – 65 Marks (External)**

- | | | | |
|------|--|---|-----------------------|
| i) | One Mark Questions (10 questions x1 mark) | - | 10 Marks |
| ii) | 5 Mark Questions (5 questions x 5 marks) | - | 25 Marks (5 out of 6) |
| iii) | 10 Mark Questions (3 questions x 10 marks) | - | 30 Marks (3 out of 4) |

Internal Concurrent – 35 Marks

- | | | |
|---------------------|---|----------|
| Mid Term Evaluation | - | 35 Marks |
|---------------------|---|----------|

2. APPLICATION OF MODERN TOOLS AND TECHNOLOGY

Theory: 50

Practical: 50

Sl. No.	LEARNING OUTCOMES
LO-1	Understand aerial photographs, photogrammetric techniques and its applications in forest mapping, height measurement, stock assessment, and inventory analysis.
LO-2	Use remote sensing data (satellite imagery, GPS, SAR, etc.) for vegetation mapping, forest inventory, change detection, and ground validation
LO-3	Apply digital image processing and visual interpretation techniques for forestry and land-use analysis.
LO-4	Use computer applications (Word, Excel, DBMS, PowerPoint) for forestry data management, reporting, analysis, and wildlife census work.
LO-5	Develop and analyze GIS-based spatial and non-spatial databases to support forest and wildlife management decisions.

PART A- REMOTE SENSING TECHNIQUES IN FORESTRY

1. AERIAL SURVEY (15)

- 1.1 Introduction to aerial photography and photo grammetry; types of aerial photos; photographic specifications for forestry applications; obtaining, handling and storage of aerial photographs; scale and horizontal measurement; tilt and displacement; stereoscopy; elements and steps involved in photo interpretation; mapping, map numbering and ortho photo maps; difference between aerial photograph and maps.
- 1.2 Measurement of height of an object and height difference characteristics of single tree and a stand; area determination and stock mapping; use of aerial photographs in Forest inventory and Forest Management.
- 1.3 Application of Aerial Photographs for estimation of timber volume and volume increment of a crop using stratified random sampling, line plot and strip sampling and multi-stage sampling methods.

2. REMOTE SENSING (15)

- 1.1 Introduction to basic principles of remote sensing, spectral reflectance in infrared region, thermal infrared radiation and other spectral band from vegetation, soil and water.
- 1.2 Introduction to RBV, MSS, LISS, TM, Thermal Images, Radar Technology, SAR Inter ferometry for generating accurate topographic maps.
- 1.3 Procurement of satellite data.
- 1.4 Resolution and form of data from LANDSAT, NOAA, SPOT, IRS 1 B, C and D, IKONOS High Resolution Satellite etc.
- 1.5 Visual Interpretation and Digital Image Processing of Satellite Data

- 1.6 Application of remote sensing techniques in forestry and allied subjects and future prospects of remote sensing.
- 1.7 Use of satellite imagery in multi-stage sampling for forest Inventory and change detection.
- 1.8 National vegetation mapping.
- 1.9 Use of Global Positioning System for collection of Field data collection
- 1.10 Methodology for ground validation.

PRACTICAL

(10)

1. Aerial Survey: Stereo test, Orientation of aerial photographs, determination of photo scales, transfer of points under stereoscopy, construction of Director point measurement of height and crown diameter of single tree, crown density of a stand, stock mapping.
2. Remote Sensing: Digital and visual interpretation of satellite imagery. Multi-stage sampling for volume estimation using satellite imagery and aerial photos.
3. Land use and Soil Capability Classification

PART B- COMPUTER APPLICATION IN FORESTRY

Practical – 20

1. Introduction to Computers:
Brief history of computers, Hardware & Software
2. Operating Systems:
Introduction to operating Systems,
Introduction to WINDOWS 98 & WINDOWS 2000
Discussion on other operating systems, Self-learning packages.
3. Word Processing:
Introduction to Word Processing, Self-learning package
MS WORD: Edit, Save, Print, Block, Mail, Merge, Spell Checks, Thesaurus Advance Features, Exercises, Practice and Quiz,
Comparison of latest word processors.
4. Spread Sheet:
Introduction to Electronic Spread Sheet Application and creation of spreadsheets
MS EXCEL: Menus, Graphs, Reports and Printing of Spread sheets Forestry Applications
Practice and Quiz, Self-learning package.
5. Data Base Management Systems:
Introduction to Data Base Management Systems, M.S. ACCESS, Creating Data Base, Modify, Add and delete records, Report Generation Practice and Quiz.
Application in DBMS Self-learning package.

6. Graphical packages & Multi Media Applications
Presentation Tools: MS Power Point.
Practice and Quiz
7. Computer Viruses
8. Latest Trends in Computers
9. Computers in Wildlife Management,
Making use of Spread Sheets & DBMS for Census etc.
Networking Concepts: LAN; WAN; INTERNET
10. Application of Computers in Forestry

Part C - Application of Geographical Information System

Theory – 20

1. Basic Concepts in GIS (1)
2. Scope of Geographical Information System (2)
3. Principles of GIS (2)
4. Concepts, Spatial and Non-Spatial Information (2)
5. Preparing & developing spatial and non-spatial database for GIS Analysis (3)
6. Methods of data entry in the GIS Domain (2)
7. Analytical Capability of the GIS (3)
8. Applications of Forest and Wildlife Management and allied areas (3)
9. Generating outputs for application in field (2)

Practical – 20

1. Exposure to different sources of spatial and non- spatial data
2. Preparation of data inputs for GIS
3. Introduction to hardware and different software available
4. Hands on training in operating basics of the GIS
5. Actual data entry of spatial and non-spatial data
6. Editing, rasterization, labelling of attributes etc.
7. Carrying out theme based analysis to know applications to Forestry, Wildlife and allied areas.
8. Generating outputs useful for Managers of the resources

Reference Books:

1	Lecture Notes on Remote Sensing Techniques in Forestry, By R. Sharavanan
2	Remote Sensing and Image Interpretation, Lilliesand T.M & Kiefer. R. W
3	Reading Material on Computer Application Course, CASFOS, Coimbatore
4	Study Material on GIS & GPS, V. Jayaprakasam, ACF (Retd.,) TNFD
5	Lecture Notes on Application of Modern Tools and Technology, TNFA
6	Computer Basics for Forestry by Kingva, H.S & Gurdev Singh

Special Lectures:

Sl. No.	Title	Resource Person
1	A Special session on Cyber security- how to report and investigate cyber issues	Expert person from Police Department
2	A Special session on PFMS, IRHMS and e-office	Expert from ISTM
3	A Special Session on App creation and its usage	Ms.Sudha Ramen IFS,TNFD
4	A special session on search engines and social media	Expert in relevant field
5	A special session on LAN, WAN, server, website, domain, IP Address	Expert person - Computer Networking
6	A special session on visual basics and QR code generation	Expert in relevant field
7	Basic photo and video editing tools	Expert in relevant field
8	A special Module on entire MS office (Word, PPT, Excel) for beginners	Expert in relevant field
	GIS	
1	Special lecture by Land use planning cell	Expert - State Planning Commission
2	Space science applications in forestry	Expert - National Remote Sensing Centre, Hyderabad
		Expert - Indian institute of Remote Sensing, Dehradun

Field Visits:

Sl. No.	Topic	Place of Visit
1	Visit to TNAU Remote Sensing & GIS Lab	TNAU, Coimbatore
2	Visit to a forest department using RS & GIS Extensively	Forest Dept. of Telangana/Karnataka
3	Visit to Anna University GIS Lab	Anna University, Guindy, Chennai

Tours:

Sl. No.	Topic	Tour Destination	Duration
1	Visit to NESAC (North eastern Space Applications Centre), Meghalaya	East India Tour - Meghalaya	1 day
2	One day module in FSI, Dehradun	FSI, Dehradun	1 day
3	IIRS, Dehradun - Half day visit	During North India Tour	1 day
4	NRSC, Hyderabad / Karnataka FD visit	During South India Tour- 2	1 day

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Introduction to Leveraging AI and ChatGPT	00:34:36
2	Cyber Security and Strategy	00:38:22
3	The Drone Rules	00:44:00
4	ChatGPT and Generative AI tools for Government Officials	01:00:00
5	Responsible AI in the Generative AI Era	01:14:23
6	AI led Digital Transformation in Urban Governance	01:15:00
7	Stay Safe in Cyber Space	01:16:41
8	Cyber and CDR Analysis	01:57:06
9	Digital Literacy	02:06:35

Exam Pattern:**AMTT (Part – A & C and B) - 200 Marks****Theory – 60 Marks (External)**

Computer - 15 Marks & GIS- 45 Marks

Internal Concurrent- 40 Marks**Part ‘B’ – 15 Marks**

- i) Computer Power Point Presentation - 05 Marks
- ii) Excel Programme - 05 Marks
- iii) Viva voce - 05 marks

Part ‘A & C’ – 25 Marks

- | | | | |
|-----|-----------|---|----------|
| i) | Viva Voce | - | 5 Marks |
| ii) | Quiz | - | 20 Marks |

Practical – 100 Marks

- Project in GIS- 35 Marks
- Project in Computer Application- 15 Marks
- Practical Exam GIS- 30 Marks +5 marks for Practical Record
 - Practical Exam COMPUTER- 10 Marks + 5 marks for Practical Record

3. SILVICULTURE – I

Theory: 59

Practical: 20

Excursion: 8 days

Sl. No.	LEARNING OUTCOMES
LO-1	Explain the principles, scope, and ecological basis of silviculture, including forest regeneration, growth, and stand dynamics.
LO-2	Analyze the influence of climate, soil, physiography, and biotic factors on forest crop establishment and site management.
LO-3	Apply appropriate natural and artificial regeneration techniques, including nursery, planting, and plantation maintenance practices.
LO-5	Plan and supervise silvicultural operations such as seed collection, nursery management, planting, tending, thinning, and pruning.
LO-6	Integrate silvicultural practices with working plans and conservation objectives to ensure sustainable forest management.

PART A : GENERAL SILVICULTURE

1. INTRODUCTION (1)

Definition, scope and basis of rational Silvicultural practice.

2. LOCALITY FACTORS (5)

2.1 Climatic factors: Importance of climate and weather in forestry; elements of climate and factors influencing forests, periodicity of climate, climatic provinces, seasons, solar radiation, temperature, moisture and wind. (1)

2.2 Physiographic factors: Altitude and its effect; effect of slope and aspects; topography and surface conditions. (1)

2.3 Edaphic factors: soil condition; soil moisture; influence of soil on vegetation, indicator plants. (1)

2.4 Biotic factors: plant parasites; beneficial & injurious effects of wild and domestic animals; interference by man; beneficial and harmful effects of fire. (1)

2.5 Interaction of locality factors in determining vegetation; relative hardness of species; resistance and tolerance to different climatic factors. (1)

3. SITE MAINTENANCE AND IMPROVEMENT (3)

3.1 Site maintenance in regeneration operations

3.1.1 Evaluation of site characters for plantation.

3.1.2 Structural management of soils.

3.1.3 Water Management.

- 3.1.4 Soil working in relation to moisture conservation.
 - 3.1.5 Cultural practices
- 3.2 Site maintenance in forest stand
 - 3.2.1 Species composition.
 - 3.2.2 Controlled grazing.
 - 3.2.3 Manures and fertilizers.
 - 3.2.4 Soil amendment.
 - 3.2.5 Fertility potential of soil.
- 4. GROWTH AND DEVELOPMENT OF TREE (9)
 - 4.1 Tree form
 - Form of crown, branching, bole & root, root and mycorrhiza - their types and role. (1)
 - 4.2 Structure
 - 4.2.1 Stem structure-bark
 - 4.2.2 Root structure (1)
 - 4.3 Water relations
 - 4.3.1 Ascent of sap
 - 4.3.2 Conduction
 - 4.3.3 Transpiration
 - 4.3.4 Moisture availability and growth. (1)
 - 4.4. Light relations
 - 4.4.1 Photosynthesis.
 - 4.4.2 Photoperiod.
 - 4.4.3 Leaves and light relations.
 - 4.4.4 Ground flora and light.
 - 4.4.5 Light demanders and shade bearers.
 - 4.4.6 Other effects of light. (1)
 - 4.5 Food relations
 - 4.5.1 Carbohydrate metabolism
 - 4.5.2 Assimilation
 - 4.5.3 Respiration
 - 4.5.4 Nitrogen assimilation.
 - 4.5.5 Major and minor nutrients.
 - 4.5.6 Function of mineral nutrients
 - 4.5.7 Mineral deficiency
 - 4.5.8 Translocation.
 - 4.5.9 Accumulation
 - 4.5.10 Parasitism. (2)

- 4.6 Growth regulations
 - 4.6.1 Absorption and translocations.
 - 4.6.2 Growth promoters.
 - 4.6.3 Growth inhibitors and phytocides
 - 4.6.4 Other important effects of growth regulators. (1)
- 4.7 Growth and development - Period of growth and rest; growth rings; height growth; diameter growth; volume increment; quality increment; Growth in Bamboos. (1)
- 4.8 Crop Morphology - Differentiation of stands by composition and density, crown and canopy; crown classification; crown closure; root competition. (1)
- 1. CLASSIFICATION OF FOREST TYPES AND THEIR DISTRIBUTION (5)
 - 1.1 Basis for classification.
 - 1.2 Forest types of India and their distribution according to Champion and Seth's classification.

Note: Field study of tree growth and development, study of locality factors, forest stand, succession, study of vegetation in various forest types shall be done during field tours and excursions. (5 days)

PART B: SILVICULTURAL PRACTICES

- 1. NATURAL REGENERATION (3)
 - 1.1 Natural regeneration by seed
 - 1.2 Natural regeneration by coppice
 - 1.3 Natural regeneration by root suckers
 - 1.4 Cultural operations
- 2. ARTIFICIAL REGENERATION (24)
 - 2.1 General Consideration (3)
 - 2.1.1 Objects of artificial regeneration; artificial v/s natural regeneration
 - 2.1.2 Choice of species in respect of hard-woods, softwoods, fast growing, slow growing, exotics and indigenous species.
 - 2.1.3 Sowing v/s planting
 - 2.1.4 Pure v/s mixed crops
 - 2.2 Seed Supply
 - 2.2.1 Seed collection; selection of plus trees, their evaluation. (4)
 - 2.2.2 Seed orchard; seed stand; seed production areas; seedling seed orchards and clonal seed orchards.
 - 2.2.3 Seed testing, certification and storage
 - 2.2.4 Pre-sowing treatment of seed including stratification and scarification.

2.3 Nursery

- 2.3.1 Selection of site, Layout, preparation of beds, fencing (4)
- 2.3.2 Seed requirement; Time and method of Sowing.
- 2.3.3 Protection of seeds and seedlings against diseases, pests and natural calamities.
- 2.3.4 Green and organic manure and fertilizer application; shading; watering and damping off; weed control in the nursery.
- 2.3.5 Weeding and hoeing; Thinning out; culling, shifting grading of seedlings; time and method of transplanting; maintenance of fertility, calendar of operations.

2.4 Container plants

- 2.4.1 Specification of container (2)
- 2.4.2 Potting Media
- 2.4.3 Container Filling and stacking
- 2.4.4 Time and method of sowing and transplanting

2.5 Modern Nursery Techniques (4)

- 2.5.1 Comparative performance of planting stock raised from vegetative parts and from seed.
- 2.5.2 Clonal Techniques.
- 2.5.3 Root suckers
- 2.5.4 Stem and branch cutting.
- 2.5.5 Root and rhizome cutting.
- 2.5.6 Layering.
- 2.5.7 Grafting.
- 2.5.8 Budding.
- 2.5.9 Hormone and stimulants for rooting.
- 2.5.10 Green house and mist chamber design and management.

2.6 Planting Operations and Techniques (4)

- 2.6.1 Survey and mapping of the plantation area; treatment map; clearing, burning, planting plan; direct sowing;
- 2.6.2 Season of planting
- 2.6.3 Stacking and Carriage to planting site
- 2.6.4 Spacing
- 2.6.5 Size of trench and pits, and soil working;
- 2.6.6 Method of planting of nursery bed and container grown seedlings.

- 2.6.7 Irrigation including water conservation techniques and drainage.
- 2.6.8 Application of fertilizers
- 2.6.9 Use of fungicides and insecticides
- 2.6.10 Nurse and cover crop
- 2.7 Maintenance of plantation (2)
 - 2.7.1 Weeding.
 - 2.7.2 Soil working and hoeing.
 - 2.7.3 Watering.
 - 2.7.4 Mulching.
 - 2.7.5 Protection from grazing.
 - 2.7.6 Replacement of casualties, cutting back
- 2.8 Plantation Records (1)
 - 2.8.1 Site Map and Site Photographs.
 - 2.8.2 Treatment Map.
 - 2.8.3 Plantation Estimations.
 - 2.8.4 Records of various operations.
 - 2.8.5 Expenditure incurred.
 - 2.8.6 Monitoring and Evaluation Formats, Inspection Notes etc.
- 3. TENDING (4)
 - 3.1 Definition
 - 3.2 Weeding and cleaning
 - 3.2.1 Weed control in natural regeneration areas.
 - 3.2.2 Weed control in artificial regeneration areas.
 - 3.2.3 Climber control.
 - 3.2.4 Cleaning.
 - 3.2.5 Thinning in plantations.
 - 3.2.6 Thinning in natural regeneration areas.
 - 3.2.7 Thinning in irregular crops.
 - 3.2.8 Thinning intensity and mathematical checks.
 - 3.2.9 Pruning
- 4. GENETICS AND TREE IMPROVEMENT (3)
 - 4.1 Mendelian law of heredity.
 - 4.2 Provenance delimitations and trials.

- 4.3 Hybridisation, plant breeding including selective breeding and progeny trials.
- 4.4 Biotechnology and tissue culture.
5. Seed Orchard Establishment (1)
6. Seed collection from superior trees, handling, storage (1)
- PRACTICAL: (20)
1. Seed Processing (2)
 - 1.1 Extraction
 - 1.2 Cleaning
2. Seed Testing (5)
 - 2.1 Sampling
 - 2.2 Moisture determination
 - 2.3 Purity analysis
 - 2.4 Germination test
 - 2.4.1 First day: Seed counting, preparation of seed beds/petri dishes, putting the seed for test
 - 2.4.2 Fifth day: Counting
 - 2.4.3 Fifteenth day: final counting.
 - 2.5 Viability test
 - 2.5.1 Day one: Counting of seeds, soaking in water and preparation of reagent.
 - 2.5.2 Day two: Decoating of seed and putting seeds in test solution.
 - 2.5.3 Day three: Evaluation
3. Rooting of cuttings (3)
 - 3.1 Taking of cuttings and planting in beds
 - 3.2 Evaluation after a week and writing report
4. Budding, Grafting & Layering (3)
5. Other Methods of Propagation. (3)
 - 5.1 Bamboo Propagation
 - 5.2 Evaluation of result and reporting.
6. Plus Tree Selection (4)
 - 6.1 Selection of phenotypically superior quality trees, marking and reporting.
 - 6.2 Finalization of trees and its marking
 - 6.3 Recording of data and maintenance of records

6.4 Collection of reproductive material, its transportation and establishment of germplasm.

Field exercise:

(3 Days)

- (i) Preparation of a plantation scheme for a given area including estimates and scheduling various operations and protection of the plantation for five years. (This could be done during Watershed Management Plan exercise).
- (ii) Visits to nursery and plantation sites to study and participate in the operations.

Note: The above experiments are to be carried out under the guidance of Scientists from Seed Testing Laboratory, Plant Physiology and Genetics branches of the Research Institutes of the Indian Council of Forestry Research and Education.

Reference Books:

1	Lecture Notes on Silviculture – I Part - A Silviculture Practice, TNFA
2	Lecture Notes on Silviculture – I Part - B General Silviculture, TNFA
3	A Revised Survey of the Forest Types of India
4	Text Book of Silviculture by Dwivedi. A. P
5	Principles and Practices of Silviculture by L.S. Khanna
6	General Silviculture for India by H.G. Champion & Seth S.K.
7	Manual of General Silviculture for India by H.G. Champion & Griffith
8	Glossary of Technical Terms by FRI, Dehradun

Special Lectures:

Sl. No.	Title	Resource Person
1	Precision Silviculture	Dr. A. Balasubramanian, FC & RI, Mettupalayam
2	Special Lecture to be decided by the Resource person	Dr. K.K. Suresh (Retd. Dean), TNAU
3	Special Lecture to be decided by the Resource person	Dr. L. Bhuvaneshwaran, Scientists -F, IFGTB

Field Visits:

Sl. No.	Topic	Place of Visit
1	Nursery visit	Tamil Nadu Newsprint & Paper Limited (TNPL)
2	Nursery visit	Forest College and Research Institute (FC&RI), Mettupalayam and IFGTB
3	Field visit to tall seedling production	Nearby Private Nursery

4	Seed Technology Lab	TNAU/ IFGTB
5	1 day module on seed technology	Seed Centre, TNAU
6	Visit to farmer field for plantation, TBGP	Green Tamil Nādu Mission, TBGP
7	Different Afforestation Models (i) Pure Plantation (ii) Bund Plantation (iii) Agro Forestry Models	FC & RI, Mettupalyam
8	Plantation Project by NGO	Vanathukkul, Tirupur
9	Rock Afforestation	Krishnagiri
10	Modern Nursery	Dharmapuri
11	Grow More Biotech, Hosur	Krishnagiri
12	Research Station/Centre - Vilamundi, Varuttupallam, Seshanchavadi	Sathyamangalam, Andiyur near Erode, Salem
13	Mining Afforestation	Virudhunagar Ramco During South India Tour - 1
14	Miyawaki Plantation	Bharathiar University, Coimbatore

Practical:

Sl. No.	Topic
1	Identification of Bag sizes, photos, seedlings, equipment etc
2	Tall seedlings production
3	Plantation Journal
4	Nursery Journal
5	Seed ball preparation
6	Plantation and Practices

iGoT Courses:

Sl.No.	Title	Duration (Online hours)
1	Tree Improvement	04:14:36
2	Modern Tools and Technologies for Nursery	00:55:00
3	Seed Handling and Nursery Techniques for Sandal wood	01:08:00
4	Deforestation	00:43:56
5	Microforest	00:19:00
6	Watershed Management	00:54:44
7	Nursery Techniques	04:45:00

Exam Pattern:

1. SILVICULTURE- I- 200 Marks

Theory – 100 Marks (External)

Objective Type Questions

i)	Fill in the blanks	-	10 Marks
ii)	Match the following	-	10 Marks
iii)	True or False	-	10 Marks
iv)	Multiple Choice	-	10 Marks
	Definition (5 questions x 2 marks)	-	10 Marks (5 out of 6)
	Short Answer (4 questions x 5 marks)	-	20 Marks (4 out of 5)
	Long Answer (2 questions x 15 marks)	-	30 Marks (2 out of 3)

Internal Concurrent – 50 Marks

i)	Assignment (2 Nos)	-	20 Marks
ii)	Viva-Voce	-	10 Marks
iii)	Group Discussion	-	10 Marks
iv)	Quiz Test	-	10 Marks

Practical – 50 Marks

- Practical Record - 05 marks
- Practical Exam - 45 Marks (Identification-20 marks; Calculation-10 marks; Descriptive type-15 marks)
 - ❖ Identification of tree species, identification of equipment, use of tools, calculations of requirement of seeds, spacing, plant percent, etc may be included in the practical test.

4. SILVICULTURE – II

Theory: 45

Field Exercises: 2 Days

Sl. No.	LEARNING OUTCOMES
LO-1	Identify major Indian tree species (common and region-specific) and explain their growth characteristics, distribution, and silvicultural requirements.
LO-2	Apply appropriate regeneration, nursery, plantation, and tending practices for important forest species, including bamboos and rattans.
LO-3	Compare and select suitable silvicultural systems (clear felling, shelterwood, selection, coppice, and conversion systems) for different forest types and objectives.
LO-4	Recommend scientifically sound silvicultural interventions for sustainable forest management based on field observations and study tours.

Part A : SILVICULTURE OF INDIAN TREES

General description dealing with the general value, growth characteristics, natural distribution, phenology, silvicultural characters, autecology, synecology, community environment, natural regeneration, artificial regeneration, seed collection, storage, nursery technology, plantation technology, after care, tending operations and management of the following species:

1. Common species: (15)
 - 1.1 Conifers
 - 1.1.1 *Cedrus deodara*
 - 1.1.2 *Pinus roxburghii*
 - 1.2 Broad leaved.
 - 1.2.1 *Acacia nilotica* & *A. Catechu*
 - 1.2.2 *Azadirachta indica*
 - 1.2.3 *Dalbergia sissoo*
 - 1.2.4 *Eucalyptus* species
 - 1.2.5 *Madhuca indica*
 - 1.2.6 *Shorea robusta*
 - 1.2.7 *Tectona grandis*
 - 1.2.8 *Terminalia* species
 - 1.2.9 *Populus* species
 - 1.2.10 *Casuarina equisetifolia*

1.3 Bamboos and Rattans:

- 1.3.1 *Bambusa* species
- 1.3.2 *Calamus* species
- 1.3.3 *Dendrocalamus strictus* & other species
- 1.3.4 *Melocanna bambusoides*

2. Species of regional importance: (10)

2.1 Northern region:

Abies pindrow, *Celtis australis*, *Diospyros* spp., *Grewia* species, *Picea smithiana*, *Pinus wallichiana*, *Populus* species, *Quercus* species, *Robinia pseudocacia*, *Salix* species.

2.2 Southern region:

Acacias spp. (Wattles), *Anacardium occidentale*, *Casuarina* spp., *Dalbergia latifolia*, *Dipterocarpus* species, *Pongamia* species, *Pterocarpus* species, *Santalum album*, *Swetenia mahogany*, *Tamarindus indica*.

2.3 Eastern region:

Anthocephalus kadamba, *Casuarina* species, *Chuckrassia tabularis*, *Cryptomeria japonica*, *Dipterocarpus* species, *Mesua ferea*, *Morus laviegata*, *Pinus kesiya*, *Shorea assamica*, *Terminalia myriocarpa*

Note: This subject should also be covered during study tour and species of regional importance will be taught to groups of that region.

Part B : SILVICULTURAL SYSTEMS

1. Introduction: (1)

Definition, scope and classification, formulation and objectives of systems.

