

Annexure I

Course Contents for In-service Training of Foresters

Distribution of lectures for six months foresters

1. Timing - 1st Jan to 30th June & 1st July to 31st December

2. Calculation of Effective working days.

i) Total Days available in Six months 180

S NO.	Particulars	Days
(a)	Sundays excluding tour period	(-) 16
(b)	Gazetted Holidays excluding Tour Period	(-)07
	Total Available Days	157
	Distribution of days for Training	
i	Joining date	01
ii	Inauguration	01
iii	Relieving formalities	01
iv	Examination	10
v	Annual sports	05
vi	Cultural activities	01
vii	Preparation of results	03
viii	No. of lecture hours available in Forenoon 180	46
ix	No. of lecture hours available in Afternoon 148	
x	Excursion/ Field Practical on Saturdays	24
xi	Tours	65
	Total days	157

SUBJECT WISE ALLOTMENT OF LECTURE HOURS (60 MINUTES) FOR FORESTERS COURSE

COURSE CONTENTS FOR FORESTERS COURSE

SILVICULTURE

Theory: 35
A/NField
Practical:05
Field Ex.: 10 Days
Sat Excursion-2days

	Theory	Prac.	F.E
1. INTRODUCTION			
1.1 History			
1.2 Definition			
1.2.1 Forest and Forestry	1	-	-
1.2.2 Different branches of forestry			
2. ROLE AND IMPORTANCE OF FORESTS	2	-	-
2.1 Productive functions of forests			
2.1.1 Major and minor forest produce			
2.1.2 Rural dependence on forestry output.			
2.2 Protective functions of forests			
2.2.1 Environment protection			
2.2.2 Soil conservation			
2.3 Bioaesthetic functions of forests			
2.3.1 Urban forestry			
2.3.2 Recreation forestry and its impact on rural economy			
2.4 Employment in Forestry			
2.4.1 Direct employment in forestry activity			
2.4.2 Generation of indirect employment			
3. LOCALITY FACTORS			
3.1 Definition, classification and importance	6	-	1
3.1.1 Climatic factors			
3.1.2 Topographic factors			
3.1.3 Edaphic factors			

3.1.4 Biotic factors

4.	GEOLOGY, ROCK AND SOIL			
4.1	Classification of rocks and their characteristic	1	-	-
4.2	Igneous rocks			
4.3	Sedimentary rocks			
4.4	Metamorphic rocks			
5.	Soil	2	1	1
5.1	Formation of soil			
5.2	Soil profile			
5.3.	Physical, chemical & biological			
	5.3.1 Properties of soil.			
	5.3.2 Soil texture, soil structure, organic matter, soil fauna.			
5.4.	Soil nutrient			
5.5.	Correlation of geological formation with forests.			
5.6.	Classification of land forms & their significance in forestry.			
6.	CROP MORPHOLOGY	2	-	1
6.1	Definition and classification			
6.2	Canopy density and canopy class			
6.3	Nature of individual tree- dominant, suppressed, whipy, wolf etc.			
7.	SILVICULTURAL SYSTEMS			
7.1	Different systems and their merits and demerits, with applicability and resultant crop (citing examples).	3	-	1
	7.1.1 Clear felling systems			
	7.1.2 Coppice systems			
	7.1.3 Selection system			
	7.1.4 Shelter-wood system			
8.	FOREST MANAGEMENT	3	2	1
8.1	Working plans			
8.2	Definition of technical terms			
8.3	General idea on preparation of			
8.4	Working plans			
8.5	Control forms			
9.	FOREST REGENERATION	2	-	1
9.1	Different types and their comparative			