2. Clear felling system and its modifications, cutting sections application in India. (1)

3. Shelter wood system:

3.1 Uniform system- including regeneration period, periodic blocks, their types and importance, regeneration fellings, examples and application in India, Chir, Deodar, Kail, Sal, Teak.

3.2 Group system

3.3 Irregular shelter wood system

3.4 Canopy lifting shelter wood system (9)

4. Selection system: (3)

Characteristics, rotation, felling cycle, application in India.

5. Coppice system; (2)

5.1 Simple coppice system

- 5.2 Coppice with standards – rotation, selection of standards, yield
- 5.3 Coppice with reserve
- 5.4 Pollarding system
- 6. Conversion: (3)
 - 6.1 Reasons for conversion and types of conversion
 - 6.2 Conversion to uniform system.
 - 6.3 Conversion from coppice system to high forest
- 7. Concept of Dauerwald and Method du controle (1)

Field Exercises (2 Days)

Note: Different Silvicultural systems followed for important Indian tree species like Sal, Teak, Shisham, Chir, Deodar, Fir, Spruce, Oaks etc, shall be studied during field tours.

Reference Books:

1	Theory And Practice of Silviculture System, Ram Parkash & L.S. Khanna
2	Silviculture of Indian Trees (Vol-I, II, III, IV, V), Troup.R. S, Joshi.H. B & Mandal.R. K
3	Indian Trees by Brandis, D
4	Lecture Notes on Silviculture – II Part-A Economic Trees, TNFA
5	Lecture Notes on Silviculture – II Part-B Silviculture Systems, TNFA
6	Lecture Notes on Silviculture Systems, B.R. Baskaran IFS
7	Lecture Notes on Silviculture of Indian Trees, B.R. Baskaran IFS& Rajesh Gopal IFS,
8	Tree Species, ICFRE Publication

Special Lectures:

Sl. No.	Title	Resource Person
1	Identify Scientists who are assigned each tree - Session on each species	ICFRE Institutes at Coimbatore, Hyderabad, Chhindwara, Jabalpur, FRI, HFRI, JFRI, Jodhpur etc

Field Visits:

Sl. No.	Topic	Place of Visit
1	Bamboo	Dr. Dominic Savio, Scientist-E, IFGTB Coimbatore
2	Growmore Biotech	Dr. N. Bharathi, Growmore Biotech
3	Learning coppice system	Nearest TNPL Site

4	Clear felling system in Kerala and Marking of species	Walayar, Mr. Vijay Anand, IFS, CCF, Kerala
5	Sandalwood depot	Sathyamangalam
6	Tirupati Red Sandal depot	Tirupati

Tours:

Sl. No.	Topic	Tour Destination	Duration
1	Selection systems to be shown during tours	All tours	1 day
2	Shelterwood system	MP/CG/UK/UP	1 day

Special instructions: Animation Expert- to Create an animation of all of the mentioned systems

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Seed Handling and Nursery Technique for Sandalwood	01:08:59
2	Field Identification of Important Timbers Of India	01:40:08
3	Nursery Techniques	04:45:00

Exam Pattern:

SILVICULTURE-II- 200 Marks

Theory- 125 Marks (External)

Objective Type Questions

- | | | | |
|------|--------------------------------------|---|-------------------------|
| i) | Fill in the blanks | - | 10 Marks |
| ii) | Match the following | - | 10 Marks |
| iii) | True or False | - | 10 Marks |
| iv) | Multiple Choice | - | 10 Marks |
| | Definition (10 questions x 2 marks) | - | 20 Marks (10 out of 11) |
| | Short Answer (4 questions x 5 marks) | - | 20 Marks (4 out of 5) |
| | Long Answer (3 questions x 15 marks) | - | 45 Marks (3 out of 4) |

Internal Concurrent – 75 Marks

- | | | | |
|------|---------------------|---|----------|
| i) | Assignment (2 No's) | - | 30 Marks |
| ii) | Viva-Voce | - | 15 Marks |
| iii) | Quiz Test | - | 15 Marks |
| iv) | Group Discussion | - | 15 Marks |

5. FOREST RESOURCE ASSESSMENT

Theory : 45

Practical : 12

Field Exercise : 16 days

Sl. No.	LEARNING OUTCOMES
LO-1	Measure tree and stand attributes such as diameter, height, crown, bark thickness, form, volume, and age using standard forestry instruments and methods.
LO-2	Estimate tree and stand volume, growth, and increment using volume tables, stem analysis, and recognized formulae and procedures.
LO-3	Apply statistical methods, correlation, regression, and sampling designs for forest inventory, data analysis, and resource assessment.
LO-4	Design and implement forest sampling and crop measurement programmes to assess growing stock, productivity, and yield.
LO-5	Prepare reliable forest resource assessments to support working plans, sustainable yield regulation, and management decisions.

PART A: TREE MEASUREMENTS

1. Diameter and girth measurement: (1)
 - 1.1 Objects of tree measurements.
 - 1.2 Reference and other points of diameter measurement of standing trees.
 - 1.3 Measurements of forked, buttressed, fluted and abnormal trees.
 - 1.4 Simple instruments such as caliper, tape etc. their use and relative accuracy.
 - 1.5 Various kinds of dendrometers such as Bar and strut pedometer and Tele relascope, their use and relative accuracy.
 - 1.6 Determination of basal area of trees and its uses.
 - 1.7 Various formulae used for basal area.
2. Height measurement: (2)
 - 2.1 Objects of height measurements.
 - 2.2 Definition and measurements of various heights such as total, clear bole, merchantable etc.
 - 2.3 Principles of Hypsometers, Principles and use of Abney's level, Altimeters, relascopes and Calinometers.
 - 2.4 Relative accuracy of these instruments and sources of error in measurements.

3. Crown measurements (1)
 - 3.1 Objects of crown measurements.
 - 3.2 Measurements of crown width, crown height, crown area, crown volume etc.
 - 3.3 Construction and use of instruments for crown measurements such as mirror type, pun-chun crown meter etc.
 - 3.4 Measurement of branch angle, branch diameter and its length.
4. Volume measurements of logs and felled trees: (3)
 - 4.1 Estimation of volume of log through sectional area, length etc.
 - 4.2 Use of various formulae for estimating volume of log such as Huber, Smalian, Newtons etc. and their relative accuracy.
 - 4.3 Volume measurements of logs, branch wood etc., by Xylometric method.
 - 4.4 Measurement of specific gravity of wood.
 - 4.5 Measurement of stack wood and piling coefficient
 - 4.6 Concept and measurement of various types of volume of a tree, standard total timber, standard branch wood, sapwood and heartwood volume etc.
 - 4.7 Estimation of conversion losses of plywood, sawn logs, poles, pulp etc. from a tree or log.
 - 4.8 Determination of cull and assessment of internal defects in felled trees.
 - 4.9 FRI procedure for measurement of volume of felled trees.
5. Bark thickness measurement: (1)
 - 5.1 Need for measurement.
 - 5.2 Instruments for measuring bark thickness, their use and accuracy.
 - 5.3 Bark percent tables, their construction and use.
 - 5.4 Bark quotient and conversion of over bark volume to under bark.
6. Study of tree form: (1)
 - 6.1 Various theories relating to development of tree taper.
 - 6.2 Definition, measurement and use of form factors and form quotients.
 - 6.3 Various formulae relating to form of trees and their use.
 - 6.4 Taper table, taper curves and their use.
7. Volume estimation of standing trees: (4)
 - 7.1 Volume estimation by measuring diameter, height and form of trees.
 - 7.2 Volume estimation by volume tables:
 - 7.3 Definition of volume tables.
 - 7.4 Various kinds of volume tables and their uses.

- 7.5 Construction of volume tables by graphical and regression methods.
8. Age determination of trees: (1)
 - 8.1 By ocular estimate.
 - 8.2 From records.
 - 8.3 By counting of whorls of branches.
 - 8.4 By counting growth rings.
 - 8.5 Through successive measurements.
9. Growth measurement of trees: (6)
 - 9.1 Definition of various kinds of growth i.e., growth in diameter, basal area, height, volume, quality and their characteristics curves.
 - 9.2 Increment percent and its determination by Pressler's and Schneider's formulae.
 - 9.3 Determination of growth of trees with annual rings.
 - 9.3.1 Measurement of diameter growth by stump analysis and increment borer.
 - 9.3.2 Measurement of diameter, height and volume growth by stem analysis.
 - 9.4 Measurement of growth of trees without annual rings from data of sample plots, linear increment plots etc.
 - 9.5 Concept of mean and current annual increments and their relationship.
 - 9.6 Factors influencing the volume growth of trees such as site, competition, age etc.

PRACTICAL (12)

1. Measurement of diameter, girth, height, crown of standing trees and presentation of data in tabular form. (6)
2. Use of tele-relascope for calculation of taper-data and also to calculate the volume of standing trees. (6)

FIELD EXERCISES: (10)

1. Stem and stump analysis to study the growth history of individual trees.
2. Increment boring analysis.
3. Preparation of local volume tables.

PART B: FOREST BIOMETRY

1. Basic statistical methods: (10)
 - 1.1 Importance of statistics in forestry
 - 1.2 Grouping and presentation of data
 - 1.3 Frequency distribution and its representation
 - 1.4 Measures of central tendency – arithmetic mean, median and mode.
 - 1.5 Measures of dispersion– standard deviation, variance and coefficient of variation.

- 1.6 Normal distribution and its applications in forestry
 - 1.6.1 Properties of normal distribution
 - 1.6.2 Distribution of errors
 - 1.6.3 Confidence limits
 - 1.6.4 Types of abnormality – skewness and kurtosis
- 1.7 Expected value of mean and standard error
- 1.8 Tests of significance
- 1.9 Correlation and regression
 - 1.9.1 Definitions
 - 1.9.2 Simple linear regression and its fitting by least square method.
 - 1.9.3 Coefficient of determination and its significance
 - 1.9.4 Examples of multiple regression
- 2. Forest Sampling: (8)
 - 2.1 Necessity of sampling in forestry
 - 2.2 Complete enumeration v/s partial enumeration
 - 2.3 Principal steps in sample surveys
 - 2.4 Terminology and concepts
 - 2.4.1 Population, sampling unit and frame
 - 2.4.2 Size of sample/ sampling intensity
 - 2.4.3 Bias, accuracy and precision
 - 2.4.4 Sampling variation and estimation of sampling error
 - 2.4.5 Determination of sample size at a given level.
 - 2.4.6 Classical sampling design used in forest surveys:
 - 2.4.6.1 Simple random sampling
 - 2.4.6.2 Stratified random sampling
 - 2.4.6.3 Systematic sampling
 - 2.4.6.4 Point sampling and use of wedge prism and relascope.
 - 2.5 Examples of National Forest Inventory design of India and other countries.
 - 2.6 Continuous Forest inventory
- 3. Crop Measurements: (7)
 - 3.1 Lay out of sample plots
 - 3.1.1 Objects

- 3.1.2 Various kinds of sample plots – temporary, permanent, linear increment etc.
- 3.1.3 Considerations while laying out sample plots number, location, size & shape
- 3.1.4 Frequency and timing of measurements.
- 3.2 Definition and measurement of crops diameter, crop height, top height and crop age.
- 3.3 Methods of volume estimation of crop
 - 3.3.1 Arithmetic mean tree method
 - 3.3.2 One inch diameter class or Hossfeld's method
 - 3.3.3 Huber's, Urich's, Hartig's method and Blocks method
 - 3.3.4 F.R.I. procedure
 - 3.3.5 Graphic method
 - 3.3.6 Abstract sample tree methods–by volume table, volume-curve and Prussian Institute methods.
- 3.4 Growth and yield estimation of stand
 - 3.4.1 Concept of growth of stand in even aged and uneven aged forests.
 - 3.4.2 Factors affecting the growth of stands – site quality, stand density and age
 - 3.4.3 Methods of site classification
 - 3.4.4 Determination of stand density
 - 3.4.5 Preparation of yield tables by graphical and regression methods.
 - 3.4.6 Mathematical models for predicting growth and yield.
 - 3.4.7 Definition, use and projection and stand tables
 - 3.4.8 Money yield tables and their uses.

Field exercises

(6)

1. Formulation of a sampling design and carrying out the inventory in the field. (Use of Computer for processing and analysis of data)
2. Calculation of basal area using Wedge prism and relascope and comparing it with the data obtained through actual enumeration of standing crop.
3. Sample plot exercise–volume calculation and selection of mean tree.
4. Regression equation co-relating volume as a function of diameter and height and its use in local volume table.

Reference Books:

1	Forest Mensuration and Biometry by L.S. Khanna & A.N. Chaturvedi
2	Forest Mensuration Hand Book by Hamilton, G.H
3	Forest Mensuration by Chaturvedi & Khanna
4	Manual of Forest Mensuration by Simmons, C.E
5	Elementary Forest Mensuration by Jerram, M.R.K. And Bourne, R
6	Lecture Notes on Forest Mensuration by B.J. Shetty, IFS
7	Lecture Notes on Forest Mensuration by Viswanathan.S
8	Lecture Notes on Forest Resource Assessment, TNFA
9	Forest Mensuration Conversion Tables, FRI
10	Growth & Yield Statistics of Common Indian Timber Species FRI & College

Special Modules:

Sl. No.	Title	Resource Person
1	Biodiversity Index Calculations	Expert from Forest Survey of India (FSI)
2	Continuous forest inventory	
3	2-3 days module on statistics and sampling	TNAU professor of statistics
4	Drone and LIDAR applications in FRA	Dr. Darshan Kumar J, Kumaraguru Institutions, Coimbatore
5	Attachment with Institute of Wood Science and Technology (IWST), Bengaluru, and Indian Plywood Industries Research and Training Institute (IPIRTI), Karnataka	Experts from IWST, IPIRTI, Bangalore

Special Lectures:

Sl. No.	Title	Resource Person
1	Session on crown width assessment etc	Dr. Sivakumar, Scientist-F, IFGTB
		Dr. K. Anand, IFS, CCF, J&K
2	PWPR, Working Plan	Shri T.V. Manjunatha, IFS, APCCF (Rtd.), TNFD
		Dr. R.K. Bharti, IFS (Retd.) CCF
		Dr. Balasubramaniam, FC&RI, Mettupalayam
		Dr. Radhakrishnan, Professor, FC&RI, Mettupalayam

3	PWPR, Working Plan, Bamboo Estimation	Shri C.M. Ammanavar, DCF (Retd.), Karnataka
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Field Visits:

Sl. No.	Topic	Place of Visit
1	Bolampatty Range-Teak	Bolampatty, Coimbatore
2	Vilamundi Research Station - various species	Sathyamangalam
3	FC&RI plantation	Dr.Balasubramaniam, FC&RI, Mettupalayam
4	Equipment (relascope, wedge prism etc)	Dr. Anbu A, Eco Development Officer, KMTR, TNFD
5	Demo on Van App	Siruvani, or any other location decided by the resource person

Tours:

Sl. No.	Topic	Tour Destination	Duration
1	Bamboo estimations (culms etc)	Amravati	1 day
2	Yield Regulation, Working Plan and Implementation of Management plans	During Tours to UP, UK, MP, Karnataka & ANI	1 day

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Forests and Their Management	01:12:00
2	Forest Resource Management	01:19:00

Exam Pattern:

FOREST RESOURCE ASSESSMENT- 200 Marks

Theory – 100 Marks (External)

Objective Type Questions

- | | | | |
|------|---------------------|---|----------|
| i) | Fill in the blanks | - | 10 Marks |
| ii) | Match the following | - | 10 Marks |
| iii) | True or False | - | 10 Marks |
| iv) | Multiple Choice | - | 10 Marks |

Definition (5 questions x 2 marks)	-	10 Marks (5 out of 6)
Short Answer (4 questions x 5 marks)	-	20 Marks (4 out of 5)
Long Answer (2 questions x 15 marks)	-	30 Marks (2 out of 3)

Internal Concurrent - 50 Marks

i) Assignment (2 No's)	-	30 Marks
ii) Viva-Voce	-	10 Marks
iii) Quiz Test	-	10 Marks

Practical-50 Marks

- Practical Record-05 marks
- Project- 15 Marks (Assessment of Growing stocks / yield measurement from the plantation of Teak, Bamboo, Eucalyptus, Tamarind, Casuarina, *A. Cadamba*, etc.,)
- Practical Exam – 30 Marks

6. FOREST SURVEY

Theory: 40

Practical: 30

Sl. No.	LEARNING OUTCOMES
LO-1	Explain the principles, scope, and errors of surveying in forestry.
LO-2	Measure distances and angles accurately using chains, compasses, and related instruments.
LO-3	Conduct chain, compass, and plane table surveys and prepare field plots.
LO-4	Perform levelling and compute reduced levels for terrain works.
LO-5	Interpret topographical maps, contours, and compute areas for forest planning and demarcation.

1. Objectives and scope: (2)
 - 1.1 Introduction – definition, plane and geodetic survey; cadastral, Topographical, geographical, city, route and engineering surveys-Field and office work.
 - 1.2 Principles of surveying
 - 1.3 Error in surveying–cumulative and compensating errors and mistakes
 - 1.4 Scope of surveying in forestry
2. Scales: (2)
 - 2.1 Definition, representative fraction
 - 2.2 Construction of scales, requirements of good scale; Simple Diagonal, Vernier and Comparative scales
 - 2.3 Choice of scales and scales generally adopted
3. Measurement of Distances: (2)
 - 3.1 Linear measurements; ranging of chain and lines; testing and adjustment of chains, chaining the line on flat ground; chaining on sloping ground and hypotensal allowance; sources of error in ordinary chaining and measures to minimize them; correction of distances and areas measured with incorrect chains.
 - 3.2 Chaining round obstacles
4. Chain Surveying: (4)
 - 4.1 Principles suitability, surveys with straight and irregular boundaries.
 - 4.2 Field work; reconnaissance; selection of stations and well-conditioned triangles; marking of stations, the base line; tie line, check line and offsets; running a survey line and accuracy of offsets; oblique offsets and offsets to different kinds of objects, such as buildings, fences, river margins etc.

- 4.3 The field book; single and double line systems methods of recording.
- 4.4 Method of plotting
- 5. Measurement of angle: (4)
 - 5.1 Objects; triangulation
 - 5.2 Instruments, prismatic compass, construction; use, testing; source of error and corrections; introduction to Theodolite.
 - 5.3 Magnetic bearings; Forward and Back-bearings and their relationship; whole circle bearings and reduced bearings and their relationship.
 - 5.4 The Meridian–True, Magnetic, Grid and Arbitrary meridians; the magnetic declination and its variations-Isogonic and Agonic lines.
 - 5.5 Dip of the Needle and Iso clinic lines
 - 5.6 Local Attraction – Causes and correction.
- 6. Chain and Compass surveying: (7)
 - 6.1 Methods of surveying; Radiation, intersection and traversing; the closed and open traverse; comparison with chain survey; applicability.
 - 6.2 Sources of error and measures to minimize them
 - 6.3 Methods of checking closed and open traverse data; interior and exterior angles, latitudes and departures; northings and southings.
 - 6.4 Methods of plotting – parallel Meridian.
 - 6.5 Closing error; its distribution graphically and by computation
 - 6.6 Field problems–To find horizontal distance to an inaccessible point; supplying omission of one side of a closed traverse.
 - 6.7 Laying out a coupe, its demarcation
- 7. Plane Table survey: (6)
 - 7.1 Instruments–Plane Table, Alidade, Declinator, Plumbing fork and Plum-bob.
 - 7.2 Centering and orientation.
 - 7.3 Methods of plane tabling–radiation, Intersection, traversing and Resection.
 - 7.4 Three-point problem and its solution–Mechanical trial and error and the Bessels’s graphical solution–The two point problem and its solution.
 - 7.5 Sources of error in plane Tabling
 - 7.6 Advantages and disadvantages of plane Tabling; applicability.
- 8. Levelling: (6)
 - 8.1 Introduction; definitions and scope, the level surface, horizontal and vertical planes, Datum surface, and Reduced levels.

- 8.2 Instruments Abney, Ceylon Ghat Tracer and levelling instruments, construction and use of Dumpy Level, Modern tilting level, temporary adjustments of the Dumpy Level only – levelling staff- Boning rods.
- 8.3 Difference of levels–Back sight, intermediate sight, fore sight, Height of instrument and change point, Axis of the telescope and line of Collimation Negative readings.
- 8.4 Bench-Marks-GTS, permanent, temporary and arbitrary
- 8.5 Reduction of levels-Rise and fall system and the collimation or H.I. system; their relative merits; arithmetical checks; the level book.
- 8.6 Effect of Earth’s curvature and refraction correction due to their combined effects.
- 8.7 Classification of levelling; simple levelling; compound or differential levelling; profile levelling, Cross-sectioning-Reciprocal levelling.
- 8.8 Sources of errors and precautions
9. Topographical Surveying and Map Reading: (7)
 - 9.1 Methods of contouring–direct and indirect, by interpolation, indirect contouring by radiant lines; spot height and grids.
 - 9.2 Characteristics of contours
 - 9.3 Uses of contours
 - 9.4 Map Catalogue – How to obtain maps.
 - 9.5 Map reading; orientation of a map, methods of finding true north; finding one’s position on the map.
 - 9.6 Relief and its representation; hachures; hill shading spot heights, contours and form lines-layer tints.
 - 9.7 Computation of areas by planimeter, graph, division of area into graph, division of area into triangles, squares, and trapeziums.

PRACTICAL: (30)

1. Chain Survey of an area; Fieldwork plotting and finishing (5)
2. Chain and compass survey. (6)
 - 2.1 Intersection
 - 2.2 Traversing
 - 2.3 Plotting and distribution of error
 - 2.4 Computation of area by graph, planimeter
3. Plane Tabling (5)
 - 3.1 Surveying and finishing
 - 3.2 Two and three point problems

4. Leveling (5)
 - 4.1 Simple levelling and booking
 - 4.2 Survey and Lay out of Terraces.
5. Topographical Survey and Map Reading
 - 5.1 Map Reading (2)
 - 5.2 Topographic Survey (5)
 - 5.3 Use of Survey and Engineering Instruments (2)

Reference Books:

1	Forest Surveying by Ram Parkash
2	Surveying And Levelling Part – I & II, Kanetkar, T.P And Kulkarni
3	Forest Surveys for Development, Rego, L.H. A
4	Remote Sensing and Forest Survey, Dr. M.K. Sharma
5	Lecture Notes on Forest Survey, TNFA

Special Modules:

Sl. No.	Title	Resource Person
1	Drone Survey applications in reserve forest and software applications	Dr. Darshan Kumar J., Kumaraguru Institutions, Coimbatore
2	Total station	Expert from TNAU
3	DGPS survey	Mr. D. Raghavan, Head of Operations, Indian Geoinformatics Centre

Special Lectures:

Sl. No.	Title	Resource Person
1	Lecture on Survey and Settlement rules for different states, Boundaries Act covering Section 4A and 16A	Expert Person from Land Survey Dept., Forest Settlement Officer
2	How to read Field measurements and forest boundaries	Expert from Department of Survey - Assistant Director (AD) of Survey and land Records Office and Revenue Inspector
3	National Bureau of Soil Survey and Land Use Planning	In Nagpur during CIT or NIT

Field Visits:

Sl. No.	Topic	Place of visit
1	Special Lecture 1	Assistant Director, Survey and Settlements, Coimbatore

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	The Drone Rules	00:44:00

Exam Pattern:**FOREST SURVEY -200 Marks****Theory -75 Marks (External)**

- | | | | |
|------|--|---|-----------------------|
| i) | One-word questions (20 questions x 1 mark) | - | 20 Marks |
| ii) | 2 Mark Questions (5 questions x 2 marks) | - | 10 Marks (5 out of 6) |
| iii) | 5 Mark Questions (3 questions x 5 marks) | - | 15 Marks (3 out of 4) |
| iv) | 10 Mark Questions (3 questions x 10 marks) | - | 30 Marks (3 out of 4) |

Internal Concurrent – 25 Marks

- | | | | |
|------|------------|---|----------|
| i) | Assignment | - | 10 Marks |
| ii) | Viva-Voce | - | 5 Marks |
| iii) | Quiz | - | 10 Marks |

PRACTICAL-100 Marks

- Practical Record-10 marks
- Survey Project Report (Group Exercise)
(Each group consists of 5 Officer Trainees) - 20 Marks
- Practical Exam Theory - 70 Mark

7. FOREST POLICY AND LAW

Theory: 62

Field Exercises: 5 days

Sl. No.	LEARNING OUTCOMES
LO-1	Apply the legal procedures for constituting Reserved Forests, Protected Forests, and Village Forests.
LO-2	Exercise the statutory powers of Forest Officers under various forest and environmental laws.
LO-3	Conduct prosecution and compounding of forest and wildlife offences in accordance with prescribed legal procedures.
LO-4	The procedure involved in diversion for Forest for Non Forestry purpose under FCA
LO-5	The role of Forest officers in FRA and Biodiversity Act

1. FOREST POLICY

(4)

- 1.1 Necessity of a Forest policy in a Country
- 1.2 General basis of formulation, various considerations.
- 1.3 National Forest Policies of 1894, 1952 and 1988 their comparative study, basis of their formulation and after effects.
- 1.4 Constraints in the implementation of Forest Policy in India. Need based law for implementation of policy.
- 1.5 National Forestry Action Program, formulation and constraint in implementation and State Forestry Action Programs

2. FUNDAMENTAL PRINCIPLES OF LAWS RELATING TO FORESTS AND INDIAN FOREST ACT 1927

(25)

- 2.1 Basic concepts regarding property, possession, rights & servitudes. Government property and its acquisition (salient features of land Acquisition Act, 1894)
- 2.2 General principles, object and reasons for enactment of special law relating to forests and its produce
- 2.3 Brief history of Forest Legislation in India, coming into force of Indian Forest Act, 1878 and its subsequent replacement by Indian Forest Act 1927. Validity under the new Act of the notifications issued under the Act of 1878.
- 2.4 Constitution of permanent forest estates (Reserved Forests), their need and scope