	Merits and demerits			
9.2	Natural regeneration			
9.3	Artificial regeneration			
10.	Regeneration operations	3	1	1
10.1	Method of inducing natural regeneration			
10.2	Introduction of exotics			
	10.2.1 Comparative merits and demerits with reference to indigenous species			
	10.2.2 Important exotic species introduced in the state			
10.3	Pure and mixed crop; their comparative merits and demerits			
10.4	Plantation Planning	1	1	-
	10.4.1 Survey & laying out of plot			
	10.4.2 Preparation of treatment map			
10.5	Nursery	3	-	1
	10.5.1 Planning and selection of site, fencing			
	10.5.2 Preparation of beds, polypot and sheds			
	10.5.3 Selection, and marking of plus trees			
	10.5.4 Seeding time, seed bed, weight, seed procurement, seed preservation			
	10.5.5 Seed treatment and sowing			
	10.5.5 Pricking out in permanent beds and polypots			
	10.5.6 Common nursery diseases, symptoms, casual organism, control and cure by application of insecticides and fungicides			
	10.5.7 Application of manures and fertilizers			
	10.5.8 Weeding, cleaning, watering and manipulation of shade			
	10.5.9 Hardening			
	10.5.10 Root pruning			
	10.5.11 Gradation			
	10.5.12 Root/shoot cuttings			
	10.5.13 Grafting/layering budding			
	10.5.14 Bamboo and its propagation through seeds, rhizome, nodes and vegetative means.			
	10.5.15 Clonal Propagation/Root Training/Modern Techniques.			
10.6	Plantation techniques	4	-	1
	10.6.1 Site cleaning, burning, contouring, stacking, digging			

		of pits and pit filling			
	10.6.2	Fencing, firelines and inspection paths			
	10.6.3	Sowing, dibbing, planting of cuttings and stump transplanting			
	10.6.4	Application of weedicides, pesticides, manure and fertilizers			
	10.6.5	Weeding, cleaning, gap filling and irrigation			
	10.6.6	Plantation techniques of some important species in the state.			
10.7	Cultural operations		2	-	1
	10.7.1	Tending-weeding, cleaning, climber cutting, pruning, cutting back, polarding Girdling etc.			
	10.7.2	Thining			
		Field Exercises on Saturdays- 2 Days			

FOREST UTILISATION

Theory: 12
Field Exercises: 1
Day
Field Tour: 3 Days

			Theory	Pract	Tours
1.	MAJOR FOREST PRODUCE				
	1.1	Structure and properties of wood	1	-	-
		Structure of wood			
	1.1.1	Pith, Annual ring, Heartwood, Sapwood, Grain, Texture, Medullary rays.			
	1.2	Properties of wood	1	-	-
		Weight, Hardness, Strength, Flexibility, Seasoning power, Moisture content in wood, Durability, Heating power, Combustibility, Colour and Odour.			
	1.3	Defects in wood	1	-	-
		Abnormal growth			
	1.3.1	KNOT – live knot, dead knot, twisted fibre, burrs, constriction due to climber.			
	1.3.2	Defects due to ruptures of tissues			
	1.3.2.1	Shakes			
	1.3.2.2	End splits			
	1.3.2.3	Surface cracking			

	1.3.2.4	Warping			
	1.3.3	Defects resulting from wounds			
	1.3.3.1	Pruning, broken branch, fissures damage, insect and parasite attacks.			
	1.3.3.2	Decays			
1.4		Preservation of timber	1	-	1
		Seasoning of timber			
	1.4.1	Air seasoning			
	1.4.2	Water seasoning			
	1.4.3	Kiln seasoning			
	1.4.4	Treatment of timber			
		1.4.4.1 Prophylectic treatment			
		1.4.4.2 Pressure treatment			
	1.4.5	Chemicals used in treatment ASCU, Creosote, Sleeper oil etc.			
	1.4.6	Stacking of timber			
	1.4.7	Defects during seasoning			
	1.4.8	Clamping of sleeper			
1.5		Logging	2	-	1
	1.5.1	Laying out of copues and tree marking, preparation of marking list			
	1.5.2	Felling			
	1.5.2.1	General principles and rules for felling			
	1.5.2.2	Felling tools, their efficiency and maintenance.			
	1.5.3	Sectioning, debarking and piece marking			
	1.5.4	Extraction and storage			
	1.5.4.1	Various methods of extraction			
	1.5.4.2	Various types of depots, their layouts			
	1.5.4.3	Various types of staking with grading and numbering			
	1.5.4.4	Maintenance of depot and depot records - registers, forms, transit challans, passing certificate, booking instruction for railway etc.			
	1.5.5	Disposal			
	1.5.5.1	Sale and distribution			
	1.5.5.2	Rights and privileges			
1.6		Conversion	1	-	-
	1.6.1	Hand sawing			
	1.6.2	Saw mills, saw mill checking			

1.6.3 Various standard commercial sizes including railway sleepers

2.	NON-WOOD FOREST PRODUCES	3	-	-
	(Relevant to the state only)			
2.1	Fibres and flosses			
2.2	Bamboos, canes, grasses and leaves.			
2.3	Oil seeds			
2.4	Tans and dyes			
2.5	Gums and resin			
2.6	Drugs and poisons			
2.7	Edible products			
2.8	Mineral products			
2.9	Rubber etc.			
2.10	Animal products horns/honey			
3.	IMPORTANT FOREST INDUSTRIES	-	-	1
	(Relevant to the state only)			
3.1	Katha industry			
3.2	Saw mills and furniture workshops			
3.3	Plywood mills and hard board factories			
3.4	Match industry			
3.5	Rayon industry			
3.6	Paper and pulp industry			
3.7	Agar oil industry			
3.8	Lac industry			
3.9	Resin based industries			
3.10	Bidi industry			
4.	IDENTIFICATION AND TRADE NAME OF IMPORTANT SPECIES IN THE STATE	1	-	-
5.	Method of – Collection, processing and marketing of forest produce.	1	-	-

Saturday Field Exercises- 1 Day

FOREST PROTECTION AND LAWS

Theory Hrs: 14

Practical –2

Saturday Ex.-1

Field Exercise-2 Days

		Theory	Pract	F.E
A.	FOREST PROTECTION			
1.	General Consideration	1	2	-
	1.1 Need of protection in forestry.			
	1.2 Classification of injurious agencies			
	1.2.1 Animals			
	1.2.2 Insects/Pests			
	1.2.3 Plants			
	1.2.4 Atmospheric agencies			
2.	Prevention – its importance			
B.	FOREST LAW			
1.	Legal concepts – General Act & Special Act	2	-	-
2.	Forest Regulation of the State concerned	2	-	-
	2.1 Definition of Forest Produce, Forest Officer, Cattle, River etc.			
	2.2 Constitution of Reserve Forests/Protected forests/Village Forests/Ancal Forests/Panchyat forests etc.			
	2.3 Protection of forests			
	2.4 General protection of forests and forest produce			
	2.5 Penalties and procedure for breach of Forest Rules – Compounding of forest offences.			
	2.6 Recovery of money due to Government			
3.	Powers of Forest Officers	2	-	-
	3.1 Offence reports/Investigation/Custody of seized Produce			
	3.2 Search & seizure procedure			
	3.3 Eviction			
	3.4 Arrest			
4.	Rules Regarding Forests	1	-	-
	4.1 Reserved trees			
	4.2 Trade permit			
	4.3 Free grant			
	4.4 Quarrying of stones etc.			
	4.5 Tree (Protection) Act.			

5	Transit Rules	1	-	2
	5.1 Issue of permit			
	5.2 Certificate of origin			
	5.3 Challan			
	5.4 Functions of Revenue stations(obligatory Check posts)			
	5.5 Control over saw mills and sawpits			
	5.6 Registration of traders property marks			
	5.7 Control over Forest Produce from private forests etc.			
	5.8 Marking hammers			
6.	Drift Timber Rules	1	-	-
	6.1 Categories of timber			
	6.2 Notice to claimants			
	6.3 Drift Mohals(for North-Eastern States only)			
7.	Rules for settlement and control of Forest Village	1	-	-
8.	Laws relating to forests, other miscellaneous rules and regulations	1	-	-
9.	Forest (Conservation) Act, 1980: procedure for preparation of report.	1	-	-
10.	Labour laws : Salient features	1	-	-
	Saturday Field Exercises			- 1 Day

FOREST ENGINEERING

Theory: 10
A/N Practicals: 8
Saturday Field Exercises: 2
Field Exercises: 11 Days
 Theory Pract. F E.