- 2.5 Constitution of village Forests, their need and scope
- 2.6 Protection of Forests/Wastelands not included in a Reserved Forest (Protected Forests).
- 2.7 Control over Forests and lands, not being the property of the Government.
- 2.8 Legal protection of Forests: Demarcation, settlement of rights, prevention of offences, information and help, forest-offences in Reserved and Protected Forests, grave offences, transit Rules, establishment of checking depots, saw mill Rules, Rules relating to protection from fire and Rules related to hunting etc.
- 2.9 Application of Cattle Trespass Act, 1871 to Forests, scope and limitations.
- 2.10 Legal principles of punishment; the punishment, aggravation of offences, imprisonment and fine, seizure, confiscation as a punishment, properties liable to confiscation. Distinction between confiscation and forfeiture. Disposal of forest produce in respect of which a forest-offence is committed and is the property of the Government and the case where it is not the property of the Government. Disposal of tools, boats, vehicle and cattle used in commission of any forest offence. Procedure when offender is not known, disposal of perishable property. Wrongful seizure.
- 2.11 Power of Forest-Officers under Indian Forest Act: Powers relating to arrest (to be discussed along with the topic at 3.3) and seizure. Powers to confiscate, demand aid, and prevent offences. Powers to compound forest offences, scope thereof and principles, which regulate the exercise of this power. Powers of Criminal courts in relation to issue of search warrants (to be discussed along with the topic at 3.6), holding inquiry into forest-offences and receiving and recording evidences (to be discussed along with the topic at 3.9). Powers of civil courts to compel the attendance of witnesses and production of documents etc. (to be discussed along with the topics at 4.1 to 4.4). Powers to distribute rewards out of the proceeds of fines and confiscations under Indian Forest Act. Powers as receivers of Government revenue.
- 2.12 Indian Forest Act and the State Forest Acts-Comparative study.
- 3. CODE OF CRIMINAL PROCEDURE, 1973 (8)
 - 3.1 Definitions. Position of forest-offences as per the First Schedule of the Cr. PC. Cognizable/ non-cognizable and bailable/non-bailable offences. Provisions of Cr. PC. not applicable where special procedure is prescribed by the Forest Act. (Sec.4)
 - 3.2 Constitution and powers of Criminal courts (Secs. 6 to 15, 20 & 24 to 31)
 - 3.3 Arrest of persons (Chapter V) (included in para 2.11)
 - 3.4 Summons and warrant of arrest (Part A and B of Chapter VI)

- 3.5 Information to police and their power to investigate. Legal validity of confessions recorded by a Forest Officer (Chapter XII with emphasis on Sec.164 read with Sec.72 (2) of the Indian Forest Act)
- 3.6 Procedure for issuing search warrants (Sec.93 and Part C of Chapter VII). Form no.10 of Second Schedule (included in Para 2.11)
- 3.7 Cognizance of offences by Magistrates, prosecution of public servants (Secs.190 and 197)
- 3.8 Complaints to Magistrates and commencement of proceedings (chapter XV and Secs. 204 to 206). Legal position of complaints made by Forest officers.
- 3.9 Mode of taking and recording of evidence (Secs.272 to 275 and 277) (included in para 2.11)
- 3.10 Classification of forest-offences according to mode by which offender is brought. Trial of warrant cases, summon cases and summary trials (chapter XIX, XX, and XXI). Limitation (Chapter XXXVI)
- 3.11 Appeals and Revisions (Secs. 374 to 378, 397, 399). Criminal and Civil writs (Article 226 and 227 of the Constitution of India).
- 3.12 Bails and bonds (Secs. 436 and 437) with special reference to Sec.65 of the Indian Forest Act.
- 3.13 Disposal of property (Secs. 451 and 452). Relevance with regard to Forest cases in view of Secs. 55 to 59 of the Indian Forest Act.
4. CODE OF CIVIL PROCEDURE 1908 (2)
 - 4.1 Summons and discovery (Secs.27 TO 32)
 - 4.2 Issue and service of summon (order V)
 - 4.3 Summoning and attendance of witnesses (order XVI)
 - 4.4 Form no.13 of summon of witnesses (Appendix B to First Schedule of CPC).
5. INDIAN PENAL CODE, 1860 (4)
 - 5.1 Abetment of forest offences (Secs. 108,109 read with Sec.40)
 - 5.2 Offences directly connected with forests and its produce: Theft (Secs.378,379); criminal misappropriation (Sec.403); criminal breach of trust (Secs.405,406); receiving stolen property etc. (Secs. 410,411,413,414); mischief (secs. 425 to 429); criminal trespass (sec. 441); Attempt to commit offences (Sec.511)
 - 5.3 Offences indirectly connected with forest works: Unlawful assembly (Secs. 141 to 144); omitting to give aid and information, or giving false information (secs. 176, 177,187,201); giving false evidence (Sec.191); concealing offenders (sec.212)
 - 5.4 Protection extended by law to Forest Officers (Secs.76, 79, and Sacs. 49,43 & 74 of the Forest Act)

6. FOREST (CONSERVATION) ACT, 1980: (3)

6.1 Need for enactment of the Act.

6.2 Salient features and scope.

7. Industrial Disputes Act, 1947 (2)
8. Wildlife (Protection) Act, 1972 (10)
9. Environmental (Protection) Act, 1986 (1)
10. Eviction of Public Premises Act, 1986 (2)
11. Indian Evidence Act (1)

Field Exercises: (5 days)

Visit to areas prone to forest offence, preparation and collection of various documents, procedure for arrest, bails and bonds, seizure of property, inquiry and investigations, finalization of charge sheet (Chelan) etc.

Reference Books:

1	Lecture Notes on Forest Policy and Law, Chandrasekar. L
2	Forest Law, S.S. Negi
	India's Forest Policy, Analysis and Appraisal , JHA, L.K
3	Professional's Forest Laws, Arora, Krishnan
4	A Manual of Law for Forest Officers R.J. Shetty
5	Indian Forest Act, 1927, Govt of India
6	National Forest Policy
7	BharathiaNagarik Suraksha Sanhita 2023
8	Bharathia Nyaya Sanhita 2023
9	BharathiaSakshyaAdhiniyam 2023
10	India's Forests and the Judiciary-The Godavarman Story
11	Wildlife Crime Investigation Manual, WCCB

Special Modules:

Sl. No.	Title	Resource Person
1	Module on NGT	NGT official

Special Lectures:

Sl. No.	Title	Resource Person
1	Lecture on CRPC & IPC	Mr. Chandrasekhar, DCF (Retd), TNFD
2	Lecture on Indian evidence act and prosecution	Mr. Sakthivel, ACF (Retd.), TNFD

3	Lecture on Vigilance and IB	Expert- DVAC, IB or state intelligence
4	Case study on Money Laundering	Mr. G. Venkatesh, FRO, TNFD
5	Case study on Kerala elephant poaching case	Ms. T. Uma, IFS, Kerala
6	Case study on tiger poaching	Expert from Rajasthan FD/NTCA Officials
7	A special session on functioning of NTCA	Expert from NTCA, Delhi
8	A special session on Zoo management	Expert from CZA, Delhi
9	A special session on CITES	Expert from WCCB, Chennai
10	A special session on Biodiversity Conservation Act, 2002	Expert from NBA, Chennai
11	A special session by Enforcement Directorate and Customs	Expert from ED and Customs, Coimbatore
12	A special session on wildlife forensics, Collection of evidence, court procedure etc.	Expert from SACON, and WII
13	A special session on Civil Procedure Code and Criminal Prosecution	Adv. Mr. Senthil, or Govt Pleader/JM/Public Prosecutor
14	A special session on NGT	Mr. Sanjay Upadhyay, Advocate Supreme Court
15	Special session on CBI involvement and pangolins case	Mr. Rithesh, WTA
16	Special Session on FRA	Mr. Vijayanand, IFS, CCF, Kerala
17	Session on ESZ notification	Any Tiger Reserve FD

Field Visits:

Sl. No.	Topic	Place of Visit
1	Visit to airport, post office and Container corporation	Coimbatore Airport
2	One day visit to District session court	Dist. Sessions court, Coimbatore
3	Visit to WCCB	Chennai

Tours:

Sl. No.	Topic	Tour Destination	Duration
1	Attachment with District Court, High Court, Judicial Academy	Madurai	2 days

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Right to Information Act 2005	00:48:30
2	Introduction to Bharatiya Nyaya Sanhita, 2023	00:52:42
3	Introduction to BharatiyaNagarik Suraksha Sanhita, 2023	01:22:36
4	The Civil Procedure Code, 1908	02:47:56
5	Digital Forensics (Managing digital evidences and e-Investigation)	02:48:00
6	Contempt of Court	00:45:00
7	Right to Information Act - Part 1	00:55:00
8	Landmark Judgments- RTI Act, 2005	01:10:00
9	Right to Information Act - Part 2	01:22:00
10	Forest Rights Act - English Version	01:32:19
11	Forensic science for Investigation Officers	01:34:53
12	Cyber and CDR Analysis	01:57:06

Exam Pattern:**FOREST POLICY AND LAW – 250 Marks****Theory- 125 Marks (External)****Objective Type Questions**

i)	Fill in the blanks	-	10 Marks
ii)	Match the following	-	10 Marks
iii)	True or False	-	10 Marks
iv)	Multiple Choice	-	10 Marks
	Definition (10 Questions x 2 marks)	-	20 Marks (10 out of 11)
	Short Answer (4 questions x 5 marks)	-	20 Marks (4 out of 5)
	Long Answer (3 Questions x 15 marks)	-	45 Marks (3 out of 4)

Internal Concurrent – 125 Marks

i)	Open Book Exam	-	60 Marks
ii)	Assignment (2 No's)	-	40 Marks
iii)	Viva-Voce	-	10 Marks
iv)	Group Discussion	-	15 Marks

FOREST ENGINEERING

Theory : 30

Practical : 20

Field Exercise : 10 Days

Sl. No.	LEARNING OUTCOMES
LO-1	Explain the role of forest engineering and the properties of construction materials used in forest works.
LO-2	Plan and supervise building construction including foundations, masonry, roofs, doors, and drainage systems.
LO-3	Design and align forest roads with proper gradients, curves, drainage, and retaining structures.
LO-4	Design basic bridges and soil–water conservation structures with ecological considerations.
LO-5	Prepare estimates, cost analyses, and project reports using standard measurement and costing procedures.

1. Role and importance of Forest Engineering in Forest Management (1)
2. Building Material: (4)
 - 2.1 Characteristics of stones, bricks, tiles and sand for building construction.
 - 2.2 Properties of cement and its storing.
 - 2.3 Mortars:
 - 2.3.1 Definition, kinds, proportions, mixing, laying and curing.
 - 2.3.2 Quantities needed for masonry work and brickwork.
 - 2.4 Concrete:
 - 2.4.1 Definition, proportion, mixing, laying and curing of concrete.
 - 2.4.2 Water-cement ratio and consistency.
 - 2.4.3 Quantities of ingredients needed for different proportions of concrete.
 - 2.5 Reinforced cement concrete:
 - 2.5.1 Definition, principle and advantages.
 - 2.5.2 Location of reinforcement in RCC slabs, beams and pillars/columns.
 - 2.5.3 Bamboo re-inforcement.
3. Construction: (10)
 - 3.1 Considerations for selection of sites.
 - 3.2 Drawing and Layout

- 3.3 Foundation:
 - 3.3.1 Safe bearing capacity of soil
 - 3.3.2 Footing foundation
 - 3.3.3 Width of foundation, depth of foundation by Rankine Rule and thickness of concrete bed.
 - 3.3.4 Damp proof courses
 - 3.3.5 Precaution against termite
- 3.4 Super structure:
 - 3.4.1 Scaffoldings
 - 3.4.2 Thickness of walls
 - 3.4.3 Bonds in brick work-kinds, difference between English and Flemish bonds, details of English bond at corners, junctions and inter-section of 1 brick and 1½ brick walls.
 - 3.4.4 Construction of different kinds of masonry walls, Ashlar, Ashlar face, Random and coursed rubble and dry rubble masonry and dry stone revetments.
 - 3.4.5 Method of constructing mud, brick and stone masonry, CGI and wooden walls.
 - 3.4.6 Stone versus bricks
- 3.5 Sills and Lintels:
 - 3.5.1 Kinds of sills and their construction
 - 3.5.2 Lintels and their constructions
 - 3.5.3 Position of reinforcement in RCC lintels
- 3.6 Roofs Types–Sloping and Flat roofs
- 3.7 Types of Roof covering
- 3.8 Floors:
 - 3.8.1 Trench and basement fillings
 - 3.8.2 Stone, concrete and wooden floor
- 3.9 Doors and windows:
 - 3.9.1 Doors, types and sizes normally used, ledged and braced, attened doors, panelled, glazed and wire Gauge, doors, swing doors.
 - 3.9.2 Windows–fanlight, ventilator and clerestory window.
- 3.10 House drainage and sewage:

3.10.1 Sanitary fittings and plumbing—wash basin, sinks—bath tubs—water closets—traps—flushing, cisterns—inspection, chamber— septic Tank dispersion trenches.

3.11 Electrical Fittings

4. Roads: (5)

4.1 Introduction

4.1.1 Necessity of roads

4.1.2 Classification

4.1.3 Cross and longitudinal section

4.1.4 Systems of metalling

4.2 Design

4.2.1 Road and land widths

4.2.2 The shoulders

4.2.3 Camber

4.2.4 Gradients

4.2.5 Section on hill road

4.2.6 Drainage of plain and hill roads

4.2.7 Road curves, super-elevation widening and sighting distance.

4.3 Alignment

4.3.1 Reconnaissance

4.3.2 Obligatory point

4.3.3 Alignment of a plain road

4.3.4 Alignment of a hill road

4.3.5 Preliminary survey

4.3.6 Paper location

4.3.7 Demarcation

4.4 Retaining wall and breast walls

4.4.1 Necessity, material used, forces acting

4.4.2 Conditions of stability and thumb rules for design of brickwork.

5. Bridges: (2)

Introduction to various types of forest bridges, Irish bridges, causeway, road siphon, culverts, timber bridges, cantilever bridges and their constructions.

6. Conservation Engineering (4)
 - 6.1 Structural stability and Construction of:
 - 6.1.1 Check dam and its components-head wall- apron, wingwall, spillway, embankment, and Gabion's structure.
 - 6.1.2 Spurs, revetments, jetties etc.
 - 6.1.3 Embankment (masonry, earthen and Gabion's)
 - 6.2 Ecological considerations in designing engineering structures, landscaping etc.
7. Estimating and costing (4)
 - 7.1 Study of drawings for estimation—plan, sections
 - 7.2 Elevations of small buildings, road sections, slab or pipe culvert, stream training structures etc.
 - 7.3 Principles and essential parts
 - 7.4 Project Report
 - 7.5 Specifications
 - 7.6 Units of measurements
 - 7.7 Procedure and proforma of detailed measurements and bill of quantities for building, roads, culverts, stream training structures etc.
 - 7.8 Working out quantities for simple building, roads culverts, stream-training structures etc.
 - 7.9 Analysis of rates/SSR (Standard Schedules of Rates)
 - 7.10 Abstract of cost estimates
 - 7.11 Plinth area and cube rate estimates
 - 7.12 Measurement Book
- PRACTICAL: (Drawing and exercise) (20)
 1. Location of reinforcement in RCC, lintels, slab and columns. (2)
 2. Earth work, sections, slope, template calculation of volume by trapezoidal, prismoidal rules. (2)
 3. Foundation of building, standard foundation and designs by Rankine's formula. (4)
 4. Study of different drawings of buildings, roads, culvert Stream training structures for the preparation of estimates. (3)
 5. Preparation of estimate of building, road, culvert, stream training structures. (8)
 6. Calculation of Earthwork for buildings and roads (1)

FIELD EXERCISE:

(10)

- a. Road alignment exercise including setting out of curve estimating and reporting.
- b. Survey of a nala for construction of soil conservation structures, designing, estimating and reporting.

Reference Books:

1	Forest Engineering Without Tears, Masani.N. J
2	Build Construction, 5 th Ed., Punmia, B.C
3	Text Book of Building Construction, Sharma, S.K & Kaul, B.K
4	Field Engineering Handbook on Watershed Management, A. Raviraj, Balaji Kanna
5	Lecture Notes on Forest Engineering-I, II, Muniyammuthu. K
6	Lecture Notes on Forest Engineering, TNFA
7	Materials of Construction, Deshpande. R, S

Special Modules:

Sl. No.	Title	Resource Person
1	Fire Proofing of Building and requirements for fire safety clearance	Fire Officers
2	Module on Special structures and designs in forest department including Zoo, APC, Watchtowers etc	Field expert

Special Lectures:

Sl. No.	Title	Resource Person
1	Designing of a Building	Leading Architect
2	Construction of Building	Expert from PWD or any Civil Engg. Firm or Realtor
3	Road Engineering focusing on placement of bridges, culverts and other structures	Superintendent Engineer or Exec Engineer from Highway& Roads Department
4	Building Materials Quality Testing lab	PSG/ GCT laboratories
5	Exposure to failed structures of watershed management	Professor from PSG Technology (1/2 day or 1 day visit)
6	Exposure on Plumbing and Electrical Works	Expert from any leading civil firm/construction site
7	Special Lecture on Designing of Structures - Check dam	Mr. Varadharaj, DCF, TNFD, Ms. Vanitha Mohan, Siruthuli, NGO, Coimbatore and Professor from TNAU

8	Special lecture on Green Building Code and design	Industry expert (1/2 or full day session)
9	Special lecture on designing of various enclosures in Zoo	CZA

Field Visits:

Sl. No.	Topic	Place of Visit
1	Visit to Building Construction Site	Any leading builder/realtor, gated community construction preferred
2	Visit to Road Construction site	Expert from NHAI
3	Visit to quarrying site, m-sand manufacturing site	Any nearby site
4	Visit to observe construction materials including fencing materials, fittings etc	Codissia Expo, Coimbatore
5	Visit to Check Dam	Any nearby site
6	Visit to Siruthuli	Siruthuli, NGO, Coimbatore
7	Prefabricated structure	Any nearby site

Tours:

Sl. No.	Topic	Tour Destination	Duration
1	Visit to Green Buildings	Punjab State PCCF office, Mohali, Punjab	½ day during NIT
2	Visit to Bamboo Research and Training Centre (BRTC)	Chandrapur forest Academy	½ day during CIT
3	Visit to Watershed Management Site	Ooty	2 days

Practical: Practicalexamination should include identifying materials, structures etc.

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Overview of Infrastructure in Civil Engineering	00:20:30
2	Safe practices while doing excavation	00:28:00
3	Building Materials and their Measurements	00:30:00
4	Green Building Concept	00:35:00
5	Rain Water Harvesting	00:37:13

6	Hazard Identification, Risk Assessment and Control	00:39:46
7	Grey Water Management	00:40:00
8	Sustainable Development Goals	00:49:00
9	Introduction to Watershed Management	01:05:55
10	Soil Erosion and Conservation	01:09:02
11	Rain Water Harvesting	01:09:17
12	Maintenance of Land and Building Assets	02:14:20
13	Water Pollution and Management Approaches	02:30:00
14	Used Water Management	02:30:00
15	Urban Planning, Development and Climate Change	03:09:35

Exam Pattern:

FOREST ENGINEERING -200 Marks

Theory – 70 Marks (External)

- | | | | |
|------|--|---|-----------------------|
| i) | One Mark Questions (25 questions x 1 mark) | - | 25 Marks |
| ii) | 2 Mark Questions (5 questions x 2 marks) | - | 10 Marks (5 out of 6) |
| iii) | 5 Mark Questions (3 questions x 5 marks) | - | 15 Marks (3 out of 4) |
| iv) | 10 Mark Questions (2 questions x 10 marks) | - | 20 Marks (2 out of 3) |

Internal Concurrent – 30 Marks

- | | | | |
|------|------------|---|----------|
| i) | Assignment | - | 15 Marks |
| ii) | Viva-Voce | - | 5 Marks |
| iii) | Quiz Test | - | 10 Marks |

Practical – 100 Marks

- Practical Record-10 marks
- Designing the Project in the Group of 5 OT's each in the following project desirably- Anti Poaching camp, retaining wall, Guest house, Preparation of estimates, Estimate for check dam (if possible, with Auto CAD) - 20 Marks
- Practical Exam -70 Marks (Identification - 20 marks; Calculation - 50 marks)

8. ECOLOGY AND ENVIRONMENTAL SCIENCE

Theory: 50

Sl. No.	LEARNING OUTCOMES
LO-1	Explain core ecological principles related to populations, communities, ecosystems, energy flow, and nutrient cycling in forest environments.
LO-2	Analyze ecosystem structure, productivity, and dynamics to understand forest functioning and management impacts.
LO-3	Assess major terrestrial and aquatic ecosystems of India and the world in relation to biodiversity and biotic regions.
LO-4	Evaluate environmental problems such as pollution, climate change, resource degradation, and their ecological and socio-economic implications.
LO-5	Apply environmental conservation tools, policies, and legal frameworks for sustainable forest and environmental management.

PART A : ECOLOGY

1. Basic Concepts (1)
 - 1.1 Definition
 - 1.2 The need of understanding ecological principles for a forester
 - 1.3 Divisions of Ecology
2. Population Ecology (3)
 - 2.1 Definition
 - 2.2 Structure of population
 - 2.3 Dynamics of species population
 - 2.4 Carrying capacity and natural regulation of population size
 - 2.5 Importance of population ecology in Forest Management
3. Biotic Community (3)
 - 3.1 Concept
 - 3.2 Ecological dominance, tolerance, aggregation
 - 3.3 Ecotone and Edge Effect
 - 3.4 Vegetation dynamics, Succession (recapitulation only), Palaeoecology
 - 3.5 The plant animal interactions in a biotic community.
4. Principles of Ecosystem Ecology (8)
 - 4.1 Introduction and basic parameters of an ecosystem
 - 4.2 Significance of the concept and types of ecosystems

- 4.3 Ecosystem as a unit existing in space and time
- 4.4 Components of Ecosystem
 - 4.4.1 Abiotic
 - 4.4.2 Biotic
- 4.5 Ecosystem dynamics
 - 4.5.1 Food chains and food webs
 - 4.5.2 Concept of trophic levels
 - 4.5.3 Ecological pyramids
 - 4.5.4 Concept of Habitat & Niche
 - 4.5.5 Energy flow through an ecosystem
 - 4.5.6 significance of shorter food chains in meeting food/energy requirement in context of human population explosion
 - 4.5.7 Nutrient Cycling: concept of biogeochemical cycles-an over view
 - 4.5.8 Concept of bio-magnification and its significance
 - 4.5.9 Concept of limiting factors.
- 4.6 Ecosystem productivity
 - 4.6.1 Concept of productivity and assessment of productivity in a forest ecosystem
 - 4.6.2 Nutrient/energy budgeting
 - 4.6.3 Effect of forest management on energy/nutrient flow in forest ecosystem.
- 5. Ecosystems of the World (5)
 - 5.1 Terrestrial Ecosystems
 - 5.1.1 The concepts of biome & biotic regions
 - 5.1.2 Major biotic regions of the world
 - 5.1.3 Biotic regions of India
 - 5.2 Major non-terrestrial ecosystems (I) seas (ii) Estuaries and sea shores (iii) Streams and rivers (iv) Lakes, ponds, marshes (note: brief overview only).

PART B : ENVIRONMENTAL CONSERVATION AND MANAGEMENT

- 1. Introduction to Environmental Conservation (6)
 - 1.1 A brief recapitulation of origin of life; the span of evolutionary time scale, the advent of man; the concept of cultural inheritance vis-à-vis genetic inheritance; the changing face of man-environment interaction in context of

- technological advancement and its possible future implications on sustainability of life support system on the earth.
- 1.2 Present status of natural resource utilization and their degradation in the global and Indian context.
 - 1.3 Conservation of natural resources and the concept of sustainable development.
 - 1.4 Plant Succession: Concept, type and stages; competition among different species, significance of succession in taking forest management decisions.
 - 1.5 Environmental conservation as a deep-rooted tradition of our cultural heritage.
 2. Demographic and Socio-economic factors (2)
 - 2.1 Impact of growing population on environment-a resource or a liability?
 - 2.2 The need for regulating human population growth, vicious cycle of poverty and environmental degradation
 - 2.3 The inter linkages of affluent consumption patterns and threat to global ecosystem.
 3. Contemporary models of development-A review (2)
 - 3.1 Development projects and their emerging socio-political implications:
 - (i) multipurpose dams (ii) mining (iii) road construction (iv) urbanization and industrial development (v) irrigation systems (vi) compensatory a forestation etc.
 4. Soil and Chemical Pollution (2)
 5. Air pollution (2)
 - 5.1 Causes, general impact and control
 - 5.2 Role of Forests/Green belts in controlling pollution.
 - 5.3 Impact of air pollutants on forests and vegetation.
 - 5.4 Acid Rain
 - 5.5 Level of tolerance to pollutants of some important tree species
 6. Legal provisions and remedies (1)
 7. Global Warming and Climatic Change (3)
 8. Water pollution (2)
 - 8.1 Major causes (including industrial and human waste, wars etc), impacts & control
 - 8.2 Eutrophication and death of water bodies
 - 8.3 Treatment and utilization of sewerage water and reclamation of other industrial wastes and Solid Waste Disposal Management
 9. Thermal pollution and radiation pollution (2)

10. Noise Pollution causes, remedies and legal provisions
11. Tools of Environmental Management Environmental impact assessment of development projects. (3)
12. National conservation strategy and policy statement on environment and development (salient features) (1)
13. Environmental legislation in India (2)
14. Geopolitics of environment (2)
 - 14.1 Environment as an emerging major foreign policy issue; the perceptions of developed and developing countries.
 - 14.2 The international conventions on environment; the Rio convention and its outcome and implication.

Reference Books:

1	Fundamentals of Ecology, Odum, Eugene, P. And Barret, Gray. W
2	Ecology and Environment, P.D. SHARMA
3	Reading Material on Forest Ecology, G.B. Reddi, IFS
4	Indian Forest Ecology Vol-I, Puri.G. S
5	Forest Ecology of India, Sagwal, B.S
6	Ecology, Environment and Pollution, Purohit, S.S. And Ranjan, R.
7	Environmental Conservation, J.B. Lal
8	Lecture Notes on Environmental Management and Conservation K.Chithambaram IFS

Special Modules:

Sl. No.	Title	Resource Person
1	Ecosystem functions	Ecologist from KFRI/FRI/NCBS/FCRI
2	NCBS	Expert from NCBS
3	Global Warming	Expert from Anna University, Department of Climate Change
4	Climate Change	Dr. A.Ramachandran, IFS, CCF(Retd.), TNFD Mr. Venkatesh, Scientist (Retd.), IGCAR
5	Solid Waste Management	Commissioner, Coimbatore Municipal Corporation
6	Solid Waste Management & Sustainability Tour	Expert from Kumaraguru Institutions, Coimbatore
7	Convention on Biological Diversity (CBD)	Mr. Dheeraj Mittal, IFS
8	UNFCCC	Dr.Sanjayan Kumar, IFS, MoEFCC.