1.	Building Materials	2	-	5
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1.1	Stone			
1.1.1	Classification of rocks			
1.1.2	Requirement of good building stone			
1.1.3	Quarring of stone, blasting			
1.2	Bricks			
1.2.1	Characteristic of good brick			
1.2.2	Size of brick			
1.2.3	Properties			
1.3	Mortar			
1.3.1	Lime – Classification, storage and uses			
1.3.2	Sand – Classification and uses Bulking of sand			
1.3.3	Surkhi, uses			
1.3.4	Cement – Classification, storage, uses			
1.4	Cement concrete			
2.	Building	3	2	5
2.1	Selection and preparation of site			
2.2	Foundation			
2.2.1	Choice of foundation bed and its Preparation.			
2.2.2	Width and depth of foundation			
2.2.3	Thickness of concrete bed			
2.2.4	Precaution against white ants			
2.2.5	Damp proof course			
2.3	Walls			
2.3.1	Thickness of walls, and scaffolding			
2.3.2	Mud wall, brick wall, stone wall, Wooden framework			
2.3.2.1	Definition of different parts of Wall			
2.3.2.2	Bonds-English, Flemish etc.			
2.3.2.3	Plastering-Mud, Lime, Cement etc.			
2.3.2.4	Painting, white washing, Colour washing, pointing.			
2.4	Roof			
2.4.1	Types of roof – Flat or terraced roof, Bent roof etc.			
2.4.2	Roof trusses			
2.4.3	Roofing material – G.I. sheets, Thatch, Asbestos			
2.5	Floors: Different types viz. wooden, brick, sand stone etc.			

2.6	Stairs: Common types in forest quarters.				
2.7	Doors, windows and ventilators				
2.8	Latrines – Pits, sanitary etc.				
3.	Building material	3	3	-	
3.1	Measurement/ verification of building materials.				
3.2	Calculation of material requirement				
3.3	Construction and maintenance				
4.	General ideas on roads, bridges and culverts	1	3	1	
4.1	Types of roads				
4.2	Catch water drain/side drain				
4.3	Retaining wall, Breast wall				
4.4	Sand dressing				
4.5	Types of Bridges and culverts and Their maintenance				
4.6	Inspection paths				
5.	Water supply	1	-	-	
5.1	General sources of supply, water table.				
5.2	Sinking of wells, shallow wells, deep wells, tube wells.				
5.3	Purification of water				
5.4	Cleaning and protection of wells				

Saturday Field Exercises- 2 Days

SURVEY

Theory- 20

A/N Practicals-18
Sat. F.Ex- 2 Days
Field Exercises—9 Days

Theory Pract. F Ex

1.	Introduction	1	-	-
	1.1 Definition of surveying			
	1.2 Branches & principles of surveying			
2.	Measurement of distances	1	1	1
	2.1 Instruments for measuring distances			
	2.2 Various kinds of chains			
	2.3 Uses of chains			
	2.4 Advantages and dis-advantages including numerical problems			
	2.5 Errors in chaining			
3.	Chain surveying	4	4	3
	3.1 Scope of chain surveying			
	3.2 Method of surveying			
	3.3 Well conditioned and ill conditioned			
	3.4 Triangles			
	3.5 Check line and tie line			
	3.6 Offsets			
	3.7 Instruments for measuring offsets			
	3.8 (Optical square & tape)			
	3.9 Field book and its maintenance			
	3.10 Obstacles in chaining			
	3.11 Plotting a chain survey			
4.	Chain and compass survey	1	4	2
	4.1 Angle measuring instruments (Prismatic compass)			
	4.2 Testing the compass			
	4.3 Errors to which the compass observation are liable.			
	4.4 Precaution in using a compass			
	4.5 Angles, bearing, magnetic meridian, true meridian magnetic declination.			
	4.6 Designation of included angles from W.C. bearing and R.B.			
	4.7 Correction of error due to local attraction			
	4.8 Closed and open traverse			
	4.9 Methods of traversing by chain and optical square and by chain and prismatic compass			
	4.10 Plotting a compass survey			
	4.11 Error of closure and adjusting the closing error			
	4.12 Writing and maintenance of field books			

5.	Plain Table Survey	4	5	-
6.	Levelling	4	2	-
7.	Map and Map reading	3	1	1
	7.1 Definition and object of Map reading			
	7.2 Importance of Map reading			
	7.3 Contour symbols, copying, enlarging and reducing maps.			
8.	Area calculation	2	1	2
	Measurement and calculation of irregular area by Acre comb, Planimeter, graph paper.			

Saturday Field Exercises- 2 Days

FOREST BOTANY

Total Lecture Hrs: 8
A/N Practicals: 10
Saturday Ex: 2
Field Exercises: 5 days
 Theory Pract F. E

1.	Introduction			
	General – Importance of Botany	1	-	-
2.	Morphology	2	4	2
	2.1 Seed			
	2.1.1 Monocotyledons, Dicotyledons			
	2.1.2 Parts of typical Monocot and Dicot seeds			
	2.1.3 Germination, Definition, Types-Epigeal, Hypogeal, Viviparous, conditions essential for germination.			
	2.2 Root			
	2.2.1 Definition of root.			
	2.2.2 Different parts of root, Taproot, Root hair, Root cap.			
	2.2.3 Types of root, primary , secondary, adventitious			
	2.2.4 Modification of roots(brief).			
	2.2.5 Mycorrhiza.			

- 2.3 Stem**
 - 2.3.1 Definition of stem.
 - 2.3.2 Characteristics and functions of stem.
 - 2.3.3 Herbs, shrubs and trees.
 - 2.3.4 Annuals, Biannuals, Perennials, types of Eak stem.
 - 2.3.5 Node and Internodes.
 - 2.3.6 Special types of plants-parasite, epiphytes and Saprophytes.
- 2.4 Branching**
 - 2.4.1 Definition and different types of branching.
- 2.5 Bud**
 - 2.5.1 Definition and functions of bud.
 - 2.5.2 Kinds of bud: vegetative, floral.
- 2.6 Leaf**
 - 2.6.1 Definition and functions of leaf.
 - 2.6.2 Duration of leaves.
 - 2.6.3 Parts of a typical leaf-leaf base, stipule, Petiole lamina, Mid-rib, Vein, Apex, Margin.
 - 2.6.4 Simple and compound leaves, definition and description of various types of leaf.
 - 2.6.5 Modifications of lead.
- 2.7 Flower**
 - 2.7.1 Parts of a typical flower and their functions.
 - 2.7.2 Types of flower-complete, incomplete, perfect, Imperfect, monoecious, dioecious.
- 2.8 Bark, cambium, sapwood, heartwood. Ring formations(Phloem, xylem)**
- 2.9 Dispersal of seeds and fruits**
 - 2.9.1 Agencies and modes of dispersal- Wind, water, mechanical and animals.
- 3. Elementary Physiology 2 1 -**
 - 3.1 Physiological functions
 - 3.1.1 Absorption of water and raw food materials.
 - 3.1.2 Photosynthesis, chlorophyll, stomata.
 - 3.1.3 Transpiration
 - 3.1.4 Respiration
 - 3.1.5 Growth

	8.			
4.	Reproduction	1	1	-
	4.1 Sexual reproduction			
	4.1.1 Flowering periodicity			
	4.1.2 Seed maturation, dormancy and viability			
	4.2 Vegetative reproduction	1	1	1
	4.2.1 Root suckers			
	4.2.2 Stump and stem cutting			
	4.2.3 Coppice			
	4.2.4 Layering			
	4.2.5 Grafting			
5.	Elementary Systematic	1	-	1
	5.1 Classification and scientific names of plants			
	5.1.1 General idea about family, Genus and Species, scientific nomenclature			
	5.1.2 Scientific names of important species of the state their uses and field identification.			
6.	Identification of trees, shrubs, herbs and grasses etc.	-	3	1
	Saturday Field Exercises- 2 days			

ACCOUNTS AND PROCEDURES

Total Lecture Hrs : 26
A/N Practicals - 3
Theory A/N Pract. Field Ex.

1.	Classification of Forest Revenue and Expenditure in different sub-heads.	4	-	-
2.	Range account (Practical exercise)	5	1	-
	2.1 Writing Cash Book.			
	2.2 Closing of account and balancing.			
	2.3 Compilation of different account forms.			
	2.4 Preparation of bills for works, supplies, personal entitlement, maintenance of Muster rolls.			
3.	Definition of Cash, Cash Book,	5	1	-
	3.1 Security deposit, Earnest Money Deposit,			
	3.2 Measurement Book, Remittance by Challan.			
4.	Procedure for transfer of charge of a section	2	1	-

5.	Miscellaneous Rules	6	-	-
	5.1 Duties			
	5.2 Conduct rules			
	5.3 Pay and allowances			
	5.4 T.A., T.T.A. rules: Leave rules: L.T.C rules			
	5.5 G.P. Fund			
	5.6 Security amount deductible from subordinates			
	5.7 Joining time			
	5.8 Free grant of timber to forest official (if any)			
	5.9 Different type of advances and recoveries			
6.	Code and manual	4	-	-
	6.1 Important Provisions			
	6.2 Forest organization			