Special Lectures:

Sl. No.	Title	Resource Person
1	Weather Phenomenon and Climate Change	Dr. Venkatesan, Scientist (Retd.), IGCAR.
2	Session on Waste to Wealth	Mr. Vellore Srinivasan
3	Various Conventions on Environment	District Environment Engineer, TNPCB
4	CRZ	Member Secretary Officers of various PCBS
5	Ecology	Dr.P.S. Easa, Director (Retd), KFRI
6	Functioning of PCBs	Mr. S. Narayanan, IFS, APCCF, Haryana, Mr. K.C.A. Arunprasad, APCCF, Rajasthan, Dr. M. Jayanthi, IFS, PCCF, TNFD
7	ESZ	FD of any Tiger Reserve

Field Visits:

Sl. No.	Topic	Place of Visit
1	Restoration Ecology	Nature Conservation Foundation, Valparai
2	STP	CRPF Campus Visit for STP, Narasimanaickanpalayam, Coimbatore
3	District PCB Lab	Coimbatore
4	Succession - Eco-restoration areas.	NCBS Pune during CIT
5	Visit to Dept. of Environmental Science, TNAU	TNAU
6	Exposure to different Ecosystems	All Tours
7	Noyyal river pollution	Siruthuli NGO, Coimbatore
8	Visit to Vellalore dump yard, CMC, Coimbatore	Coimbatore Municipal Corporation

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Sustainable Development Practices	00:22:00
2	Orientation Module on Mission LiFE	00:22:59
3	Green Building Concept	00:35:00
4	Biodegradable Waste Management	00:35:00
5	Grey Water Management	00:40:00
6	Plastic Waste Management	00:40:00
7	Solar Energy	00:50:24

8	Solar Energy: Its Need and Uses	01:15:05
9	E-waste Disposal	01:00:00
10	Energy Management	01:19:43
11	Energy Conservation	01:29:00
12	Water Use Efficiency	02:04:58
13	Overview of Water Resources of India	01:39:49
14	Monitoring and Evaluation of Climate Mitigation Initiatives	01:30:00
15	Navigating Climate Challenges – A Guide for Civil Servants	01:34:35
16	Water Pollution and Management Approaches	02:30:00
17	Used Water Management	02:30:00
18	Urban Planning, Development and Climate Change	03:09:35
19	Soil Erosion and Conservation	01:09:02
20	River and Wetlands	05:07:00
21	Sustainable Development Goals	00:49:00
22	Basics of Climate Change: Science Behind Stories	02:11:43

Exam Pattern:

ECOLOGY AND ENVIRONMENTAL SCIENCE- 200 Marks

Theory- 125 Marks (External)

Objective Type Questions

i)	Fill in the blanks	-	10 Marks
ii)	Match the following	-	10 Marks
iii)	True or False	-	10 Marks
iv)	Multiple Choice	-	10 Marks
	Definition (10 questions x 2 marks)	-	20 Marks (10 out of 11)
	Short Answer (4 questions x 5 marks)	-	20 Marks (4 out of 5)
	Long Answer (3 questions x 15 marks)	-	45 Marks (3 out of 4)

Internal Concurrent – 75 Marks

i)	Assignment (2 No's)	-	30 Marks
ii)	Viva-Voce	-	15 Marks
iii)	Quiz Test	-	15 Marks
iv)	Group Discussion	-	15 Marks

10. ADVERSE INFLUENCE ON FORESTS

Theory : 30

Practical : 5

Local Excursions : 3 Days

Sl. No.	LEARNING OUTCOMES
LO-1	Identify major biotic, abiotic, and anthropogenic agents causing damage to forests, including fire, pests, diseases, grazing, and encroachment.
LO-2	Diagnose symptoms of forest pest and pathogen infestations in nurseries, plantations, and natural forests.
LO-3	Apply appropriate preventive and control measures for forest fires, insect pests, diseases, weeds, and climatic hazards.
LO-4	Plan and implement plantation and regeneration protection strategies, including fencing, community participation, and fire management systems.
LO-5	Integrate forest protection measures into sustainable forest management practices to minimize ecological and economic losses.

1. Susceptibility of forest to damages caused by different agencies. (1)
2. Prevention and protection measures for damages by different agencies: (29)
 - 2.1 Human agency (3)
 - 2.1.1 Encroachment, poaching, illicit felling and removal of forest produce.
 - 2.1.2 Faulty land use practices including shifting cultivation, over grazing.
 - 2.2 Forest fires (3)
 - 2.2.1 Controlled fires in forest regeneration and habitat management.
 - 2.2.2 Types of forest fires and the extent of damages caused by them
 - 2.2.3 Preventive Control measures
 - 2.2.4 Fire Management Planning
 - 2.3 Natural Factors (2)
 - (i) frost (ii) snow (iii) hail (iv) storm (v) drought (vi) water logging (vii) floods
 - 2.4 Forest pests:
 - 2.4.1 Role of insects and pests in forest eco-system (1)
 - 2.4.2 Symptoms, extent and nature of damage, preventive and control measures of important insects/pests of: (5)
 - a) Seeds
 - b) Nurseries
 - c) Felled and converted trees

- d) Standing trees (Plantation and natural forests) with special reference to Sal, Teak, Toon, Eucalyptus, Poplar, Chir, Deodar, Bamboo and Sandalwood.

2.5 Forest Pathogens:

- 2.5.1 Introduction and importance of forest pathology (1)
- 2.5.2 Symptoms, extent and nature of damage, preventive (4) and control measures of important diseases of:
 - a) Seed and nurseries
 - b) Root diseases of sissoo and khair
 - c) Stem diseases of Eucalyptus, Poplars, Sal, Khair, Teak (coppice) and Chir (stem rust)
 - d) Foliage diseases of Poplar, Teak
- 2.5.3 Spike disease of sandal wood
- 2.5.4 Mycorrhiza: Importance in Forestry
 - (i) Ecto-Abies, Cedrus
 - (ii) Endo Acacia, Prosopis, Albizia. (2)

2.6 Protection of Plantations and Regeneration Areas (5)

- 2.6.1 Fencing:
 - 2.6.1.1 Types of fencing and their effectiveness
 - 2.6.1.2 Cost, construction and maintenance
- 2.6.2 Protection through participation of local people in forestry programmes
- 2.6.3 Protection against fire:
 - 2.6.3.1 Annual Fire Management Plan
 - 2.6.3.2 Forest Fire forecasting system
 - 2.6.3.3 Fire suppression techniques
- 2.6.4 Protection against weeds and climbers
- 2.6.5 Protection against natural calamities/atmospheric agencies
- 2.6.6 Grazing problems

PRACTICAL: (5)

1. Visit to Entomology Museum and Entomology Insectory to see insect pests and their damages (at the Institutes of ICFRE). This preferably be done before theory class for better understanding of the subject.
2. Methods of insects/pests (especially rodents) control, techniques- demonstration at the Institutes of ICFRE
3. Diagnosis of insect damage of common trees by symptoms in the fields.

FIELD VISITS

(3 Days)

1. Local visit to forests to acquaint the Officer Trainees with diseases of common trees, their preventive and control measures.

Reference Books:**Special Modules:**

Sl. No.	Title	Resource Person
1	7 days module on Forest Fire	Dr. C. Vidhyasagar, IFS, CF and Lecturer, CASFOS and Dr. Anbu, DCF, Eco-development Officer, KMTR, TNFD
2	Special module on Agroforestry and grasslands	Dr. K. T. Parthiban, FC&RI, Mettupalayam
3	Special module on Fencing: a. EPT, CPT, Rail fencing, Wire rope fencing, Solar powered fencing b. Live fencing c. Stone wall fencing	DFO Coimbatore During South India Tour at Krishnagiri
4	Fire management plan preparation	At CASFOS or Walayar Forest School by Beat Forest Officers of Kerala Forest Dept.
5	Special Lecture on Solar fencing	Mr. George Eapen, CEO, Fenzgard India Pvt. Ltd.

Special Lectures:

Sl. No.	Title	Resource Person
1	Special lecture on mycorrhiza, biofertilizer, rock afforestation and biotechnology	Mr. Kannan, DCF, Modern Nursery Division, TNFD
2	Special lecture on kurangani fire	Mr. Gowtham, DFO, Nilgiris

1	Forest Protection, Negi, S.S
2	Elements Of Forest Protection, V.K.Prabhu
3	Forest Pathology Principles and Practice in Forestry, Bakshi.C.K
4	An Introduction to Forest Pathology, Negi, S.S
5	Lecture Notes On Mycology Dr.H.S.Sehgai
6	Lecture Notes on Forest Protection, Edwin Jayaraj
7	Lecture Notes on Adverse Influences on Forests, TNFA
8	Lecture Notes on Adverse Influences on Forests, Edwin Jeyaraj

3	Special session on demo on mobile applications in TN	Ms. Sudha Ramen, IFS, TNFD
4	Special lecture on Dzukou valley fire, Nagaland	Mr. Rajkumar. M, IFS, Protector of Immigrants, Chennai (Former DFO Kohima, Nagaland)
5	Perspective on forest Fire	NDRF Personnel
6	Fire control	Mr. Daulat, District Fire Officer
7	Fire Equipment	Elite Team, RRF team
8	Forest Fire alert system	FSI team, Dehradun

Field Visits:

Sl. No.	Topic	Place of Visit
1	Visit to Pathology Lab, Insectary lab, Nematology lab	TNAU, Coimbatore
2	Visit to Sundara Raman Farms	Sathyamangalam
3	Visit to TNAU - session on biofertilizer and vermi compost	TNAU, Coimbatore
4	Field trips to observe insect pests and diseases	Any Nursery and Plantation sites
5	Visit to TNAU Insect Museum	TNAU
6	field Visit to study the incidence of insect pests and diseases and collection of specimens	Sadivayal/Top slip
7	Field visit to Plant Propagation Unit	TNPL Unit - 1, Karur and TNPL Unit - 2, Trichy
8	Field visit to Nursery & plantation	SFD, IFGTB, FC&RI
9	Field visit to Nursery & plantation - collection and preparation of insect pests and diseases - Preparation of herbarium specimen	Any Research institute or SFD or Paper mills
10	Field visit to Bio-fertilizer production lab	1) TNAU, Coimbatore 2) TNFD, Dharmapuri 3) TNPL Unit-2, Trichy
11	Field visit to Iron and Manganese site-Reclamation and Rehabilitation Methods	SMIORE mines, NMDC Mines, Sandur Taluk, Bellary, John mines, Chitradurg dist., Karnataka

Tours:

Sl. No.	Topic	Tour Destination	Duration
1	South India Tour - Visit to Manaparai, Trichy	TNPL (unit 2), Trichy	1 day
2	Demo on mobile apps on fire control	Karnataka or Kerala	1 day
3	Visit to various agroforestry models	Palladam, Kangeyam, Dharmapuri and Nagapattinam, during SIT	1 day

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Fire prevention and detection	00:46:14
2	Forest Fire Hazard and Safety-Disaster Response Training	01:25:00

Exam Pattern:**ADVERSE INFLUENCE ON FOREST – 200 Marks****Theory – 100 Marks (External)****Objective Type Questions**

- | | | | |
|------|--------------------------------------|---|-----------------------|
| i) | Fill in the blanks | - | 10 Marks |
| ii) | Match the following | - | 10 Marks |
| iii) | True or False | - | 10 Marks |
| iv) | Multiple Choice | - | 10 Marks |
| | Definition (5 questions x 2 marks) | - | 10 Marks (5 out of 6) |
| | Short Answer (4 questions x 5 marks) | - | 20 Marks (4 out of 5) |
| | Long Answer (2 questions x 15 marks) | - | 30 Marks (2 out of 3) |

Internal Concurrent - 50 Marks

- | | | | |
|------|---------------------|---|----------|
| i) | Assignment (2 No's) | - | 20 Marks |
| ii) | Viva-Voce | - | 10 Marks |
| iii) | Group Discussion | - | 10 Marks |
| iv) | Quiz Test | - | 10 Marks |

Practical - 50 Marks

- Practical Record- 05 marks
- Practical Exam – 45 Marks (Entomology-2x5 marks; Pathology 2x5 marks; Fire Equipments 1x10 marks; Descriptive-15 marks)
- Identification of defects, abnormalities, diseases and pests, precautionary control measures, etc measures, may be included in the practical test.

11. FOREST UTILIZATION –I

Theory: 50

Practical: 10

Field Exercises: 4 Days

Sl. No.	LEARNING OUTCOMES
LO-1	Comprehensive understanding of forest utilization as a key component of sustainable forest management. Learn the scientific basis of wood anatomy and properties, along with practical aspects such as seasoning, preservation, grading, logging systems, and handling of forest produce.
LO-2	The course also develops an understanding of the economics of forest utilization, emphasising value addition, efficient resource use, waste reduction and by-product utilisation, enabling officers to manage forest resources in a technically sound, economically viable and environmentally responsible manner. Ensure compliance with felling prescriptions, marking rules and harvest limits.
LO-3	Impart knowledge of timber, including their properties, classification, processing and end uses.
LO-4	Plan and supervise harvesting operations in accordance with working plans and silvicultural prescriptions. Make informed decisions on choice of extraction methods and transport systems.
LO-5	Managing forest produce efficiently, legally and sustainably at the field and divisional levels. Ensuring optimal utilisation of forest resources while safeguarding ecological and social values.

1. Wood Harvesting: (8)
 - 1.1 Basic logging hand tools and their maintenance (2)
 - 1.1.1 Power chain saws and attachments.
 - 1.1.2 Felling of trees
 - 1.1.3 Cross cutting, de-limbing etc.
 - 1.2 Off road transportation (2)
 - 1.2.1 Ground skidding
 - 1.2.2 Use of Tractor
 - 1.2.3 Dragging
 - 1.2.4 Winches
 - 1.2.5 Aerial transport
 - 1.3 Major transportation (2)
 - 1.3.1 Loading devices

- 1.3.2 Surface transportation
 - 1.3.3 Water transportation.
 - 1.4 Logging planning (1)
 - 1.5 Timber Depot Management (1)
- 2. Wood Technology: (10)
 - 2.1 Gross features of wood
 - 2.1.1 Pith, heartwood, sap wood (2)
 - 2.1.2 Bark, early wood, late wood, growth rings
 - 2.2 Minute structure of wood (2)
 - 2.2.1 Tracheids, fibres
 - 2.2.2 vessels: Parenchyma, rays and resin canals
 - 2.3 General properties: (2)
 - Colour, fluorescence, lusture, odour, weight, hardness, grain, texture and figure.
 - 2.4 Identification of timber with key (2)
 - 2.5 Properties of wood, defects and abnormalities (2)
 - 2.5.1 Physical properties of wood
 - 2.5.2 Mechanical properties of wood
 - 2.5.3 Factors influencing strength properties of wood
 - 2.5.4 Suitability indices and their use
 - 2.5.5 Safe working stresses and their valuation.
 - 2.5.6 Testing and evaluation of timber products.
 - 2.5.7 Classification of defects in wood & their influence on utilization characteristics.
 - 2.5.8 Measurement and evaluation of defects.
- 3. Wood Seasoning: (4)
 - 3.1 Introduction
 - 3.2 Object, need and importance of seasoning
 - 3.3 Air seasoning
 - 3.4 Kiln seasoning
 - 3.5 Special methods of seasoning
 - 3.6 Schedules and classification of timber
 - 3.7 Design of seasoning kilns

- 3.8 Air-drying sheds and solar kiln
- 4. Wood Preservation: (5)
 - 4.1 Need of wood preservation.
 - 4.2 Natural durability of timber and wood destroying agencies
 - 4.3 Types of wood preservatives, their characteristics, composition and properties.
 - 4.4 Preparation of material for treatment
 - 4.5 Method of wood preservation
 - 4.6 Factors affecting penetration of preservatives
 - 4.7 Properties of treated wood
 - 4.8 Testing of wood preservatives and treated timber
 - 4.9 Treatment of timber for different uses including cost aspects.
- 5. Wood Based Industries (10)
 - 5.1 A panoramic view of the forest based industries in India.
 - 5.2 Demand and supply position of raw material for wood based Industries.
 - 5.2.1 Indian tree species whose timbers are suitable for different wood based Industries.
 - 5.2.2 Plywood, fibre board, particle board, improved wood- specifications of raw material for such industries; present supply and demand situation, manufacture.
 - 5.2.3 Properties and uses of plywood, fiber board particle board.
 - 5.2.4 Sandal wood, Katha, Agarwood
 - 5.2.5 Wood substitution
 - 5.3 Cellulose and paper Industry
 - 5.3.1 Demand and supply situation of raw material for paper and Cellulose Industry
 - 5.3.2 Manufacture of paper (only outline)
 - 5.3.3 Manufacture of rayon (only outline)
- 6. Saw Milling. (5)
 - 6.1 Types of saws, saw mill machinery
 - 6.2 Design and layout of saw mills and wood workshop
 - 6.3 Wood working.
 - 6.4 Saw Mill Rules
- 7. Grading of Timber and Timber Products Commercial grading, stress grading existing Indian Standards and grading. (3)

8. Suitability of Indian Timber for: (5)
 - 8.1 Agricultural implements
 - 8.2 Furniture Industry.
 - 8.3 Packing case
 - 8.4 Coach building and sleeper industry
 - 8.5 Sports goods, musical instruments.

PRACTICAL

1. Identification of timbers with key
2. Assessment of Yield (10)

FIELD VISITS/EXERCICES

(4 Days)

1. Paper Industry.
2. Plywood Industry.
3. Composite wood and fiber board industry.
4. Saw mill industry.
5. Timber Depot.
6. Assessment of yields for veneer, plywood and saw mills.

Reference Books:

1	Indian Forest Utilization Vol.I, FRI
2	Manual of Indian Forest Utilization, H. Trotter IFS
3	A Hand Book of Forest Utilization, Mehta, T.
4	Lecture Notes on Forest Utilization-I,Vijai.N IFS
5	Lecture Notes on Forest Utilization – I, TNFA
6	Text Book of Forest Utilization, S.S. Negi
7	A Manual for Field Identification of Important Timbers, IWSST, Bangalore
8	Atlas of Indian Hardwoods their Photomicrographs & Anatomical Features (Volume-I), Sangeeta Gupta
9	Wood Technology Course Wood Anatomy, CASFOS, CBE
10	Growth & Yield Statistics of Common Indian Timber Species, FRI Publication
11	The Common Commercial Timbers of India and their Uses, Trotter H
12	Field Identification of Fifty Important Timbers of India, Ramesh Rao.K & Juneja. K.B.S

Special Lectures:

Sl. No.	Title	Resource Person
1	Wood is Good	IWST, Bengaluru
2	Production Forestry	Shri. Vasanth Reddy, CF, Karnataka

Field Visits:

Sl. No.	Topic	Place of Visit
1	Visit to Wood Seasoning Lab Mettupalayam	Mr. Subramanyam, FRO (Retd.), TNFD
2	IWST Scientists	Mr. Anil Kumar Sethy, IWST, Bangalore
3	Wood Seasoning	FRI Scientists/ FC&RI, Mettupalayam

Tours:

Sl. No.	Topic	Tour Destination	Duration
1	Visit to Ambi Plywood-plywood industry	Mettupalayam, Tamil Nadu	1 day
2	Visit to sawmill, Furniture industry TNPL Factory	IWST/IPRITI Bengaluru	1 day
3	Visit Timber depot, Seasoning units, water storage of timber	Pvt, Govt, MH & MP, KA, A & N Islands	1 day
4	Indian Rayon & paper industry	During Tour	1 day
5	Imported wood	Tuticorin	1 day
6	Balharsha Timber depot/ Maharashtra Corporation	During Central India Tour	1 day

Practical:

Sl. No.	Title
1	Wood identification, identification of defects, features of wood,
2	Sawmill types of machinery, agarwood etc

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Wood Seasoning and Preservation	00:56:00
2	Wood Preservation	01:05:00

3	Plywood Manufacturing Technology	00:50:00
4	Bamboo Based Composite Technology	00:47:00
5	Field Identification of important timbers of India	01:40:00
6	Plywood Manufacturing Technology (PMT)	00:50:57

Exam Pattern:

FOREST UTILIZATION- I – 200 Marks

Theory – 100 Marks (External)

Objective Type Questions

- | | | | |
|------|--------------------------------------|---|-----------------------|
| i) | Fill in the blanks | - | 10 Marks |
| ii) | Match the following | - | 10 Marks |
| iii) | True or False | - | 10 Marks |
| iv) | Multiple Choice | - | 10 Marks |
| | Definition (5 questions x 2 marks) | - | 10 Marks (5 out of 6) |
| | Short Answer (4 questions x 5 marks) | - | 20 Marks (4 out of 5) |
| | Long Answer (2 questions x 15 marks) | - | 30 Marks (2 out of 3) |

Internal Concurrent – 50 Marks

- | | | | |
|------|---------------------|---|----------|
| i) | Assignment (2 No's) | - | 20 Marks |
| ii) | Viva-Voce | - | 10 Marks |
| iii) | Group Discussion | - | 10 Marks |
| iv) | Quiz Test | - | 10 Marks |

Practical – 50 Marks

- Practical Record- 05 marks
- Practical Exam – 45 Marks (Identification-20marks; Calculation-25 marks)
 - ❖ Identification of timber specimens, identification defects from sample, identification physical features of wood sample, identification of porous/non porous wood, etc.

12. FOREST UTILIZATION –II

Theory : 40

Practical : 5

Field Exercises : 3

Sl. No.	LEARNING OUTCOMES
LO-1	Identify major non-wood forest products (NWFPs) and explain their economic importance in rural and industrial sectors.
LO-2	Apply appropriate methods for cultivation, harvesting, processing, grading, storage, and marketing of NWFPs such as fibres, grasses, bamboos, gums, resins, oils, rubber, and charcoal.
LO-3	Explain extraction techniques for essential oils, dyes, tannins, and other commercially important forest products.
LO-4	Implement conservation strategies for medicinal plants using in-situ and ex-situ methods, nursery techniques, and sustainable harvesting practices.
LO-5	Conduct field identification, surveys, and basic cultivation of important medicinal plant species for conservation and sustainable use.

PART I: NON-WOOD FOREST PRODUCTS

1. Introduction: (1)
 - 1.1 Definition.
 - 1.2 Non-wood forest products of India and their importance in rural and industrial economy of the country.
 - 1.3 Survey of non-wood forest products
2. Fibers and Flosses: (1)
 - 2.1 Fiber yielding plants
 - 2.2 Methods of cultivation of important fiber yielding plants.
3. Grasses, Bamboos and canes: (2)
 - 3.1 Various grasses and their uses in village and cottage industries.
 - 3.2 Bamboos—their distribution, harvesting and uses, raw material scenario in bamboos.
 - 3.3 Canes—their distribution, harvesting, processing and uses.
4. Essential Oils and their methods of extraction: (2)

Essential oil bearing plants of commercial importance, methods of their cultivation and exploitation.

5. Oil Seeds: (2)
 - 5.1 Important oil seeds obtained from forests
 - 5.2 Methods of collection, processing, packing and storage.
6. Gums, Resin and Oleoresin: (2)
 - 6.1 Commercial gums, resins and their oleo-resin and their economical importance.
 - 6.2 Methods of tapping of important gums, resin and oleo-resin.
 - 6.3 Processing, grading, packing and storage of gums, tans and dyes.
 - 6.4 Vegetable tanning materials obtained from forests, their extraction, processing, handling and storage.
 - 6.5 Important dyes.
7. Edible plants, nuts and spices (1)
8. Rubber: (1)
 - 8.1 Cultivation, and tapping
 - 8.2 Processing
 - 8.3 Uses of rubber
9. Charcoal: (1)
 - 9.1 Various types of kilns used for manufacture of charcoal.
 - 9.2 Charcoal dust briquettes
10. Miscellaneous products: Determination of yield extraction, procedure, storage marketing (4)
 - 10.1 Bidi leaves
 - 10.2 Katha
 - 10.3 Products of destructive distillation of wood
 - 10.4 leaf fodder
 - 10.5 Animal products
 - 10.6 Mahua
 - 10.7 Chironji
 - 10.8 Achar
 - 10.9 Dhak Leaves
 - 10.10 Pine Needles
 - 10.11 Phooljharoo
11. Important Dyes (3)

PART II: MEDICINAL PLANTS IN INDIA

Section A

1. Conservation of Medicinal Plants – The Current Scenario (5)
 - 1.1 Perspective, need and scope.
 - 1.2 Traditional use of Medicinal Plants (ethno Medicines)
 - 1.3 Medicinal Systems and its evolution
 - 1.4 Institutions and agencies involved
 - 1.5 National Policy on Trade, Use and Conservation of important drugs of commercial value
2. Conservation strategy (5)
 - 2.1 In-situ and ex-situ conservation
 - 2.2 Nursery Techniques
 - 2.3 Methods of cultivation, harvesting, processing and grading
 - 2.4 Research and Training
 - 2.5 Database generating
 - 2.6 Identification, Survey/Assessment Techniques, and database generation

Section - B

Following list of medicinal plants will be dealt in the course: (10)

1. *Saussurea costus*
2. Ladies Slipper Orchid (*Paphiopedilium* species)
3. Red Vanda (*Renanthera imschootiana*)
4. *Rauwolfia serpentina* (Sarpagandha)
5. *Ceropegia* species
6. *Frerea indica* (ShindalManakundi)
7. *Podophyllum hexandrum* (emodii) (Indian podophyllum)
8. *Dioscorea deltoidea* (Elephant's foot)
9. *Pterocarpus santalinus* (Red Sanders)
10. *Taxus wallichiana* (Common Yew of Birni leaves)
11. *Aquilaria malaccensis* (Agar wood)
12. *Aconitum* species
13. *Coptisteeta*
14. *Coscinium fenestratum* (Calumba wood)
15. *Dactyorchiza hatagirea*

16. *Nardostachys grandiflora* (Jatamansi)
17. *Panax pseudoginseng*
18. *Picrorhiza kurroa*
19. *Swertia chirata* (Charayatah)
20. *Chlorophytum tuberosum* (Safed Musali)
21. *Blue Vanda* (Vandal cue Rulea)

Other species, which are commonly known to have valuable medicinal properties that may be dealt with in details, are as follows:

1. *Anacardium occidentale*.
2. *Argemone Mexicana*
3. *Azadirachta indica*
4. *Balanites egyptica*
5. *Bucchanania lanzan*
6. *Butea monosperma*
7. *Canabis sativa*
8. *Terminalia arjuna*
9. *Citrus limon*
10. *Gliricidia sepium*
11. *Murraya keongi*
12. *Pongamia pinnata*
13. *Terminalia alata*
14. *Terminalia bellerica*
15. *Terminalia chebula*
16. *Emblica officinalis*
17. *Mentha* sps. (mint)
18. *Ocimum sanctum* (Tulsi)
19. *Ferula assafoetida* (Hing)
20. *Herpestismonniera* (Brahmi)
21. *Cinnamomum zeylanicum* (Cinnamum)
22. *Elettaria aromaticum* (Clove)

Practical

(5)

1. Field Identification
2. Surveying for Medicinal Plants

3. Cultivation and Harvesting Techniques

Field Exercises

(3 Days)

Reference Books:

1	Indian Forest Utilization Vol.II, FRI
2	Minor Forest Product of India, T.Krishnamurthy
3	Non-Wood Forest Products in India, Tirath Gupta Amar Guleria
4	Forest Utilization - II (Ppt Printed Notes), D. Sathyan IFS
5	Lecture Notes on Forest Utilization- IIVijai.N IFS
6	Fire Wood Crops Shrub & Tree Species for Energy Production
7	Medicinal Plants -Vol-I -IV, Bentley Robert
8	Compendium of Indian Medicinal Plants Vol-II, Ram P. Rastogi, B.N. Mehrotra
9	Medicinal Plants of India, Sharma, Ravindra

Special Modules:

Sl. No.	Title	Resource Person
1	NTFP	Dr. I. Sekar, FC&RI, Mettupalayam
2	Medicinal Plants	Ayush Ministry Expert

Special Lectures:

Sl. No.	Title	Resource Person
1	Honey collection and tribal life support systems	Dr. Anitha, Keystone Foundation, Coimbatore
2	Kani Tribal Products	Dr. Anbu A., DCF,Eco-development Officer, KMTR, TNFD
3	Pungam Oil Extraction	Mr. Murugan, MyRada, NGO, Dharmapuri
4	Honey Extraction	Dr.V. Priyanka, TNAU
5	Lecture by Sidha Doctor	Dr. Sivaraman, Chennai
6	Medicinal Plants Conservation	Dr. Somasekar, Dr. AK Gupta, IFS (Retd.), FRLHT, Bangalore

Field Visits:

Sl. No.	Topic	Place of Visit
1	Medicinal plant	Medicinal plant Development Area. MPDA Dodabetta, Nilgiris
2	Lorry body building	Mettupalayam
3	Coach building	Karur

4	NTFP	FC&RI, Mettupalayam
5	Paper mill visit	TNPL, Seshayee Paper mill

Tours:

Sl. No.	Topic	Tour Destination	Duration
1	Sports Goods	Punjab, J&K, during NIT	½ day
2	Resin tapping	J&K, UP, during NIT	½ day
3	Wood Sculpting	Kallakurichi, TN during SIT	1 day
4	Charcoal Making	Ramanathapuram, during SIT	½ day
5	Rubber tapping, Processing etc	ARC, Nagercoil, during SIT	½ day
6	MFP Corporation	Bhopal, during CIT	1 day
7	Indian Rayon	Veraval, Gujarat, during WIT	1 day

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Plywood Manufacturing Technology (PMT)	00:50:57
2	Medicinal Plants: Conservation Development and Sustainable Use	01:10:00

Exam Pattern:

FOREST UTILIZATION- II- 200 Marks

Theory- 125 Marks (External)

Objective Type Questions

- | | | | |
|------|--------------------------------------|---|-------------------------|
| i) | Fill in the blanks | - | 10 Marks |
| ii) | Match the following | - | 10 Marks |
| iii) | True or False | - | 10 Marks |
| iv) | Multiple Choice | - | 10 Marks |
| | Definition (10 questions x 2 marks) | - | 20 Marks (10 out of 11) |
| | Short Answer (4 questions x 5 marks) | - | 20 Marks (4 out of 5) |
| | Long Answer (3 questions x 15 marks) | - | 45 Marks (3 out of 4) |

Internal Concurrent – 75 Marks

- | | | | |
|------|---------------------|---|----------|
| i) | Assignment (2 No's) | - | 30 Marks |
| ii) | Viva-Voce | - | 15 Marks |
| iii) | Quiz Test | - | 15 Marks |
| iv) | Group Discussion | - | 15 Marks |

13. FOREST RESOURCE MANAGEMENT

Theory: 40

Field Exercise: 30 days

Sl. No.	LEARNING OUTCOMES
LO-1	Explain the principles, objectives, and scope of forest resource management, including sustained yield, rotation, and normal forest concepts.
LO-2	Analyze growing stock, age-class distribution, and increment patterns in regular and irregular forests.
LO-3	Impart knowledge on appropriate yield regulation methods for different forest types under Indian forestry conditions.
LO-4	Prepare a Working Plan using field data, stock mapping, compartment descriptions, and doing statistical analysis.
LO-5	Integrate ecological, silvicultural, and conservation considerations into forest management.

1. Introduction: (2)
 - 1.1 Definition and scope
 - 1.2 Management of forests and its peculiarities
 - 1.3 Forest management for environmental conservation
 - 1.4 Forest management for soil and water conservation
 - 1.5 Principles of forest management and their application.
2. Objects of management: (2)
 - 2.1 Purpose and policy (passing reference since covered in Law)
 - 2.2 Objectives.
 - 2.3 Owner's attitude and social role of forestry
3. Sustained yield: (4)
 - 3.1 Concept and meaning of sustained yield
 - 3.2 Progressive yield
 - 3.3 Sustained yield in relation to environmental management
4. Rotation: (1)
 - 4.1 Definition
 - 4.2 Kinds of rotation
 - 4.3 Factors affecting choice of rotation

- 4.4 Rotation and conversion period
- 5. Normal forest: (4)
 - 5.1 Definition and concept
 - 5.2 Normality in regular forests
 - 5.3 Normality in irregular forests
- 6. Growing stock and its increment: (5)
 - 6.1 General considerations
 - 6.2 Distribution of age gradations or classes in regular forests, normal and actual
Distribution of age gradations or classes in irregular forests, normal and actual.
 - 6.3 Distribution of age gradations or classes in forests under coppice systems
 - 6.4 Growth estimation and reduction factors for:
 - 6.4.1 Density
 - 6.4.2 Quality
 - 6.4.3 Quality and price increment.
- 7. Yield regulation: (6)
 - 7.1 General principles of yield calculation.
 - 7.2 Silvicultural system in relation to yield regulation.
 - 7.3 General definitions i.e. felling series, felling cycles, cutting series etc.
 - 7.4. Methods of yield regulation:
 - 7.4.1 Yield regulation in regular forests.
 - 7.4.1.1 By area, reduced area and Hufnagl's modification.
 - 7.4.1.2 By volume and increment methods.
 - 7.4.2 Yield regulation in irregular forests.
 - 7.4.2.1 Methods based on growing stock only
 - 7.4.2.2 Von Mantel's formula and its modifications
 - 7.4.2.3 Methods based on volume and increment
 - 7.4.2.4 Austrian method
 - 7.4.2.5 Method based on number of trees in various age classes and time taken to pass from one age class to next
 - 7.4.2.6 Brandis method
 - 7.4.2.7 Hufnagl's method
 - 7.4.2.8 Smithies safeguard formula
 - 7.5 Application of different methods of yield regulations in forest management in Indian forestry.

8. Management (Working) Plan: (6)
 - 8.1 Definition, object, scope, sphere, necessity for revisions
 - 8.2 Division of forests into various units
 - 8.3 Maps
 - 8.4 Management (Working) Plan Code
9. Preparation of Management (Working) Plan: (10)
 - 9.1 Preliminary Management Plan report
 - 9.2 Field work
 - 9.2.1 Stock mapping
 - 9.2.2 Checking of maps
 - 9.2.3. Compartment description
 - 9.2.4 Collection of statistical data
 - 9.2.5 Collection of other data
 - 9.3 Office work:
 - 9.3.1 Compilation of data
 - 9.3.2 Writing of Management Plan
 - 9.3.3 Control Forms
 - 9.3.4 Deviation Proposals

PRACTICAL

FIELD EXERCISE (30 days)

- Working plan exercise will be conducted in any suitable Sal or other forest covering as many types as possible.
- Each Officer Trainees will be required to write up a working plan for a forest block. Breakup of working days will be as follows:
- Collection of data for Part I (3 days)
- General examination of the working plan and field work - 3 days (Partly at HQ)
Field work for enumeration, regeneration survey etc. (9 days)
- Mapping and compilation (15 days)

Note: The works to be done will be specified by the in charge concerned of the Management (Working) Plan Exercise.

Reference Books:

1	Management of India's Forest Resources, Chaturvedi, A. N
2	Forest Management, Ram Parkash
3	Forest Management, Recknagel, A. B

4	Text Book of Forest Management, Jerram, M, R, K
5	Essentials of Forest Management, BalaKathiresan, S.
6	Forest Management (For Forest Colleges and Working Plan Officers, Mathur.V. P, Ranganthan.C. R)

Special Lectures:

Sl. No.	Title	Resource Person
1	Working Plan activities- Preliminary Working Plan Report (PWPR) preparation, documentation, Map preparation etc.	CF, Coimbatore, Working Plan Division.
2	Wildlife Management Plan	Dr. Ramesh. K, Scientist, Wildlife Institute of India
3	Working Plan preparation	Mr. T.V. Manjunath, APCCF (Retd.), TNFD, Mr. Ammanavar, DCF(Retd), Karnataka Forest Department
4	Working Plan preparation and its implementation	Dr. Anand, CCF, J&K Forest Department
5	Yield regulation	Mr. Vasu Yadav, IFS, PCCF, J&K Forest Department

Tours:

Sl. No.	Topic	Tour Destination	Duration
1	Field visit to working plan office	To learn map making and writing up of working plan.	1 day
2	Field visit Boluvampatty Range	To study the forest types.	1 day
3	Yield regulation, WP operation site (felling calculations etc)	MP, Maharashtra, Uttar Pradesh, Uttarakhand etc during CIT/NIT tour	1 day
4	Management Plan Implementation in National Park/Wildlife sanctuary	During NIT/CIT Tour	1 day
5	Felling activity and yield regulation	Karnataka, Kerala, Andaman and Nicobar Island etc	1 day
6	Visit to any forest area about WP implementation	During NIT/CIT Tour	1 day
7	Forest Development Corporations	Visit to Maharashtra Forest Development Corporation	1 day

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Forests and Their Management	01:12:00
2	Forest Resource Management	01:19:00

Exam Pattern:**FOREST RESOURCE MANAGEMENT - 200 Marks****Theory- 125 Marks (External)****Objective Type Questions**

i)	Fill in the blanks	-	10 Marks
ii)	Match the following	-	10 Marks
iii)	True or False	-	10 Marks
iv)	Multiple Choice	-	10 Marks
	Definition (10 Questions x 2 marks)	-	20 Marks (10 out of 11)
	Short Answer (4 questions x 5 marks)	-	20 Marks (4 out of 5)
	Long Answer (3 Questions x 15 marks)	-	45 Marks (3 out of 4)

Internal Concurrent – 75 Marks

i)	Assignment (2 No's)	-	30 Marks
ii)	Viva-Voce	-	15 Marks
iii)	Quiz Test	-	15 Marks
iv)	Group Work (Working plan)	-	15 Marks

14. NATURAL RESOURCE MANAGEMENT

Theory: 50

Practical: 12

Field Exercise: 20 days

Sl. No.	LEARNING OUTCOMES
LO-1	Identify major rock types, minerals, geological structures, and soil profiles, and relate them to landforms, vegetation, and forest site conditions.
LO-2	Assess physical, chemical, and biological properties of soils and analyze their influence on forest growth, species selection, and site productivity.
LO-3	Evaluate land use problems, soil erosion processes, wasteland conditions, and grassland status to support sustainable land and range management.
LO-4	Apply soil and water conservation techniques, including erosion control, watershed treatments, and hydrological analysis, for resource protection.
LO-5	Prepare and implement a watershed management plan integrating forestry, agronomic, engineering, and community-based conservation practices.

PART A: GEOLOGY AND SOIL SCIENCE

SECTION - A

(7)

1. Types of Rocks (2)
 - 1.1 Igneous rocks
 - 1.1.1 Forms
 - 1.1.2 Types.
 - 1.2 Sedimentary rocks
 - 1.3 Metamorphic rocks
2. Identification of minerals through physical characteristics (1)
3. Important rock-forming minerals (1)
4. Geological structures and their topographic expression (1)
5. Geological history of India: (2)
 - 5.1 Three geologically distinct units of India.
 - 5.2 Physiographical distinctness of three units.
 - 5.3 Main events in geological history of India.

PRACTICAL: (6)

1. Identification of Minerals
 - 1.1 Physical characters of minerals.
 - 1.2 Important rock forming minerals.
2. Identification of Rocks.
 - 2.1 Igneous rocks
 - 2.2 Sedimentary rocks
 - 2.3 Metamorphic rocks

SECTION - B (13)

1. Introduction: (1)
 - 1.1 Importance of soil as a factor of plant environment site and soil, soil in relation to forestry, soil as a natural living body.
2. Soil Forming processes (1)
3. Soil Profile: (3)
 - 3.1 Definition
 - 3.2 Various horizons, their characteristics and designations in various soil types
 - 3.2.1 Development of soil profiles under different conditions of climates, topography and vegetation.
 - 3.2.2 General features of forest soil profiles and their comparison with agricultural soils.
 - 3.2.3 Special features of various types of pans, e.g. hard lateritic, clay, kankar etc.
4. Physical properties: (2)
 - 4.1 Soil Texture
 - 4.2 Soil Structure
 - 4.3 Other properties
 - 4.4 Soil moisture and soil water relations
 - 4.5 Soil air and temperature.
5. Chemical properties: (2)
 - 5.1 Organic matter
 - 5.2 Silica Sesquioxide ratio
 - 5.3 Soil Colloids
 - 5.4 Soil pH
 - 5.5 Nutrient elements

- 5.6 Soil Nitrogen.
- 6. Biological properties: (1)
 - 6.1 Soil microbiology
 - 6.2 Soil fauna
- 7. Major Soil Groups (1)
 - 7.1 Soil Classification
 - 7.2 Soil survey and Soil Mapping
- 8. 8.1 Rock, Soil-Plant relationship (2)
 - 8.2 Soil properties influencing forest growth

FIELD PRACTICAL (6)

1. Study of soil profile and recording of relevant field data on soil, and vegetation etc.
2. Determination of physical properties of soil in the field such as structure, texture, hardness, porosity, colour, pH etc. and study of vegetation growth in relation to such physical properties of soil.
3. Writing of a soil survey report and analysing the obtained data for selection of species and further treatment of the soil, if needed.

PART B: LAND USE & WATERSHED MANAGEMENT

SECTION-A (4)

1. Land use problems in India:
 - 1.1 Agrarian customs, agriculture practices.
 - 1.2 Social customs with reference to use of various resources.
 - 1.3 Forests of India, their distribution.
 - 1.4 Erosion.
 - 1.4.1 Principles
 - 1.4.2 Types of erosion
 - 1.4.3 Agencies of erosion
 - 1.4.4 Kinds and forms of erosion, degree of erosion
 - 1.4.5 Causes and effects of erosion
2. Institutions for Wasteland development – their activities, programmes, limitations (Wasteland Development Board etc.)
3. Waste land Management (2)
 - 3.1 Introduction
 - 3.2 Classification
 - 3.3 Identification and Reclamation of saline-alkali soil (1)

- 3.4 Management of water logged areas
- 3.5 Identification of various types of waste lands.
- 3.6 Development of such Wastelands and techniques adopted.
- 4. Range Management: (4)
 - 4.1 Grass land-types and their distribution in India.
 - 4.2 Ecological status of Indian grasslands
 - 4.3 Principles of grassland management and various measures for maintaining grassland in good condition, (silvipastoral techniques) closures, soil and water conservation measures, application of fertilizers, seeding and planting of improved grasses, weed control and control burning, other operations like silage, hay making, stall feeding, storage of grass, provision of facilities in pastures for even distribution of grazing pressure.

SECTION - B

- 5. Hydrological cycle: (2)
 - 5.1 Hydrological cycles and its importance.
 - 5.2 Rainfall, its measurement, intensity, duration and frequency.
 - 5.3 Infiltration, percolation
 - 5.4 Evaporation and transpiration
 - 5.5 Run-off, peak rate of run off, methods for calculations, Rational and Cook's method.
- 6. Soil and water conservation measures: (7)
 - 6.1 Contour cultivation, contour trenching design and lay out
 - 6.2 Bunding and terracing
 - 6.3 Erosion control and water conservation structures like spill ways, their types, design, construction and maintenance.
 - 6.4 Gully control, principles of planning, and safety of works, use, design and maintenance of check dams.
 - 6.5 Stream bank erosion control
 - 6.6 Torrent control, control measures in catchments and in channel
 - 6.7 Land slide control
 - 6.8 Control of erosion on highways and railways
 - 6.9 Wind erosion control, wind breaks shelter belts, sand dune fixation
- 7. Watershed Management Plan: (10)
 - 7.1 Unit of planning
 - 7.2 Codification of watersheds, sub-watershed, micro-catchments.

- 7.3 Demarcation of priority watershed
- 7.4 Soil survey and capability map preparation and problem analysis.
- 7.5 Collection of basic information for soil conservation planning pertaining to soil, climate, land use, crop yields, agronomic practices, engineering and forestry practices, population needs and customs, cattle census and allied details.
- 7.6 Proposed treatment dealing with watershed management practices, agronomic and forestry practices, land treatment, structural measurement, miscellaneous specifications, phasing of project work, provision for cost estimate, cost/benefit ratio and general evaluation.
- 7.7 Agronomic practices in Soil conservation:
 - 7.7.1 Contour farming
 - 7.7.2 Cover crops and legumes
 - 7.7.3 Strip cropping
 - 7.7.4 Composting
 - 7.7.5 Mixed and rotational cropping
 - 7.7.6 Green manuring and mulch farming
 - 7.7.7 Terracing and dry land farming
- 7.8 Forestry Practices in Soil conservation:
 - 7.8.1 Wattling to stabilise debris and landslide
 - 7.8.2 Log Wood check dam
 - 7.8.3 Plantation, ground/ land development
- 7.9 Vegetative measures to check erosion at gully head, road slides, cut slopes, riverbanks, seacoasts etc.

FIELD EXERCISE

(20 days)

Preparation of Watershed Management Plan for a given micro-catchment.

Reference Books:

1	Soil Conservation & Land Management, Dutta.S. K
2	Nature and Properties of Soils, Weil, Ray.R And Brady, Nyle, C.
3	Fundamentals of Forest Soil, A.K.Mani, R.Santhi&K.M.Sellamuthu
4	Principles Of Soil Science, Rai, M.M
5	Field Engineering Training on Watershed Management, A Raviraj
6	Geology For Foresters Fundamentals of Forestry, S.S. Negi
7	Lecture Notes on Watershed Management, K.M. Perumal IFS
8	Lecture Notes on Soil Conservation CVC.PandianIFS

9	Lecture Notes on Natural Resource Management, Thyagarajan.P
10	Lecture Notes on Natural Resource Management, TNFA
11	Lecture Notes on Geology, Dr, R. Dhandapani

Special Modules:

Sl. No.	Title	Resource Person
1	A Special Module on design of Check Dam, PP, Gully plugging, Contour walls, water troughs, Garison structures and Water troughs	Mr. Varadaraj, DCF, Dharmapuri, TNFD
2	A Special module on measurement of Silting and Desilting	
3	A Special session on Watershed Management and pitfalls in design of structures	Mr. K.P.M. Perumal, APCCF(Retd.), TNFD and Mr. Chandrasekharan G, DCF(Retd.), TNFA

Special Lectures:

Sl. No.	Title	Resource Person
1	A special session on Geology	Geology professor from Wadia Institute of Himalayan Geology, Dehradun, Uttarakhand
2	Geology and soil science	Kerala Forest Research Institute, Peechi, Kerala
3	NGOs perspective	Ms. Vanitha Mohan, Siruthuli- NGO, Coimbatore

Field Visits:

Sl. No.	Topic	Place of Visit
1	A Field visit to TNAU - "Soil Profile Study"	TNAU, Coimbatore
2	A field visit to Soil survey and land use lab	JD Office, Coimbatore
3	A field visit to different catchments and forest types:Special Area Development Program (SADP) office	Ooty

Tours:

Sl. No.	Topic	Tour Destination	Duration
1	South India Tour - visit to Teri Site	TERI Site, Tuticorin	½ day
2	South India Tour - Study of Sodic soils and development - visit to ADSE&RI, Trichy	Anbil Dharmalingam Agricultural College and research Institute, Trichy	½ day
3	A Special session on Grasslands during West India Tour	Bunny Grasslands, Gujarat Forest Department	1 day
4	A Special session on soil survey and land use	Nagpur	1 day
5	South India Tour Part 2- visit to Chitradurga and Bellary Mine reclamation site	Karnataka	2 days

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Sustainable Development Practices	00:22:00
2	Deforestation	00:40:10
3	Sustainable Development Goals	00:49:00
4	Solar Energy	00:50:24
5	Introduction to Watershed Management	01:05:55
6	Soil Erosion and Conservation	01:09:02
7	Water Use Efficiency	02:04:58
8	Water Pollution and Management Approaches	02:30:00
9	Used Water Management	02:30:00
10	River and Wetlands	05:07:00

Exam Practical: Practical on Soil types, Rock samples etc.,

Exam Pattern:

NATURAL RESOURCE MANAGEMENT- 250 Marks

Theory- 100 Marks (External)

Objective Type Questions

i)	Fill in the blanks	-	10 Marks
ii)	Match the following	-	10 Marks
iii)	True or False	-	10 Marks
iv)	Multiple Choice	-	10 Marks
	Definition (5 questions x 2 marks)	-	10 Marks (5 out of 6)
	Short Answer (4 questions x 5 marks)	-	20 Marks (4 out of 5)
	Long Answer (2 questions x 15 marks)	-	30 Marks (2 out of 3)

Internal Concurrent – 50 Marks

i)	Assignment (2 No's)	-	20 Marks
ii)	Viva-Voce	-	10 Marks
iii)	Quiz Test	-	10 Marks
iv)	Group Discussion	-	10 Marks

Practical – 100 Marks

- Practical Record - 10 marks
- Practical Exam – 90 Marks (Identification-40marks; Description-30 marks; Calculation related to Water Shed Management-20 marks)

15. ENVIRONMENTAL ECONOMICS

Theory: 45

Sl. No.	LEARNING OUTCOMES
LO-1	Apply basic economic concepts of demand, supply, utility, cost, production, and markets to forestry and forest-based products.
LO-2	Analyze forest economic structures, including revenue sources, price–size relationships, risk, uncertainty, economic rotation (Faustmann’s approach), and the role of carbon credits in forestry economics.
LO-3	Evaluate the economic implications of silvicultural practices such as spacing, thinning, pruning, species choice, and crop composition, including their effects on productivity, sustainability, and green economic modelling.
LO-4	Assess ecosystem services using techniques such as Total Economic Value (TEV), contingent valuation, willingness to pay, travel cost, and hedonic pricing, and examine the relationship between environmental degradation and economic growth.
LO-5	Plan, evaluate, and analyze forestry projects using project appraisal tools such as Net Present Value (NPV), Benefit–Cost (B/C) ratio, Internal Rate of Return (IRR), and cost–benefit analysis for sustainable forest management decisions.

General (12)

1. Introduction: (1)
 Role of economics in forestry and its limitations in decision-making.
2. Demand: (1)
 Theory of demand; essential elements of demand; demand for forest products; demand schedule; elasticity of demand
3. Supply: (1)
 Concepts; law of supply; essential elements of supply; supply of forest products; supply schedule; elasticity of supply. Equilibrium point.
4. Utility: (2)
 Basic concepts and definition; concepts of total and marginal utility; law of diminishing marginal utility: The indifference curve and indifference map. Consumption possibility line.
5. Cost: (2)
 Cost of production; i.e., concept of real, opportunity and money cost; total, average, and marginal cost.
6. Production Theory: (2)

Concepts of total, average and marginal products. Production function and laws of return i.e., increasing, constant and diminishing returns. Utility theory of production and marginal products in forestry.

7. Brief account of pricing factors of production (1)

i.e., Land Rent

Labour Wages

Capital Interest

8. Market: (2)

Main features of market; Forms of market-Perfect, imperfect, monopoly market. Types of competition in the market. Market of various forest products viz. Timber, fuelwood, charcoal, seeds, bidi, bamboo, gums etc.

Forest Economics (10)

1. Economic Structure in Forestry Sector (2)

Sources of revenue in forestry sector, Price-size relationship. Value and treatment of time in forestry sector, Risk and uncertainty in forestry sector and its treatment.

2. Rotation (2)

Concept of Economic rotation- rotation of max. NPV Land Expectation Value (Faustman's formula).

3. Factors affecting Economics, Economics of spacing, thinning and pruning (3)

4. Economics of nature of crop, mosaic and mixed culture (3) species choice Protection, harvesting etc.

Environmental Economics (10)

1. Importance and Relevance, Similarities and Differences between Economics and Environmental Economics (1)

2. Economics of air, water, soil and biodiversity resources (2)

3. Defining and Identifying non-use values, optional values and existence values of resources. (1)

4. Valuation techniques of TEV contingent valuation, willingness to pay, Travel Costs, Hedonic Price (4)

5. Environmental Impact Assessment of Projects (2)

Project Planning, Evaluation and Analysis (13)

1. Definitions: (1)

Nature of forestry projects; objectives of forestry projects; Designs of forestry projects; common pitfalls in forestry projects.

2. Planning (3)

Understanding project planning, Types of planning, levels of planning and phases of planning. Organizational levels.

3. Evaluation: (2)
Phases i.e., Pre- Evaluation (PROJECT APPRAISAL), Interim evaluation and post evaluation.
4. Analysis: (2)
Analysis (SCBA). Appraisal criteria (Pay back method, average rate of return, NPV, B/C ratio, IRR)
1. Case studies in forestry project analysis. (5)

Reference Books:

1	Principles of Business Economics, Reddy, P.N And Appanniah, H.R
2	Forest Economics: Principles and Application, Nautiyal.J.C
3	Forest Economics, S.S. Negi
4	Forest Economics & Valuation, M.M. Pant
5	Lecture Notes on Forest Economics, M. Muni Reddy IFS
6	Lecture Notes on Forest Economics, TNFA

Special Modules:

Sl. No.	Title	Resource Person
1	Case studies on production theory and market	Dr. V.S. Senthil Kumar, IFS, CCF, J & K
2	Environment Economics	TERI (The Energy and Resources Institute), New Delhi
3	Environment Economics	IIFM (Indian Institute of Forest Management), Bhopal

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Introduction to Economics	00:47:38
2	Sustainable Development Goals	00:49:00
3	Plywood Manufacturing Technology (PMT)	00:50:57
4	Overview of Viksit Bharat 2047	01:03:41
5	Procurement of Works	01:09:00
6	Procurement of Goods and Services	01:10:00
7	Finance and Accounts	01:35:00

Exam Pattern:**ENVIRONMENTAL ECONOMICS- 200 Marks****Theory- 125 Marks (External)****Objective Type Questions**

i)	Fill in the blanks	-	10 Marks
ii)	Match the following	-	10 Marks
iii)	True or False	-	10 Marks
iv)	Multiple Choice	-	10 Marks
	Definition (10 questions x 2 marks)	-	20 Marks (10 out of 11)
	Short Answer (4 questions x 5 marks)	-	20 Marks (4 out of 5)
	Long Answer (3 questions x 15 marks)	-	45 Marks (3 out of 4)

Internal Concurrent – 75 Marks

i)	Assignment (2 Nos)	-	30 Marks
ii)	Viva-Voce	-	15 Marks
iii)	Quiz Test	-	15 Marks
iv)	Group Discussion	-	15 Marks

16. BIODIVERSITY CONSERVATION AND MANAGEMENT

Theory: 60

Practical: 10

Sl. No.	LEARNING OUTCOMES
LO-1	Describe biodiversity at genetic, species, and ecosystem levels, including its ecological, economic, and geopolitical significance in the Indian context.
LO-2	Identify major biogeographic regions, endemic centres, mega fauna, avifauna, wetlands, and protected areas of India, along with their conservation challenges.
LO-3	Apply concepts of wildlife ecology such as population structure, carrying capacity, home range, and behaviour for effective wildlife management.
LO-4	Implement in-situ and ex-situ conservation strategies, including conservation breeding, reintroduction, eco-development, and ecotourism approaches.
LO-5	Use ecological sampling and Wild animal Population estimation techniques to assess biodiversity status and support conservation planning in compliance with national and international laws.

Part- I (10)

Biodiversity: Definition, gene level, species level and ecosystem level. Value of Biodiversity: ecological, economic and other values. India as a mega diversity country; Bio geographic regions of India, Endemic centers of India and an overview of endemism in flora and fauna. (5)

Introduction to Plant and Animal Kingdom (5)

Part-II (5)

Mega fauna of India; occurrence, distribution, present status and elementary ecology concerning Asian Elephant, Tiger, Rhinoceros, Musk deer, Gaur, Hoolock Gibbon, Nilgiritahr. An overview of Avifauna in India and Ramsar wetlands in India

Part-III (15)

Conservation ethos of India. Wildlife Management definition, concept of carrying capacity, population structure, density and biomass, Home range and territory and an introduction to Ethology. Need for Protected Area Network; National Parks and Sanctuaries of India with special emphasis on Kanha National Park, KeibulLamjao of Manipur, Bandipur, Gir, Gulf of Mannar (Coral reef Management), Namdapha National Park, their location, extent, flagship species, habitat description, major conservation measures, man animal conflict and an assessment of sources of threats to those protected areas. The concept of Eco-development.

Part-IV (5)

Insitu and exsitu conservation and the role of gene banks. Conservation breeding and Reintroduction. National Institutions involved in conservation. Role of NGOs in conservation of natural resources. Ecotourism.

Part-V (15)

Ecological sampling Techniques: belt, quadrat and point techniques for enumeration of plants. Line transects analysis and other popular census techniques for animals. Causes of extinction; habitat destruction and degradation, fragmentation of habitat, introduction of alien species and other factors. Examples of critically endangered biota of India.

Part-VI (5)

International conservations concerning biodiversity CITES, CBD, intellectual property rights, Bio piracy. Wildlife Protection Act, 1972 and Forest Conservation Act, 1980 as corner stones of conservation in India. Biodiversity Bill/Act, Environmental pollution, Environmental laws and Environmental Impact Assessment.

Part-VII

Biodiversity (5)

Ecological and geopolitical significance of biodiversity

Biosphere reserves with special reference to India.

Practical

Ecological Census Techniques (10)

Reference Books:

1	Bio-Diversity in India, Rao, R.R.
2	Bio-Diversity Its Conservation in India, Negi, S.S
3	Management Of Biological Diversity of Indian Forests with Special Reference to South Forest Types, Kondas, S.
4	National Working Plan Code-2023
5	Lecture Notes on Biodiversity Conservation and Management, Ramesh Kumar
6	Lecture Notes on Biodiversity Conservation and Management, Jose Mathew
7	Lecture Notes on Biodiversity Conservation and Management, TNFA
8	The Biological Diversity Act – 2002, Biodiversity (Amendment) Act, 2023

Special Modules:

Sl. No.	Title	Resource Person
1	Comprehensive Management activity of any Tiger Reserve	Resource Person from any Tiger Reserve
2	2 days module on Management Effectiveness Evaluation	Expert from WII, Dehradun
3	Kaziranga NP – Management and Challenges	Dr. Sonali Ghosh, IFS, Kaziranga Field Director, Assam
4	Attaining SDG to Wildlife Management	Mr. Jagdish Bakan, DFO, Hosur, Karnataka
5	Zoo Management	Experts from AAZP, Vandalur

Special Lectures:

Sl. No.	Title	Resource Person
1	Special lecture on BDCM	Dr Azeesh, Director (Retd.), SACON
2	Special sessions on EIA, CBD, IPR, CITES	Experts from WCCB, SIEAA members,
3	Landscape management	WWF Regional Coordinators
4	Special Lecture - WL Health	Dr. Manoharan, Joint Director(Retd.), Animal Husbandry Dept., Coimbatore
5	Relocation	Mr. Krishnamoorthy, IFS, APCCF, Govt of MP.
6	Management of Kaziranga NP	Dr.P. Sivakumar, IFS,Member Secretary, Central Silk Board
7	Bird Conservation	Dr. Pramod, Pr. Scientist, SACON
8	Wetland Management	Dr. Balachandran, Deputy Director, BNHS (Retd.), Dr. Dhananjay Mohan, IFS, PCCF (Retd.), Uttarakhand
9	Wildlife Photography	Dr. R.Tolstoy, Professor, PSG college of Medical Sciences.
10	Human Animal Conflict Mitigation in Coimbatore	Dr.B. Ramakrishnan, WL dept., Govt. Arts College, Ooty.
11	WL species, behaviour and Management	Dr. K. Sankar, Director (Retd.) SACON.

Field Visits:

Sl. No.	Topic	Place of Visit
1	Madukkarai - Use of AI for Human-Wildlife Conflict mitigation	Madukkarai, Coimbatore
2	Protected Area management	Anamalai Tiger Reserve, Vellode Bird Sanctuary, Sathyamangalam Tiger Reserve

Tours:

Sl. No.	Topic	Tour Destination	Duration
1	AIWC, Chennai	Chennai during SIT	1 Day
2	Protected Area management	Gulf of Mannar during SIT	1 Day

Practical:

Sl. No.	Topic
1	Species identification, structures, Methodologies, ecological sampling

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Biodiversity Conservation	02:21:39
2	Butterfly Diversity and Identification	01:57:20
3	River and Wetlands	05:07:00
4	Sustainable Development Practices	00:22:00
5	Sustainable Development Goals	00:49:00

Exam Pattern:**BIODIVERSITY CONSERVATION AND MANAGEMENT- 250 Marks****Theory- 125 Marks (External)****Objective Type Questions**

i)	Fill in the blanks	-	10 Marks
ii)	Match the following	-	10 Marks
iii)	True or False	-	10 Marks
iv)	Multiple Choice	-	10 Marks

Definition (10 questions x 2 marks)	-	20 Marks (10 out of 11)
Short Answer (4 questions x 5 marks)	-	20 Marks (4 out of 5)
Long Answer (3 questions x 15 marks)	-	45 Marks (3 out of 4)

Internal Concurrent – 75 Marks

i) Assignment (2 No's)	-	30 Marks
ii) Viva-Voce	-	15 Marks
iii) Quiz Test	-	15 Marks
iv) Group Discussion	-	15 Marks

Practical- 50 Marks

- Practical Record- 05 marks
- Practical Exam- 45 Marks (Identification-10marks; Calculation-10 marks; Description- 25 marks)
 - ❖ Species identification, Sampling Techniques, Structure and methodology, requirement of Wild animal species in captivity like, space, feed, labour, etc, calculations, design, population estimation techniques, etc.

17. JOINT FOREST MANAGEMENT, RURAL AND TRIBAL DEVELOPMENT

Theory: 30

Field Exercises: 3 Days

Sl. No.	LEARNING OUTCOMES
LO-1	Explain the concepts of Joint Forest Management, community forestry, and participatory approaches in rural development.
LO-2	Plan and implement agroforestry and social forestry programmes for fodder, fuelwood, timber, and livelihood support.
LO-3	Apply extension, publicity, and awareness strategies for effective community participation in forestry programmes.
LO-4	Analyze the socio-economic relationship between tribals and forests, including livelihood dependence and cultural linkages.
LO-5	Prepare micro-plans for agroforestry and rural development based on integrated and participatory approaches.

SECTION-A

Introduction to concepts of Joint Forest Management and Participatory Approach. (2)

1. Community Forestry: (1)

1.1 Definition

1.2 Role of Forestry in Rural Development

1.3 Necessity-special significance in the context of energy and small timber requirement of India

1.4 Environmental pollution and recreation

1.5 Place of social forestry in the national forest policy of India.

2. Agro-Forestry: (3)

2.1 Its need and scope on and around agricultural lands.

2.2 Role in rural economy and its effect on agricultural practices

2.3 Establishment of Agro forestry

2.4 Agro Forestry Models with Economic Analysis

2.5 Role of forest department.

3. Social Forestry: (2)

3.1 Objectives and scope vis-à-vis Agro forestry

3.2 Raising of trees for fodder

3.3 Developments of pasture lands.

- 3.4 Avenue plantation.
- 3.5 Canal bank plantation.
- 3.6 Plantations along railway lines
- 3.7 Choice of species
- 3.8 Role of the forest department.
- 4. Recreation Forestry and Landscaping: (2)
 - 4.1 Scope and need of Recreation Forestry
 - 4.2 Ecotourism in relation to generate employment and local economic upliftment and economic development
 - 4.3 Concept of integrated town planning and landscaping
 - 4.4. Creation, layout and design of parks, green zones/ green belts close to urban centers.
- 5. Social Forestry for: (2)
 - 5.1 Fodder production
 - 5.2 Fuel wood
 - 5.3. Leaf manure
 - 5.4 Timber production.
- 6. Extension and Publicity: (2)
 - 6.1 Role of publicity in Social Forestry.
 - 6.2 Modes of Publicity
 - 6.2.1 Direct contact with the people
 - 6.2.2 Using mass publicity media-radio, television, posters etc.
 - 6.3 Establishing Demonstration and Interpretation centers
 - 6.4 Exposure through training, workshops, seminars and exhibitions.
 - 6.5 Incentives for tree planting both to landless and land holders.
 - 6.6 Competitions and Contests for awareness generation
- 7. Integrated rural development approach: (2)
 - 7.1 Forestry in support to agriculture, animal husbandry and horticulture
 - 7.2 Forest based cottage industry in rural environment with proper marketing facility.
 - 7.3 Employment generation in raising, tending harvesting tree crops.
 - 7.4 Alternative Sources of energy.
- 8. Organization and legislation to support the programmes (1)

SECTION - B

9. Tribals in India: (1)
 - 9.1 Distribution, groupings and cultural traditions.
 - 9.2 Special constitutional provision relating to them.
 - 9.3 Specific Provisions and guidelines in the Five Year Plans
10. Tribals and Forests-a symbiotic relationship (2)
 - 10.1 Forests as their immediate environment, Ethno botany.
 - 10.2 Brief appraisals of various religious and cultural myths and legends of tribal related to forests.
11. Forest as means of livelihood- (with reference to tribals) (2)
 - 11.1 As participant
 - 11.2 Dependence on forests: Extent of gap in demand and supply of fuel, fodder, fruit, food, and small timber to them.
 - 11.3 Shifting cultivation practiced by tribals.
 - 11.4 Role of various forest based industries and Institutions like forest labourers cooperatives societies, Tribal Development Corporations, Forest Development Corporations in various states in the amelioration of poverty among tribals.
12. Social Forestry, Future prospects, Forest Management. (5)
 - 12.1 Overall involvement of tribals (Past, Present and Scope), Emphasis on variety of Extension Forestry Programmes like Agro-Farm-Forestry, Shelterbelt, other forms of productive forestry.
 - 12.2 Social Forestry and various Area Development Programmes.
 - 12.2.1 Family Development based programmes.
 - 12.2.2 Individual Beneficiary programme.
 - 12.3 Concept of voluntary agencies and their relevance to tribals with a special attention to various rural and tribal development programmes (IRDP, RLEGP, EGS, NREP, DDP, DPAP and TSP etc.,).
13. Tribals and Five-Year Plans (3)

Preparation of sub-plan for tribal areas. Study of planning commission guidelines.

FIELD EXERCISE:

- Preparation of a Micro-plan for Agro-forestry (3 Days)

Reference Books:

1	Joint Forest Management Concepts, Policies and Guidelines, Dr. R. Annamalai, IFS
2	Joint Forest Management in India: Spread Performance and Impact, Ravindranath N H, Sudha P
3	Participatory Rural Appraisal, Method and Applications in Rural Planning, Mukherjee,A
4	Social Forestry for Rural Development, Tiwari, K.M
5	Hand Book of Agro Forestry, Singh, S.P
6	Lecture Notes on Tribal Development, Ratan Purwar IFS
7	Lecture Notes on JFM Rural and Tribal Development, Chandrasekar.L
8	Lecture Notes Joint Forest Management, TNFA
9	Reading Material on Joint Forest Management & Sustainable Rural Development, CASFOS, CBE

Special Modules:

Sl. No.	Title	Resource Person
1	Agroforestry	Experts from FCRI, Mettupalayam

Special Lectures:

Sl. No.	Title	Resource Person
1	Joint Forest Management in Tamil Nadu	Dr. Balaji, IFS, PCCF(Rtd.), TNFD
2	Eco development programs	Mr. A.Venkatesh, IFS, APCCF(Retd.)
3	Sustainability of EDC	Dr.Anbu A., DCF, KMTR, TNFD
4	Eco-tourism management committee(ETMC), Periyar Tiger Reserve	Mr. Pramod Krishnan, IFS
5	Session on Trek Tamil Nadu	MD, Trek Tamil Nadu
6	Lecture on Landscape architecture	Dr. P.T.Umasankar
7	Lecture on Biodiversity Park	Mr. Easwaran, GM, Ramco Cements
8	Agroforestry and Farmers Produces Company Limited	Mr. Narayan Swamy and Mr. Devaraj, Coimbatore District tree growers' association
8	Tribal Welfare	Mr. Annadurai, Director, Tribal Welfare
		Mr. V.C. Rahul, IFS, CF, TNFD
		Mr. H. Venuprasad, IFS. APCCF, TNFD

Field Visits:

Sl. No.	Topic	Place of Visit
1	Eco-Tourism management	Barlikadu, Coimbatore
2	Joint Forest Management Committee(JFMC) in nearby areas	Coimbatore
3	Social Forestry Plantation	Karur
4	Tribal area works	Annamalai/ Mudumalai/ Ooty etc
5	EDC activities	KMTR, Tirunelveli

Tours:

Sl. No.	Topic	Tour Destination	Duration
1	Tribal museum	Andaman and Nicobar, Bhopal	1 day
2	IGNP works	Rajasthan- WIT Tour	1 day
3	Butterfly Park	by Dr. PT Umasankar- SIT tour	½ day
4	Avenue plantation	Delhi and Chandigarh- NIT tour	1 day
5	Special Session	Mr. Kulandaivel, IFS, CCF, West Bengal	½ day
6	NGO'S role in Joint Forest Management	Arumbugal Trust, Tirunelveli	½ day
7	Ethno Botany	FRLHT, Bangalore	1 day

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Development Challenges in Tribal Areas and Aspirational Districts	01:21:24
2	Forest Rights Act - English Version	01:32:19

Exam Pattern:**JOINT FOREST MANAGEMENT, RUAL AND TRIBAL DEVELOPMENT- 100 Marks****Theory- 65 Marks (External)****Objective Type Questions**

- | | | | |
|--------------------------------------|---------------------|---|-----------------------|
| i) | Fill in the blanks | - | 10 Marks |
| ii) | Match the following | - | 10 Marks |
| iii) | True or False | - | 10 Marks |
| Short Answer (3 questions x 5 marks) | | - | 15 Marks (3 out of 4) |
| Long Answer (2 Questions x 10 marks) | | - | 20 Marks (2 out of 3) |

Internal Concurrent – 35 Marks

i)	Assignment	-	15 Marks
ii)	Viva-Voce	-	5 Marks
iii)	Quiz Test	-	10 Marks
iv)	Group Discussion	-	5 Marks

18. HUMAN RESOURCE DEVELOPMENT AND MANAGEMENT

Lectures: 30

Sl. No.	LEARNING OUTCOMES
LO-1	Apply principles of organizational behaviour, leadership, motivation, group dynamics, and organizational culture to enhance institutional effectiveness.
LO-2	Plan and manage human resources through manpower planning, recruitment, training, career development, delegation, coordination, and performance evaluation.
LO-3	Manage organizational processes including communication, change management, conflict resolution, stress management, transparency, accountability, and anti-corruption measures.
LO-4	Demonstrate individual managerial competencies such as decision-making, interpersonal skills, personality development, time management, media handling, and professional conduct.

1. Institutional: (15)
 - 1.1 Organizational behaviour
 - 1.1.1 Structure and suitability
 - 1.1.2 Motivation and recognition
 - 1.1.3 Leadership styles.
 - 1.1.4 Group dynamics.
 - 1.1.5 Management of conflict & stress
 - 1.2 Manpower planning
 - 1.2.1 Goals
 - 1.2.2 Strategies
 - 1.2.3 Selection/Recruitment
 - 1.2.4 Career development
 - 1.2.5 Training and Research
 - 1.3 Communication skill and management.
 - 1.4 Management systems and process.
 - 1.5 Organizational culture and managerial ethos
 - 1.6 Management of organizational conflicts
 - 1.7 Managing change

- 1.8 Organization structure and design
- 1.9 Delegation and interdepartmental coordination
- 1.10 Changing role of Government.
- 1.11 Inter Institutional exchange programs
- 1.12 Anti-corruption measures
- 1.13 Output evaluation
- 2. Individual (15)
 - 2.1 Role of a Manager
 - 2.2 Managerial skills
 - 2.3 Decision making models
 - 2.4 Decision making techniques and processes
 - 2.5 Analyzing interpersonal relations
 - 2.6 Media and mob management
 - 2.7 Personality development
 - 2.8 Aptitude building
 - 2.9 Time management
 - 2.10 Transparency in working
 - 2.11 Accountability.

Reference Books:

1	Human Resource Development I & II, Ashok Kumar
2	Human Resource Development, Mehta, Basant
3	Reading Material on Human Resource Management, CASFOS, CBE
4	Human Resource Management, Shah, Vaisali.K.

Special Modules:

Sl. No.	Title	Resource Person
1	Involve a management institute for session on Leadership	Expert from IIM Kozhikode, Kerala

Special Lectures:

Sl. No.	Title	Resource Person
1	Personality development	Dr. Vikrant Tomar
2	Mob management	Police department

3	Anti-corruption measures	Expert from Directorate of Vigilance and Anti-corruption
4	Public sector	Dr. L. Chandrasekharan, IFS, APCCF, Kerala
5	Media management	Shri.C.S. Koteeswaran, Chief of Bureau, Daily Thanthi, Tamil Nadu

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	Understanding Ethical Leadership	00:02:12
2	Leadership	01:35:00
3	Work Ethics	00:25:00

Exam Pattern:

HUMAN RESOURCE MANAGEMENT- 150 Marks

Theory- 100 Marks (External)

Objective Type Questions

i)	Fill in the blanks	-	10 Marks
ii)	Match the following	-	10 Marks
iii)	True or False	-	10 Marks
iv)	Multiple Choice	-	10 Marks
	Definition (5 Questions x 2 marks)	-	10 Marks (5 out of 7)
	Short Answer (4 questions x 5 marks)	-	20 Marks (4 out of 6)
	Long Answer (2 Questions x 15 marks)	-	30 Marks (2 out of 4)

Internal Concurrent – 50 Marks

i)	Assignment	-	10 Marks
ii)	Group Discussion (2 No's)	-	40 Marks

19. FOREST ACCOUNT AND PROCEDURE

Theory : 40

Sl. No.	LEARNING OUTCOMES
LO-1	Maintain forest cash accounts, vouchers, ledgers, and financial records in accordance with prescribed government accounting procedures.
LO-2	Apply correct procedures for budgeting, revenue collection, expenditure control, and management of forest deposits and advances.
LO-3	Prepare and verify forest produce accounts, yield returns, permits, and transit passes for different categories of forest produce.
LO-4	Manage office records, registers, maps, stock, correspondence, and inspections as per established forest office procedures.
LO-5	Execute conservancy and works contracts using approved procurement, accounting, and departmental execution procedures.

GENERAL

(1)

Organization of forest department: administrative and executive control.
Classification of establishment- permanent, temporary and labour.

CASH ACCOUNT

(24)

- ❖ General principles of book-keeping by single entry, its origin and advantages; accuracy, neatness and legibility in book- keeping. definitions of important terms in accounts.
- ❖ Classification of Government accounts; its necessity. Receipt and payments under various heads and sub-heads. Preparation of Budget and Annual Action Plan.
- ❖ Revenue and Capital Expenditure: Essential steps before incurring a revenue expenditure, sanctions, availability of funds, scale of rates etc.
- ❖ Definitions of cash and cash book; custody of cash chest and precautions in its use.
- ❖ Payment and its methods i.e. cash, cheque book transfer and R.T.R., letter of credit; writing of cheques and maintenance of cheque books; cancelled and lost cheques.
- ❖ Advances to contractors, disbursers and others and their accounting; recoveries of cash payment and their entries in the cash accounts.
- ❖ Different kinds of voucher for payments; muster rolls, measurement books and their preparation and maintenance. Register of sanctioned works and completion reports. Lost or missing receipt or vouchers.
- ❖ Receipt of revenue and its remittance into the treasury, i.e. cash, cheque, postal money-order, book transfer and R.T.R., refund of revenue.

- ❖ Forest deposits-Earnest money; Security deposits from subordinates and contractors.
- ❖ Maintenance of Cash book, entry of Cash transactions and closing and balancing of cash book; practice in writing cash-book; Divisional and range officer's daily cash account; supplementary accounts and objection statements.
- ❖ Contractors and disbursers ledger. Accounting procedure as followed by forest corporations. Treasury system of accounting/ study of different formats, disbursement process, Treasury cash book, Heads of Accounts, D.D.O's functions.

FOREST PRODUCE ACCOUNTING AND YIELD RETURNS (5)

Categories of produce i.e. tree, timber, logs and scantlings; firewood, charcoal and other minor forest produce; Various places of storage i.e. forests, depots, transit and sale depots; separate entries for each category and depot.

Agencies of removal: Government, Contractors and others-right holders and free grantees.

Accounts and returns connected with departmental export of produce as under

- Return showing receipt and disposals in sale depots.
- Return showing receipts and issue of timber and other produce.
- Return showing sale of timber and other produce, including drift and waif wood collected by Government agency.
- Bill and receipt book.

Accounts and returns connected with the removal of produce by purchasers as under: -

- Return showing sale of forest produce, cut and collected by purchasers.
- Return showing outstanding on account of revenue.
- Regulations of movement of forest produce permits and passes.

Accounts and returns connected with the removal of produce by right-holders and free grantees as under:-

- Return showing free grants of timber & other produce.
- Return showing grants to right-holders of timber and produce.
- Permits and passes.
- Accounting of seized and confiscated produce.

Shortage or losses. permissible limits and their accounting.

OFFICE PROCEDURE (9)

- Records of Forests and their maps and boundaries, annual plan of operations. Damage report register-compensation register and prosecution register.

- Record of stocks of forms. Forest offence register, Fire occurrence register and Fire maps- posting of.
- Record of books-maintenance of books concerning rules and regulations up-to-date. Custody and maintenance of stock in serviceable condition; its receipt and dispatch; wear and tear, purchase and writing off unserviceable stock and its disposal.
- Stock register and its maintenance stock receipt books, uniform register, hammer register.
- General office procedure, routine correspondence with higher authorities & subordinates; its receipt, dealing and dispatch.
- List of returns. Reports, Records; files, cases and registers maintained in range office.
- Rules regarding maintenance of records- classification, preservation and destruction of useless records. Transfer of charge.
- Office Inspection of Range offices.

EXECUTION OF "CONSERVANCY AND WORKS"

(1)

- Various forms of contracts viz., piece work or petty contracts, schedule rates and lump-sum contracts and connected agreements and departmental execution procedures thereof.

Reference Books:

1	Lecture Notes on Forest Accounts & Office Procedure, Sathyan.D, IFS
2	Lecture Notes on Forest Accounts & Office Procedure, Ramesh Kumar, IFS
3	Forest Accounts & Procedure –(Hindi), Khanna, L.S

Special Lectures:

Sl. No.	Title	Resource Person
1	E-Office, IHRMS, PFMS	Expert from PAO Office
2	PAO-GFR	Expert from PAO Office
3	IFHRMS	Treasury Officer
4	Functioning of Ministry	Undersecretary of any ministry
5	Estimation and Tendering	CPWD
6	e-Tendering	CCU
7	Audit	Internal Audit, Ministry, AG Audit
8	Gem Procurement	iGoT

Field Visits:

Sl. No.	Topic	Place of Visit
1	M Book Recording	Sadivayal, Coimbatore
2	Visit to DFO office Estimate file Tender file	Within Campus

iGoT Courses:

Sl. No.	Title	Duration (Online hours)
1	General Financial Rule 2017: Knowledge and Various Provisions	00:12:37
2	Inventory Management	00:24:29
3	Office Procedure and Dak Managements	00:47:16
4	Do's and Dont's for Government Employees- Hindi	00:54:00
5	Leave Rules - Updated	00:55:00
6	Travelling Allowance	00:55:00
7	Role of Inquiry Officer in Disciplinary Proceedings (Hindi)	00:55:00
8	Conduct rules	00:55:28
9	Preventive Vigilance	00:57:44
10	Financial Administration	01:00:00
11	E-waste disposal	01:00:00
12	Records Management	01:00:00
13	Handling of Complaints	01:00:00
14	Procurement of Works	01:09:00
15	Government E Marketplace	01:09:05
16	Procurement of Goods and Services	01:10:00
17	Records Management	01:15:12
18	Benefits and Allowances for Government Employees	01:30:00
19	Finance and Accounts	01:35:00
20	Office Procedures	01:35:00
21	Basics of e-Governance & Digital India	01:35:19

22	Office Procedure - Updated	02:17:00
23	Disciplinary Proceedings in Government	03:57:00

Exam Pattern:

FOREST ACCOUNTS & PROCEDURE – 100 MARKS

Theory – 65 Marks (External)

Objective Type Questions

- | | | | |
|------|--------------------------------------|---|-----------------------|
| i) | Fill in the blanks | - | 10 Marks |
| ii) | Match the following | - | 10 Marks |
| iii) | True or False | - | 10 Marks |
| | Short Answer (3 questions x 5 marks) | - | 15 Marks (3 out of 4) |
| | Long Answer (2 Questions x 10 marks) | - | 20 Marks (2 out of 3) |

Internal Concurrent – 35 Marks

- | | | | |
|------|------------|---|----------|
| i) | Assignment | - | 10 Marks |
| ii) | Viva-Voce | - | 5 Marks |
| iii) | Quiz Test | - | 10 Marks |
| iv) | Group Work | - | 10 Marks |

IV – Major Tours

1. FORESTRY FIELD ORIENTATION TOUR PROGRAMME (TAMIL NADU & KERALA)

Day	FROM	TO	PURPOSE / USEFULNESS TO TRAINEES
1	Coimbatore	Anamalai Tiger Reserve, (Topslip and halt)	Enroute visit to Sarkarpathy <i>Trekking from Sarkarpathy to Topslip.</i> Research nursery, Study of Ficetoria and other research nursery activities and Study of locality factors - forest types, Tiger Reserve management - NTCA activities and tribal school management at Topslip. Halt - Topslip
2.	Anamalai Tiger Reserve (Topslip)	Parambikulam Tiger Reserve, Kerala & back	Visit to Parambikulam Tiger Reserve - Study of Eco tourism activities - Alternative employment to tribals and value addition in NTFPs like Amala, Ginger, Honey etc., - Visit to Kannimara teak. Halt - Topslip
3.	Anamalai Tiger Reserve (Local)		<i>Trekking to Pandaravari Peak</i> - Study of Evergreen Forest at Karian Shola and introduction to evergreen species and medicinal plants conservation area. Halt - Topslip
4.	Anamalai Tiger Reserve (Topslip)		Visit to Mount Stuart block – Hugo wood cemetery - Study of moist deciduous forests - Introduction to moist deciduous species - study of Teak plantations, introduction to seed stand - candidate plus trees, plus trees, clonal seed orchards, teak germ plasm bank at Erumaiparai. - Practical Mensuration exercises. Halt - Topslip
5.	Anamalai Tiger Reserve (Topslip)		Visit to Anaikundthi Shola - Study of forest types - Practical study and demonstration of camera trap wildlife census etc., Evening visit to elephant camp and study of elephant camp management. Halt – Topslip

6.	Anamalai Tiger Reserve (Topslip)	Valparai (Anamalai Tiger Reserve) (Attakatti)	Visit to Manampalli by trekking from Kozhikamuthi to Manampalli - Enroute visit to Koomatty tribal settlement - Study the livelihood activities and tribal issues. Study of forest types - LTM habitats and species identification at Banathiyar Shola. Halt - Valparai
7.	Valparai (Anamalai Tiger Reserve) (Local)		Trek to Grass hills - Study of forest types - Exposure on National Park management and legal provisions related to National Park. Halt - Valparai
8.	Valparai (Anamalai Tiger Reserve) (Local)		Study of Man animal conflict issues - Exposure to private forests, - Introduction to Tamil Nadu private forest act and HP Act areas and enforcement of Law. Afternoon visit to disaster management centre and study of the Man animal conflict management activities and Anti Poaching camp managements etc., Halt – Valparai
9.	Valparai (Anamalai Tiger Reserve)(Local)		Visit to Attakatti - Aliyar Research Nursery and introduction to Medicinal plants nursery and medicinal plants nursery techniques. Visit to Attakatti Training Centre. Return to Head Quarter

2. SOUTH INDIA TOUR PROGRAMME

DAY	FROM	TO	ACTIVITY
1.	Coimbatore	Nilambur	Visit to Silent Valley National Park. Study of eco system, LTM Conservation
2.	Nilambur	Thrissur	Study of Clear felling system followed in teak final felling, thinning and regeneration area. Visit to Teak Museum. Collector Conolly's Plot and Chatu Menon Teak Plantations. Proceed to Thrissur
3.	Thrissur	Thrissur	Visit to Kerala Forest Research Institute (KFRI) Peechi and learning about various forestry research activities.
4.	Thrissur	Thekkady	Visit to Periyar Tiger Reserve
5.	Thekkady	Thekkady	Study of Eco tourism, Eco development activities and Tiger Reserve Management activities in Periyar Tiger Reserve
6.	Thekkady	Tirunelveli	Travel to Tirunelveli enroute, visit to Ramco Cements Mines and Studying the mining of afforestation activities
7.	Tirunelveli	Tirunelveli	FN: Visit to KMTR and learning Eco - development activities
8.	Tirunelveli	Kanyakumari	FN: Briefing about PRA tools and techniques- PRA exercises in EDC villages and micro plan preparation AN: Travel to kanyakumari
9.	Kanyakumari	Kanyakumari	Visit to Arasu Rubber factory. Interaction with DFO Kanyakumari regarding forestry issues, sanctuary management etc.,
10.	Kanyakumari	Rameshwaram	Proceed to Rameswaram Enroute Visit to Suganthi Devadason Marine Research Institute, Tuticorin for Study of Coral Reef.
11.	Rameshwaram	Rameshwaram	Gulf of Mannar Marine National Park Management. Study of Gulf of Mannar Biosphere Reserve Trust (GOMBRT) activities. Visit to Marine Ecosystem.

12.	Rameshwaram	Trichy	Travel to Trichy : Enroute, visit to Tamil Nadu Plantation Corporation's (TAFCORN) pulpwood plantations. Study of point sampling techniques, pulpwood harvest, planting etc.,
13.	Trichy	Point Calimere	FN: Visit to Elephant rescue and rehabilitation centre, Trichy. Visit to Tropical Butterfly Park Conservatory learning butterfly conservation and management. AN: Proceed to Thanjavur learning Teak depot management. Travel to Point Calimere
14.	Point Calimere	Point Calimere	Bird census module by BNHS, including Bird census, Bird migration studies.
15.	Point Calimere	Chennai	Enroute visit to Pichavaram to study of mangroves forest management.
16.	Chennai	Chennai	Zoo Management module at AAZP, Chennai
17.	Chennai	Chennai	Zoo Management module at AAZP, Chennai
18.	Chennai	Chennai	FN: Visit to Advance Institute of Wildlife Conservation. AN: Visit to State Forest Research Institute, Kolapakkam, Chennai to learn research methodologies.
19.	Chennai	Chennai	AN: Visit to Integrated Regional Office, Chennai to learn the functioning of IRO.
20	Chennai	Coimbatore	Visit to National Biodiversity Authority. Return Journey to CASFOS, Coimbatore

2.1 SOUTH INDIA TOUR PROGRAMME (Part – II)

Day	FROM	TO	ACTIVITY	STAY
1	Coimbatore	Dharmapuri	Enroot visit to Vanathukkul, Tiruppur Nursery visit at Thoppur, Model nursery to study about vermicompost, vermicost production.	
2	Dharmapuri	Hosur	Visit to Rock afforestation site at Krishnagiri. Study of Human Wildlife conflict management at Hosur.	
3	Hosur	Bengaluru	Visit to University of Trans-Disciplinary Health Sciences.	
4	Bengaluru Local	Bengaluru Local	Visit to Karnataka State Forest Department to attend the ICT on Forest Management Module. Awareness Programme and pamphlet distribution at Aranya Bhavan , Karnataka	Bengaluru
5 & 6	Bengaluru Local	Bengaluru Local	Two days module on “Wood Technology” conduct by Institute of Wood Science and Technology (IWST) Bengaluru.	Bengaluru
7	Bengaluru	Dharwad / Dandeli	Eco-Tourism Module at Kali Tiger Reserve	JLR – KTR Dandeli
8	Dandeli	Dandeli	Eco-Tourism Module at Kali Tiger Reserve	Dandeli
9	Dandeli	Dandeli	Visit to Timber Extraction site and Timber Depot	Dandeli
10	Dandeli	Dandeli	Visit to Wildlife Rescue and Training Centre	

3. NORTH INDIA TOUR PROGRAMME

S. No	Name of the State	Expected Learnings	Modules to be conducted	Institutes/Organizations to be covered
1	Uttrakhand	Applications of GIS in Forestry Study of Forest types of Himalayas PA & Wildlife Management Wildlife Mitigation measures undertaken along the wildlife corridor of Rajaji NP. Geology	GIS Module at FSI Module on Geology at Wadia Institute of Himalayan Geology	CASFOS, Dehra Dun FRI, Dehra Dun. Forest Survey of India Wadia Institute of Himalayan Geology, Wildlife Institute of India
2	Himachal Pradesh	Alpine forest ecosystem Ban oak forest management for watershed. Resin tapping in Chirpine		
2	Chandigarh-Delhi	Urban Forestry Soil & Water Conservation Vulture Conservation Initiative Zoo Management		WCCB – New Delhi NTCA, Delhi NCR
3	Uttar Pradesh	Taj Trapezium		
4	Rajasthan	Wetland ecosystem & Bird conservation GIB conservation project, Sand Dune Stabilisation		
5	Gujarat	Management of Asiatic Lion Population in GIR Landscape Conservation efforts under CSR Marine national Park Management.		GEER Foundation

3.1 NORTH INDIA TOUR PROGRAMME

Day	FROM	TO	ACTIVITY	STAY
1	Coimbatore	Junagadh	Arrival Junagadh. Proceed to Sasan Gir & Stay	Sasan Gir
2	Sasan GIR	Sasan GIR	Visit to GIR National Park and Study of Asiatic Lion habitat, its management and interaction with the Field Officers.	Sasan Gir
3	Sasan GIR	Dwarka	Tata Chemicals - Conservation activities under CSR.	Dwarka
4	Dwarka	Jamnagar	FN: Morning visit to Marine National Park. AN: Visit to Greens wild animal Rescue centre.	Jamnagar
5	Jamnagar	Ahmedabad	Enroute visit to Dhrangdhara Wild Ass Sanctuary.	Ahmedabad
6	Ahmedabad	Ahmedabad	Visit to GEER Foundation, visit to Indroda Nature Park and Biodiversity Park. Interaction with GEER Foundation authorities.	Ahmedabad
7	Ahmedabad	Udaipur	Travel	Udaipur
8	Udaipur	Udaipur	Visit to Sajjangarh Biological Park and Chirwa Ghati	Udaipur
9	Udaipur	Jodhpur	FN: Travel to Jodhpur. AN: Visit to AFRI, Jodhpur.	Travel
10	Jaisalmer	Jaisalmer	Conservation Breeding program of GIB. Visit to Thar desert to study Desert ecosystem.	Travel
11	Jaisalmer	Jaipur	Travel	Jaipur
12	Jaipur	Bharatpur	FN: Visit to Jhalana Leopard Reserve AN: Travel to Bharatpur	Bharatpur
13	Bharatpur	Dehradun	FN: Visit to Keoladeo Ghana NP. AN: Visit to Taj Trapezium & Return. Night Departure to Dehradun	Travel
14	Dehradun	Dehradun	FN: Visit to GIS Module at FSI. AN: Module on Geology at Wadia Institute of Himalayan Geology, Dehradun.	Dehradun

15	Dehradun	Dehradun	Interaction with DFE & Visit to FRI & WII.	Dehradun
16	Dehradun	Jim Corbett TR	FN: Departure from Dehradun to Jim Corbett TR AN: Interaction with Officials of Jim Corbett TR.	Jim Corbett TR
17	Kathgodam	Delhi	FN: Jungle Safari, Forest & Wildlife Protection. AN: Travel	Travel
18	Delhi	Chandigarh	FN: Visit to National Zoological Park. AN: Travel	Chandigarh
19	Chandigarh	Chandigarh	FN: Visit to Bird Park. AN: Visit to Sukhna lake to study about the success of water conservation system.	Chandigarh
20	Chandigarh	GHNP	FN: Travel from Chandigarh to GHNP. AN: Enroute Visit to - Pinjore (Haryana) - Vulture Conservation and Breeding Centre.	GHNP
21	GHNP	Manali	FN: Trekking at GHNP. AN: Travel to Manali	Manali
22	Manali	Manali	Visit to Gulaba (Foresters Folly), Pinetum and then to Rohtang Pass.	Manali
23	Manali	Dharamshala	Enroute visit to Dhauladhar Nature Park.	Dharamshala
24	Dharamshala	Dharamshala	Study of Ban Oak Forest management for watershed. Resin tapping in Chirpine.	Dharamshala
25	Dharamshala	Katra	Travel	Katra
26	Katra	Katra	Shivalik Eco-system	Katra
27	Katra	Coimbatore	Travel via New Delhi	Coimbatore

4. CENTRAL INDIA TOUR PROGRAMME

Day	FROM	TO	PURPOSE / USEFULNESS TO TRAINEES
1.	Coimbatore	Thane	Dep.: Coimbatore to Thane
2.	Thane	Thane	Study of Mangrove Ecosystem Stay at Thane.
3.	Thane	Thane	Study of Habitat Management, Urban Leopard management at Sanjay Gandhi National Park, Borevelli and return to Thane. Stay at Thane
4.	Thane	Nagpur	Visit to Bombay Natural History Society.
5.	Nagpur	Pench	Travel from Nagpur to Pench (Maharashtra) Stay
6.	Pench	Nagpur	Study of Habitat Management, Rapid Action force in Man-animal conflict, study of Elevated corridor for safe passage of animals. Return to Nagpur and stay.
7.	Nagpur	Chandrapur	Visit to FDCM Maharashtra (FN) Travel to Chandrapur & stay at Chandrapur
8.	Chandrapur	Chandrapur	Visit to Central Nursery, felling Coupes, Teak plantation and study of silvicultural operations of Teak. Visit to Science city.
9.	Chandrapur	Chandrapur	Visit to Tadoba NP, to Study the habitat management, Man- animal conflict, M- Stripes etc., and back to Chandrapur.
10.	Chandrapur	Chandrapur	Visit to Central Teak timber depot at Balarpur and study of Bamboo working, NTFP working back to Chandrapur
11.	Chandrapur	Kanha	Travel to Kanha National Park
12.	Kanha NP	Kanha	Habitat Study, Boma technique, EDC
13.	Kanha	Bhopal	Travel Bhopal
14.	Bhopal	Bhopal	IIFM Module
15.	Bhopal	Bhopal	Forest Fire Module visit to tribal museum
16.	Bhopal	Chennai	Dep.: Bhopal to Coimbatore

5. EAST INDIA TOUR PROGRAMME

Sl. No.	Place of visit	PURPOSE / USEFULNESS TO TRAINEES
1	Andaman & Islands	Study of Island Biodiversity & Management Practices Modules: 1. Forest Resource Management Module 2. Module on Forest Types and Silvicultural System (Selection system) 3. Marine Wildlife Management Module Institutes visit: Govt. Saw Mill Chatham, Zoological Survey of India, Regional Office, Port Blair
2	North East	Role of Community Ecotourism and Wildlife Conservation Modules: 1. Community based Eco-tourism Module Conservation & Management practices of 5 major wild animals in Kaziranga Institutes visit: CASFOS, Burnihat
3	West Bengal & Orissa	Wildlife & Habitat Management Practices in East India Modules: 1. Module on Forest Types and Silvicultural System (Selection system) 2. Module on advance tools and technology in forest management (IT wing – Odisha Forest Department) Institutes Visit: 1. Botanical Survey of India 2. Zoological Survey of India 3. Wildlife crime control bureau, Kolkata.

5.1 EAST INDIA TOUR PROGRAMME

DAY	FROM	TO	ACTIVITY	STAY
	Coimbatore	Chennai	Travel to Coimbatore to Chennai	Stay at Chennai
1	Chennai	Port Blair	Travel to Port Blair Visit Govt Saw Mill, Chatham Visit Zoological Survey of India, Port Blair Cellular Jail National Museum (Light & Sound Show)	Stay at Port Blair
2.	Port Blair	Havelock Island	Visit to Swaraj Dweep/ Havelock Island Eco tourism initiatives at Elephant/ Radhanagar Beach, Havelock Island. Visit Ross Island	Stay at Port Blair
3.	Port Blair	Baratang	Visit Lime Stone Caves and Mud Volcano at Baratang Study of Rafting of timber at Baratang Study Timber Depot Management Visit to Timber Extraction site Study of Silviculture System & NRA activities followed in Andaman	Stay at Port Blair
4.	Port Blair	Wandoor	Visit to Mahatma Gandhi Marine National Park, Wandoor to study the Marine Wildlife Management interventions Study of Coastal Regulation Zone Management Interaction with PCCF, Andaman & Nicobar Islands	Stay at Port Blair
5.	Port Blair	Kolkata	Travel from Port Blair to Kolkata	Stay at Kolkata
6.	Kolkata	Sundarbans	Visit to Botanical Survey of India Travel to Sundarbans by Road	Stay at Sundarbans
7.	Sundarbans	Sundarbans	Visit to Sundarbans National Park Study Challenges in management of National Park Conservationbreeding of Northern River Terrapin	Stay at Sundarbans

8.	Sundarbans	Kolkata	Travel to Kolkata Visit to Zoological Survey of India Attachment with WCCB, Kolkata	Stay at Kolkata
9.	Kolkata	Guwahati	Travel to Guwahati by flight Interaction with Principal, CASFOS, Burnihat	Stay at Burnihat
10.	Burnihat	Shillong	Departure to Shillong, Meghalaya Visit Mawphlang Sacred Groves (on the way visit subject to availability of time)	Stay at Shillong
11.	Shillong	Shillong	Trek to Mawlynong village, Living root bridge Meghalaya Study of community eco-tourism in Mawlynong village	Stay at Shillong
12.	Shillong	Kaziranga	Travel to Kaziranga	Stay at Kaziranga
13.	Kaziranga	Kaziranga	Visit to Kaziranga National Park Strategies and Management challenges of Kaziranga National Park	Stay at Kaziranga
14.	Kaziranga	Guwahati	Departure to Guwahati	Stay at Guwahati
15.	Guwahati	Bhubaneswar	Travel to Bhubaneswar	Stay at Bhubaneswar
16.	Bhubaneswar	Bhubaneswar	Attachment with IT wing of PCCF office study about PDA and its implementation Visit to Nandankanan	Stay at Bhubaneswar
17.	Bhubaneswar	Bhubaneswar	Visit to Chilika lake, marine biodiversity, dolphin conservation and avifauna conservation	Stay at Bhubaneswar
18.	Bhubaneswar	Bhubaneswar	Visit to Puri and Konark for studying coastal afforestation	Stay at Bhubaneswar
19.	Bhubaneswar	Bhubaneswar	Visit to Barbara Forest to study the timber coupe working and Bamboo coupe working and relevant silvicultural systems	Stay at Bhubaneswar
20.	Bhubaneswar	Bangalore	Travel from Bhubaneswar to Bangalore	Travel
21.	Bangalore	Coimbatore	Travel from Bangalore to Coimbatore	Coimbatore

V – Guest Lectures

S.No	Name of the Lecturer	Topic
1	Dr. Ramachandran, IFS (Retd.,)	Overview of forestry
2	Dr. Jagdish Kishwan, IFS (Retd.,)	Recent Development in Climate change Negotiation
3	Dr. H.N. Kumara, Principal, Scientist, SACON, Coimbatore	Biodiversity and Conservation
4	Shri. A. Pavendan, Founder, Tamil Nadu Butterfly Society	Identification of Butterflies
5	Shri. R. Maniyarasu, Executive Engineer, PWD	Art of Photography and Wildlife photography
6	Dr. Monali Sen, IFS, Wildlife Institute of India, Dehradun	Current Challenges in Wildlife Management (Through Online mode)
7	Mr. S. Narayanan, Member Secretary, Haryana state Pollution Control Board	Legal provision and Remedies to Mitigate Pollution
8	Dr. K. Sankar, Director (Retd.), SACON	Bio Diversity Conservation and Management-Tiger Census Techniques
9	Shri. E. Vikram, IFS, CF, Soaln, HP	Forest Fire Monitoring
10	Dr. Nagaraj Hedge, Asst. Professor, Dept of Forests., Mizoram University	Special Lecture on Forest Utilization- I (Through Online Mode)
11	Dr. N.S. Manoharan, M.V. Sc., Addl., Director of Veterinary Service and Forest Veterinary Officer (Retd.), Coimbatore	Special Lecture on BDCM
12	Shri. George Eapen, CEO, Fenzgard India Pvt.LTd	Safety & Efficiency of Electric Fences
13	Ms. Kavi Varshini. S, Forest Campus, Cbe.	Bird Watching
14	Shri.V.S.N.V. Prasad, IFS Special Commissioner & Exet., Director, Rural Development Dept., Telangana.	Harithaharam Project
15	Shri. Dheeraj Mittal. IFS, MoEF&CC, New Delhi.	COP 27
16	Dr.Yadvendradev V. Jhala, Dean & Scientist-G, WII	Cheetah Reintroduction
17	Dr.Mewa Singh, Professor, Indian Primatologist, Biopsychology Department, University of Mysore.	Management of Forest Dwelling & Commensal Species
18	Dr. R. Tolstoy and Dr. Kavitha, PSG Hospital	Special Session on General Health and Healthy Diet

19	Dr. K. Ravichandran, IFS, Director, IIFM, Bhopal.	Global Prospective on Sustainable Forest Management
20	Shri.K.C.A. Arun Prasad, IFS, APCCF, Rajasthan State Forest Department	Case Study on mass mortality of Avifauna in Rajasthan state
21	Shri. Bharat Jyoti, IFS, Director, IGNFA, Dehradun	Special lecture
22	Shri. Manoj Kumar, IFS, APCCF and M.D., Mysore Sales International Limited, Karnataka Forest Department	Special lecture
23	Shri. Arun, Inspector of Police, Cybercrime, Coimbatore	Creating Awareness about social media and Digital Technologies
24	Dr. M.M. Dominic Savio, Scientist-E, IFGTB, Coimbatore	Rediscovery of Bamboos
25	Dr. P. Azhagarasi, MD, (Siddha), Professor & Head, Trichy	Role of Medicinal Plants in Indian Medicine – Siddha Perspectives
26	Mr. G. Venkatesh, FRO, ATR, Valparai Range	Case Study on Booking of wildlife cases under Prevention of Money Laundering Act, 2002
27	Dr. B.A. Daniel, Zoo, Outreach Organisation Trust	Module on Conservation Action Module- NGO's Perspective
28	Shri. Krishna Mohan, IAS (Retd.,)	Special Lecture on “Ethics in Public Governance”
29	Shri .C.S. Koteeswaran, Chief of Bureau, Daily Thanthi and Shri. P. Oppili, Senior Journalist, TIMES OF INDIA	One day special Module on Media Management
30	Dr. P.T. Umashankar, Consultant, Asian Development Bank, Chennai.	One day Module on Urban Landscaping
31	Ms. Gayathri. PG, IRS, Joint Commissioner, Chief Commissioner Office, Cochin	Gender Sensitization
32	Dr. Dominic Savio, Scientist 'E', IFGTB	Special lecture on Bamboo
33	Dr. Bhuvaneswaran, Scientist 'F', IFGTB	Special lecture on Agroforestry
34	Dr. K. T. Parthiban, Professor, FC & RI, Mettupalayam	Special lecture on Consortium Agroforestry
35	Dr. Balasuramaniam, Professor, FC & RI, Mettupalayam	Special lecture on Precision Agriculture
36	Ms. Sudha Ramen IFS, TNFD	Special lecture on Forest Fire / Treepedia
37	Dr. K.A. Venkatesan, Scientific Officer 'H', IGCAR, Kalppakkam	Special lecture on Fire modelling
38	Shri Kannan, DCF	Special lecture on vermiculture

39	Dr. A. Anbu, Eco Development Officer, KMTR	Rock Afforestation
40	Shri Deepak Bilgi, IFS, Mission Director of the Tamil Nadu Coastal Restoration Mission	Special lecture
41	Dr. Edward JK Patterson, Marine Biodiversity	Marine Plastic Pollution
42	Dr. Balachandran, Deputy Director, BNHS	Bird Identify & Bird Migration
43	Dr. Somasekar, Atul Gupta	Medicinal Plants Conservation
44	Shri. P. Raghu Ram. Singh, IFS, (Retd.), PCCF, TNFD	Tiger Monitoring
45	Shri. R.K. Bharti, IFS (Retd.) Dr.R.Gopalan, (Retd.)	Field Botanisation
46	Dr.Arumgum.S, BSI, Cbe. &Dr. V. Ravichandran, BSI, Cbe	Field Botanisation
47	Ms. Bavithaa, Advocate	Prevention of sexual Harassment of women at workplace
48	Shri K. Srinivasan, IA & AS,General (GASAB), New Delhi	Audit Sensitisation
49	Dr.V.S. Vijayan, Founder Director, SACON	Conservation and Sustainable Development
50	Shri D. Boominathan, Landscape Coordinator with WWF- India, Wildlife Biologist and Elephant Conservation Expert	Elephant Conservation and Human - Elephant Conflice Mitigation in the Nilgiri Biosphere Reserve, Elephant Behavior, Ecology, Corridors, Conflice Mitigation and Translocation
51	Shri C. Srinivasan, Vellore, Project Director- Solid & Liquid Resource Management, Swachh Bharat Mission - Resource person, MoHUA, GoI	Special Lecture on Solid Waste Management module on "Garbage to Gold"
52	Dr. I. Sekar, Ph.D., FC&RI	World Wood Day - Forest and Food
53	Shri Prabhakaran, Conservator of Forests & Field Director	Special lecture on mountaineering
54	Shri. T.V. Manjunatha, IFS, (Retd.) Additional Principal Chief Conservator of Forests, TNFD	Special lecture on working Plan preparation
55	Shri. C.M. Ammanavar, Deputy Conservator of Forests (Retd.), Karnataka	Special lecture on working Plan preparation
56	Shri N. Bharathi (Growmore)	Special lecture on biotechnology
57	Shri Manusathiyen, DCF, Kerala	Implementation of Hawk app.

58	Shri Vijayanathan, CCF, Kerala	Special lecture on Forest Right Act 2006.
59	Shri Rajkumar, CF & FD, STR	Special lecture
60	Shri K. Ganesh Kumar, CCF, IFGTB	Special lecture
61	Shri S. Narendra Babu, IFS, DCF	Case Study on Human Wildlife conflict
62	Smt T. Uma, IFS, CCF, Kerala	Case study on elephant poaching
63	Dr. J. Justin Mohan, IFS, APPCF (Eco Development and Tribal Welfare) with additional charges of APCCF (Forest, Land and Resources)	Special lecture on Biodiversity Act 2002.
64	Shri. Udayan, IFS	Special lecture on Anti-Poaching Camp
65	Smt Sonali Ghosh, IFS, DIGF, Central Zoo Authority	Special lecture
66	Shri RSC. Jayaraj, IFS (Retd.,) AGMUT	Special lecture
67	Dr. Balaji, IFS (Retd.), PCCF, TNFD	Special lecture on JFM.
68	Dr. C. Ramesh, IFS, CCF, FD, Manas National Park, Assam	Special lecture
69	Dr. M. Sivaguru Prabhakaran, IAS, Coimbatore Corporation Commissioner	Special lecture
70	Dr. V. Irai Anbu, IAS (Retd.,)	Special lecture
71	Dr. Darshan Kumar J., Drone Engineer, Kumaraguru Institutions, Coimbatore	Special Lecture on Drone applications
72	Mr. D. Raghavan, Head of Operations, Indian Geoinformatics Centre	Special lecture on survey using DGPS

VI– Full list of iGoT Courses with KCM Competency Mapping

List of iGoT Courses recommended for SFS Induction Course Officer Trainees			
Sl. No.	Course Title	Duration	KCM competency mapping
1	General Financial Rule 2017: Knowledge and Various Provisions	0:12:37	Functional
2	Training Module on Swachata Hi Seva - 2024	0:20:00	Behavioural
3	Overview of Infrastructure in Civil Engineering	0:20:30	Domain
4	Internet of Things	0:21:05	Functional
5	A simple stretch to stretch your life	0:21:28	Behavioural
6	Sustainable Development Practices	0:22:00	Domain
7	Orientation Module on Mission LiFE	0:22:59	Functional
8	Cyber Security best Practices for an Organization	0:23:34	Functional
9	Inventory Management	0:24:29	Functional
10	Comparative Statements	0:24:45	Domain
11	Etiquette	0:27:24	Behavioural
12	Yoga Break at Workplace	0:27:54	Functional
13	Safe practices while doing excavation	0:28:00	Domain
14	Basics And Types of Fire with Handling of Fire Extinguisher	0:28:39	Domain
15	Building Materials and their Measurements	0:30:00	Domain
16	ITR Filing for Salaried Individuals	0:30:15	Domain
17	Getting Along with the Boss	0:31:07	Behavioural
18	Understanding Right to Information Act	0:32:00	Functional
19	Introduction to Leveraging AI and ChatGPT	0:34:36	Functional
20	Code of Conduct for Government Employees	0:35:00	Functional
21	Green Building Concept	0:35:00	Domain
22	Problem Solving	0:35:00	Behavioural
23	Decision Making	0:35:00	Functional
24	Biodegradable Waste Management	0:35:00	Domain
25	Rain Water Harvesting	0:37:13	Domain
26	Roles and Responsibilities as part of Disaster Management Plan	0:37:50	Domain
27	Body weight Management and Exercises	0:38:11	Domain

28	Cyber Security and Strategy	0:38:22	Functional
29	Hazard Identification, Risk Assessment and Control	0:39:46	Domain
30	Plastic Waste Management	0:40:00	Domain
31	Grey Water Management	0:40:00	Domain
32	Deforestation	0:40:10	Domain
33	Managing Personal Relationships	0:41:33	Behavioural
34	Anger Management at Work Place	0:43:01	Behavioural
35	The Drone Rules	0:44:00	Behavioural
36	Contempt of Court	0:45:00	Functional
37	Mess Etiquettes and Table Manners	0:45:01	Behavioural
38	Fire prevention and detection	0:46:14	Domain
39	Review of Financial Statements and Analysis	0:47:00	Domain
40	Office Procedure and Dak Managements	0:47:16	Functional
41	Introduction to Economics	0:47:38	Domain
42	Right to Information Act 2005	0:48:30	Functional
43	Sustainable Development Goals	0:49:00	Functional
44	Gender Sensitization -2	0:50:00	Behavioural
45	Solar Energy	0:50:24	Domain
46	Plywood Manufacturing Technology (PMT)	0:50:57	Domain
47	Introduction to Bharatiya Nyaya Sanhita, 2023	0:52:42	Functional
48	Do's and Dont's for Government Employees- Hindi	0:54:00	Functional
49	Common Yoga Protocol English	0:54:44	Behavioural
50	Cadre Review of Central Civil Services	0:55:00	Functional
51	Personal and Organizational Value	0:55:00	Behavioural
52	Leave Rules - Updated	0:55:00	Functional
53	Travelling Allowance	0:55:00	Functional
54	Right to Information Act - Part 1	0:55:00	Functional
55	Search, Seizure and Arrest under The Customs Act, 1962.	0:55:00	Domain
56	Role of Inquiry Officer in Disciplinary Proceedings (Hindi)	0:55:00	Functional
57	Conduct rules	0:55:28	Functional
58	Wood Seasoning and Preservation	0:56:55	Domain
59	Preventive Vigilance	0:57:44	Functional
60	Gender Sensitivity	0:59:00	Behavioural
61	Financial Administration	1:00:00	Functional

62	E-waste disposal	1:00:00	Functional
63	Records Management	1:00:00	Functional
64	Handling of Complaints	1:00:00	Functional
65	Management Fundamentals in Government Services	1:00:00	Behavioural
66	ChatGPT and Generative AI tools for Government Officials	1:00:00	Domain
67	e-Ustad: Soft Skills and Communication Skills	1:00:00	Behavioural
68	Workplace Wellbeing	1:02:49	Behavioural
69	Overview of Viksit Bharat 2047	1:03:41	domain
70	Mobility Training	1:04:08	Functional
71	WOOD PRESERVATION	1:04:53	Domain
72	Emotional Intelligence	1:05:00	Behavioural
73	Formalities of Joining Service	1:05:00	Functional
74	Dos and Don'ts of Disaster Preparedness	1:05:00	Domain
75	Motivation	1:05:00	Behavioural
76	Introduction to Watershed Management	1:05:55	Functional
77	Public Procurement of Goods	1:07:00	Domain
78	Increasing your Emotional Quotient	1:07:01	Behavioural
79	Physical Fitness and injuries	1:08:36	Domain
80	Seed Handling and Nursery Technique for Sandalwood	1:08:59	Domain
81	Procurement of Works	1:09:00	Domain
82	Soil Erosion and Conservation	1:09:02	Domain
83	Government E Marketplace	1:09:05	Functional
84	Rain Water Harvesting	1:09:17	Behavioural
85	Medicinal Plants: Conservation Development and Sustainable Use	1:10:00	Domain
86	Landmark Judgments- RTI Act, 2005	1:10:00	Functional
87	Procurement of Goods and Services	1:10:00	Functional
88	Basics of Communication	1:10:00	Behavioural
89	Implementation and Change Management	1:12:56	Functional
90	Responsible AI in the Generative AI Era	1:14:23	Functional
91	Gender Sensitization - 1	1:15:00	Behavioural
92	AI led Digital Transformation in Urban Governance	1:15:00	Domain
93	Public Administration	1:15:00	Domain
94	Digital safety essentials	1:15:00	Functional
95	Time Management	1:15:00	Behavioural

96	Solar Energy its Need and Uses	1:15:05	Behavioural
97	Records Management	1:15:12	Functional
98	Stay Safe in Cyber Space	1:16:41	Functional
99	New TAX Regime	1:17:42	Functional
100	Energy Management	1:19:43	Functional
101	Development Challenges in Tribal Areas and Aspirational Districts	1:21:24	Domain
102	Right to Information Act - Part 2	1:22:00	Functional
103	Conduct Rules	1:22:17	Functional
104	Introduction to BharatiyaNagarik Suraksha Sanhita, 2023	1:22:36	Functional
105	Team Building	1:25:00	Behavioural
106	Delegation of power in day-to-day administration	1:25:00	Functional
107	Team Building and Team Management	1:25:00	Behavioural
108	Forest Fire Hazard and Safety-Disaster Response Training	1:25:00	Domain
109	BNSS And CRPC	1:25:00	Domain
110	Ways of Enhancing Presentation Skills	1:25:58	Functional
111	Gender Equality and Energy	1:26:09	Functional
112	Self-Leadership	1:26:43	Functional
113	Energy Conservation	1:29:00	Functional
114	Monitoring and Evaluation of Climate Mitigation Initiatives	1:30:00	Functional
115	Benefits and Allowances for Government Employees	1:30:00	Functional
116	Introduction: Basics of Project Management	1:30:00	Functional
117	Detailed Project Report	1:30:00	Domain
118	Redressal of Grievances (Sexual Harassment) of Women at Work Place	1:30:21	Functional
119	Overview of Gender Sensitization	1:31:33	Functional
120	Evaluation of Evidence	1:32:00	Functional
121	Forest Rights Act - English Version	1:32:19	Functional
122	Preventive Vigilance	1:33:26	Functional
123	Navigating Climate Challenges - A Guide for Civil Servants	1:34:35	Domain
124	Forensic science for Investigation Officers	1:34:53	Functional
125	Personal and Professional Effectiveness	1:35:00	Behavioural
126	Finance and Accounts	1:35:00	Functional
127	Intellectual Property Rights	1:35:00	Domain
128	Conflict Resolution and Negotiation	1:35:00	Behavioural

129	Office Procedures	1:35:00	Functional
130	Basics of Disaster Management	1:35:00	Domain
131	Communication for Citizen Centricity	1:35:00	Behavioural
132	Leadership	1:35:00	Behavioural
133	Basics of e-Governance & Digital India	1:35:19	Domain
134	Understanding Motivation	1:35:48	Behavioural
135	Interpersonal Skills	1:37:41	Behavioural
136	Overview of Water Resources of India	1:39:49	Domain
137	Field Identification of Important Timbers Of India	1:40:08	Functional
138	Managing and Leading Teams	1:40:18	Behavioural
139	Disaster Management and Preparedness-Disaster Response Training	1:45:00	Functional
140	Problem Solving and Decision Making	1:45:00	Behavioural
141	Public - Private Partnership	1:50:58	Domain
142	Critical Thinking	1:51:05	Behavioural
143	Art of Storytelling	1:51:27	Behavioural
144	Prevention of Sexual Harassment of Women at Workplace	1:51:59	Behavioural
145	Purpose-Driven Leadership	1:55:36	Behavioural
146	Cyber and CDR Analysis	1:57:06	Behavioural
147	Butterfly Diversity and Identification	1:57:20	Domain
148	Proficiency in technical and scientific writing	1:58:11	Functional
149	Noting and Drafting	2:00:00	Functional
150	Water Use Efficiency	2:04:58	Domain
151	Digital Literacy	2:06:35	Functional
152	BASICS OF CLIMATE CHANGE: Science Behind Stories	2:11:43	Domain
153	Maintenance of Land and Building Assets	2:14:20	Functional / Domain
154	Leading the Karmayogi Way	2:15:00	Behavioural
155	Equity: Competency Framework	2:16:08	Behavioural
156	Office Procedure - Updated	2:17:00	Functional
157	Time Management	2:20:00	Behavioural
158	Biodiversity Conservation	2:21:39	Domain
159	Water Pollution and Management Approaches	2:30:00	Domain
160	Used Water Management	2:30:00	Domain
161	The Civil Procedure Code, 1908	2:47:56	Domain

162	Digital Forensics (Managing digital evidences and e-Investigation)	2:48:00	Functional
163	Embracing Change	2:53:02	Behavioural
164	Reading Deeply	2:54:48	Behavioural
165	Fundamentals of Public Policy	2:54:48	Functional
166	Urban Planning, Development and Climate Change	3:09:35	Domain
167	Emotional Intelligence	3:16:57	Behavioural
168	Vigilance Guidelines Part 1	3:29:08	Behavioural
169	Negotiation	3:45:21	Behavioural
170	Disciplinary Proceedings in Government	3:57:00	Functional
171	Tree Improvement	4:14:36	Functional
172	Nursery Techniques	4:45:00	Functional
173	Making Decisions	4:54:52	Behavioural
174	River and Wetlands	5:07:00	Domain

VII – Trekking Programmes

TREKKING ROUTES					
S. No	Range	Name of the Trekking Routes	Starting Point	Ending Point	Distance in KM
Coimbatore Forest Division					
1	Coimbatore	Maruthamalai Temple to Anuvavi Subramaniyar Kovil	Maruthamalai Adivaram	Anuvavi Subramaniyar Kovil Basement	6 KM
2	Coimbatore	Dhoomanur to Perumalmudi	Anaikatty - Dhoomanur Road Junction	Perumalmudi & Back	12 KM
3	Bolampatti	Siruvani Filter Station to Kerala Border	Siruvani Filter Station	Tamil Nadu, Kerala Border & Back	10 KM
4	Bolampatti	Poondi Temple to Vellingiri Top & Back	Poondi Temple	Vellingiri Hills Top & Back	12 KM
5	Bolampatti Range	Kovai Kutarlam to Chinna Kunjiramalai	Kovai Kutarlam Falls	Chinna Kunjaimalai & Back	10 KM
6	Coimbatore and Bolampatti	Narsipuram to Anaikkadu and Dhoomanur	Narsipuram	Dhoomanur	12 KM
7	Periyanaicken palayam	Palamalai Pirivu - Melmudi – Nadukandaanpoli - Thadagam	Palamalai Pirivu - Melmudi	Nadukandaanpoli - Thadagam	12 KM
8	Periyanaicken palayam	Palamalai adivaram – Palamalai Kovil	Palamalai adivaram	Palamalai Kovil (by Forest Road)	7 KM
9	Periyanaickenpalayam & Karamadai	Palamalai Adivaram to Velliangadu Pirivu	Palamalai Adivaram	Velliangadu Pirivu	12 KM
10	Karamadai	Velliangadu Check post to Athikadavu River (By Road)	Vellinagadu Check post	Athikadavu River (By Road)	10 KM

11	Karamadai & Mettupalayam	Barlikadu to Pathirakaliamman Kovil- chain gate	Barlikadu	Pathirakaliamman Kovil Chain gate	7 KM
12	Mettupalayam	Barliyar to Kallar	Barliyar	Kallar	5 KM
13	Mettupalayam	Kunjapanai to Mettupalayam Depot	Kunjapanai	Mettupalayam Depot	7 KM
14	Sirumugai	Vedar Colony to Kunukkumaduvu & Back	Vedar Colony	Kunukku maduvu & Back	10 KM
15	Sirumugai	Othimalai Adivaram to top & Back	Othimalai Adivaram	Othimalai Top	7 KM
Pollachi Forest Division					
16	Pollachi	Aliyar check post -Periyasolai	Pollachi Range / Aliyar Checkpost	Pollachi Range/ Periyasolai APW camp	8 KM
18	Pollachi & Valparai	Attakatty FRH-Varaiyattumalai	Valparai Range / Attakatty	Valparai Range / Attakatty	4 KM
17	Ulandy - Top slip	Dormitory Kariyanshola-Alamarapallam	Ulandy Range / Topslip	Ulandy Range / Topslip	8 KM
20	Ulandy - Top slip	Topslip- Ambuli-Koluman malai	Top slip-Ambuli	Koluman malai	7 KM
19	Valparai	Kadamparai Arch Trek Route	Kadamparai Arch	Upper Aliyar Dam	4.5 KM
23	Ulandy - Top slip	Topslip- Chinnar - Perunkundru	Topslip-Chinnar	Perunkundru	19 KM
21	Valparai	Valparai 36 Km hair bend to Kadambarai dam	Valparai 36 km Hair bend	Kadambarai dam	22 KM
22	Mamamboly	Urilikal to Manthiri mattum	Urilikal	Manthiri mattum	15 KM

Nilgiri Forest Division					
23	Naduvattam	Pandiar- Nilgiri peak	Pandiar	Nilgiri Peak-Pandiar	16 KM
24	Parsonsvally	Pandiar - Mukurthi peak - Fishing hut	Pandiar - Fishing hut	Porthimud	20 KM
25	Parsonsvally	Mukurthi dam-fishing hut- Western catchment 3	Mukurthi dam	Porthimund Dam	18 KM
26	Udhagai South	Avalanche Cauliflower Shola- Kolaribetta	Avalanche Cauliflower Shola	Upper Bhavani Earthen Dam	13 KM
27	Udhagai South	Avalanche cauliflower shola - Devarbetta	Avalanche Cauliflower Shola	Mulligoor	16 KM
28	Kil-Kotagiri	Karikkayur-Rangasamy Peak	Karikkayur	Rangasamy Peak	8 (Two way)
29	Kil-Kotagiri	Karikkayur - Porivarai Rock Painting	Karikkayur	Porivarai Rock Painting	3 (Two way)
30	Kotagiri/NES	Medand - Hallimoyar	Medand	Hallimoyar	8.66 KM
31	Coonoor/ Mettupalayam	Anaipallam - Pillur Dam dam	Anaipallam dam	Pillur Dam	5 KM
Mudumalai Forest Reserve - Masinagudi					
32	Udhagai North/Singara	Glenmorgan - Singara	Glenmorgan	Singara	5.5 KM
33	Udhagai North/Singara	Sholur - Bokkapuram	Sholur	Bokkapuram	6.5 KM
34	Udhagai North/Segur	Bikkapathi mund - Siriyur	Bikkapathi mund	Siriyur	8 KM
35	Udhagai North/Segur	Ebbanad - Anakellamman Temple	Ebbanad	Anakellamman Temple	9 KM
36	Segur	Anaikkatty - Mangalapatti STF Camp	Anaikkatty	Mangalapatti STF Camp	13 KM

Sathyamangalam Forest Reserve - Sathyamangalam Forest Division					
37	Vilamundy	Uppupallam - Bangalapadugai	Uppupallam	Bangalapadugai	6.5 KM
38	Vilamundy	Kallampalayam- Bangalapadugai	Kallam palayam	Bangalapadugai	5.8 KM
39	Talamalai	Thalamalai - Gejalatti	Thalamalai	Gejalatti	7.5 KM
40	Talamalai	Vinayakarkoil - Galidimbam	Vinayakarkoil	Galidimbam	3.1 KM
41	Talamalai	Vandipatti pallam - Alamalaikovil	Vandipatti pallam	Alamalai kovil	5 KM
42	Bhavanisagar	Ittari - Dhoddakombaikov il	Ittari	Dhoddakombai kovil	7 KM
43	T.N.Palayam	Punjaithoraiampal ayam – muniyappan kovil – Gundri	Punjaithoraiam palayam	Muniyappan kovil – Gundri	12 KM
44	T.N.Palayam	Bagavathinagar – Kannimaroothu - Anilnathan	Bagavathinagar – Kannimaroothu	Anilnathan	18 KM
45	T.N.Palayam	Punjaithoraiampal ayam – Navakinaru – Manikarai – Erumaikuttai	Punjaithoraiam palayam – Navakinaru – Manikarai –	Erumaikuttai	13 KM
46	T.N.Palayam	Kembanur colony - Koomathayyankov il -anilnatham	Kembanur colony	Koomathayyan kovil – anilnatham	10 KM
47	T.N.Palayam	Moolaka dambur - Karadisuttanannai – Gundri road	Moolaka dambur	Karadi suttanannai – Gundri road	5.5 KM
48	Kadambur	Magallithotti – Koviloor – Makkam palayam	Magallithotti – Koviloor	Makkam palayam	12 KM
49	Sathyamangalam	Dhimbam – Maadan kuttai- Kokkuvarai	Dhimbam – Maadan kuttai	Kokkuvarai	9 KM
50	Sathyamangalam	Uginium - Vengapathi	Uginium	Vengapathi	6.7 KM

STR - Hassanur division					
51	Hassanur	Devarnatham - Beddumandai	Devarnatham	Beddumandai	4 KM
52	Hassanur	Hassanur - AlamalaiKovil	Hassanur	Alamalai Kovil	4.6 KM
53	Jeeragahalli	Bellathur – Areakalmanda pam Kovil	Bellathur	Areakal manda pam Kovil	3.5 KM
54	Germalam	Neergundi pudur – Karayan kovil	Neergundi pudur – Karayan kovil	Neergundi pudur	6 KM

VIII – Counselling Group Meetings and Mandatory Library Sessions

As part of the holistic development approach adopted in this training programme, structured interventions have been incorporated to support both the academic and personal growth of Officer Trainees (OTs).

Counselling Group Meetings (CGMs)

To promote the overall well-being, emotional resilience, and professional grooming of the Officer Trainees, monthly Counselling Group Meetings (CGMs) are organized. The total batch is equally divided among the faculty members, with each faculty member acting as a Counselling Group Mentor for a designated group of trainees. These monthly meetings provide a structured platform for interaction, feedback and mentoring. The focus of CGMs is to foster a healthy learning environment, address individual or group concerns, encourage peer bonding and ensure the psychological and social well-being of the trainees during the rigorous course of training.

CGMs also serve as an important feedback loop between trainees and faculty, enabling the timely identification of concerns, performance challenges, and behavioural support needs, which are addressed with sensitivity and professionalism.

Mandatory Library Sessions

In order to cultivate academic discipline, research habits and independent learning, mandatory library hours are scheduled each week for all Officer Trainees. The library, being an essential resource hub, offers access to a wide range of books, journals, reports and digital resources relevant to forestry, environment, administration and allied fields.

Trainees are expected to regularly utilize the library facilities, and their participation is monitored and assessed based on key parameters like the number of hours spent in the library and the number of books borrowed during the course period.

These sessions are designed to support the academic components of the training, prepare trainees for assignments and field visits, and encourage them to explore topics beyond the classroom curriculum.

Together, the CGMs and library sessions form a vital part of the training ecosystem, ensuring that Officer Trainees receive both academic support and personal guidance throughout their journey at the Academy.

Annexure-1**Karmayogi Competency Model (KCM) Mapping****I PHASE**

S.No	Name of the Subject	KCM competency mapping
1.	General Botany / Mathematics	Domain
2.	Application of Modern Tools and Technology	Functional/Domain
3.	Silviculture- I	Functional/Domain
4.	Silviculture- II	Functional/Domain
5.	Forest Resource Assessment	Functional/Domain
6.	Forest Survey	Functional/Domain
7.	Forest Policy and Law	Domain
8.	Forest Engineering	Functional/Domain
9.	Ecology and Environmental Science	Domain
10.	Adverse Influence on Forest	Domain
11.	Forest Utilization- I	Functional/Domain
12.	Forest Utilization- II	Functional/Domain
13.	Forest Resource Management	Functional/Domain
14.	Natural Resource Management	Domain/Functional/Behavioural
15.	Environmental Economics	Domain

II PHASE

S.No	Name of the Subject	KCM competency mapping
1.	Biodiversity Conservation and Management	Functional/Domain
2.	Joint Forest Management, Rural and Tribal Development	Domain/Functional/Behavioural
3.	Human Resource Development and Management	Behavioural
4.	Forest Accounts and Procedure	Functional/Domain

III. Field Exercises

S.No	Name of the Subject	KCM competency mapping
1.	Road Alignment	Functional/Domain
2.	Engineering	Functional/Domain
3.	Working Plan	Domain/Functional/Behavioural
4.	Ecological Census Techniques	Functional/Domain

IV Modules

S.No	Name of the Modules	KCM competency mapping
1.	Management Plan module exercise	Functional/Domain
2.	Training module on Habitat Management in India and Behavioural Ecology and Conservation	Functional/Domain
3.	Drone Technology in Forestry	Functional/Domain
4.	Module on Forest clearances i.e., Parivesh portal, e - green watch, Wildlife clearance and Associated matters relating to the IRO	Functional/Domain
5.	Conservation of Medicinal Plants	Functional/Domain
6.	Eco tourism module	Functional/Domain
7.	Zoo Management	Functional/Domain
8.	RTI Module	Functional/Domain
9.	DGPS & total Station survey	Functional/Domain
10.	Ethics & Governance	Behavioural
11.	Module on Wood Technology	Functional/Domain
12.	Module on GIS Application in Forestry	Functional/Domain
13.	Module on Geology	Domain
14.	Module on Wildlife conservation and Management	Functional/Domain
15.	Module on Tiger Conservation and SOP's at NTCA	Domain/Functional/Behavioural

16.	Module on Wildlife Crime control Bureau	Domain/Functional/Behavioural
17.	Yoga & Meditation	Behavioural
18.	Special Task Force	Functional/ Behavioural
19.	Swimming	Functional
20.	Self Defense	Functional
21.	Motor Mechanics Module	Functional