MENSURATION

			Total Lecture Hrs 12		
			A/N Practicals:6		
			Saturday Ex.: 4 Days		
			Field Practicals : 10 days		
			L.H	pract	F.E.
1.	Elementary mathematics		1	-	-
	1.1 Units of measurement of length, area, volume, capacity, mass, density, weight.				
	1.2 Elementary geometry and mensuration				
2.	Height and diameter/girth measuring instrument		1	1	2
	2.1 Height measuring instruments				
	2.2 Calipers				
	2.3 Tapes				
3.	Volume calculation		9	1	2
	3.1 Height measurement				
	3.2 Diameter measurement				
	3.3 Girth measurement				
	3.4 Quarter girth formula and its use				
	3.5 Measurement of individual tree and calculation of volume				
	3.6 Form factor				
	3.7 Measurement of logs and sized timber and calculation of volume				
	3.8 Measurement of stacks and calculation of volume				
	3.9 Use of conversion factors for stacked volume				

to solid volume
 3.10 Wood density, correlation of weight & volume

4.	Enumeration of growing stocks			
4.1	Total enumeration	1	1	-
4.2	Partial enumeration	-	1	-
5.	Measurement of volume of a sample tree	-	1	2
6.	Estimation of crop by using volume table	-	1	4

Saturday Field Exercises- 4 days

WILD LIFE MANAGEMENT

Theory: 10
 Practical-5
 Saturday Excursion: 4
 Field Exercises: 3
 LH A/N FE.

1.	Introduction	1	-	-
1.1	Importance of wildlife			
1.1.1	Aesthetic, recreational & cultural values			
1.1.2	Economic values (Financial value to state and individual).			
1.1.3	Scientific values			
2.	Management of Wildlife	1	-	-
2.1	Protected Area network in the country			
2.2	Alternative resource utilization strategies to reduce pressure on the resource.			
3.	Field techniques in Wildlife Census	3	5	-
3.1	Census techniques: definition, objects, methods, track & trails, kill evidences, marking total block counts.			
3.2	Techniques of scientific compatible data collection and assessment techniques viz. vegetation sampling, density			
3.3	Monitoring techniques for large herbivores and carnivores with emphasis on species of regional importance.			
3.4	Habitat assessment and monitoring			
3.5	Damages caused by wild life			
3.6	Habits and habitats-migration, and migratory birds, Breeding seasons and habitats of important birds and animals.			

4.	Distribution of Wildlife in India with particular reference to the state.	1	-	-
5.	Legal Instruments, Law and Policy (Significance and provisions in short)	2	-	1
	▪ Indian Forest Act, 1927			
	▪ Forest (Conservation) Act, 1980			
	▪ Wildlife (Protection) Act 1972 amended 1991			
6.	Management of Wildlife sanctuaries & National parks with particulars reference to the state. Saturday Field Exercises- 4 Days	2	-	2

COMMUNITY FORESTRY AND RURAL DEVELOPMENT

Theory: 16

A/N Practicals: 5

Saturday Ex.: 2 Days

Field Practicals: 7Days

		Theory	Pract.	Field
1.	Community Forestry	1	-	-
1.1	General			
1.1.1	Definition and concept			
1.1.2	Social Forestry vis-à-vis traditional forestry			
1.1.3	Bio-aesthetical functions, urban forestry,			
1.1.4	Recreation forestry			
1.1.5	Importance of Community Forestry as a tool for community development			
1.1.6	Role of Panachayat in social forestry	-	-	1
1.2	Forestry related projects in rural areas viz EAS, JRY etc.	1	1	1
1.3	Agroforestry	3	1	1
1.4	Rail/Road/Canal side plantations	3	-	1
1.5	Choice of species & models (Forest growing & native species)	1	-	-
2.	Extension and Motivation	3	-	2
2.1	General			
2.1.1	Philosophy and principle of extension			
2.1.2	Meaning and principle of motivation			
2.1.3	Meaning and principles of communication			
2.1.4	Factors and methods of communication (Practicals)			
2.1.5	Barriers in effective communication and how to overcome/remove them	2	-	-

2.1.6	PRA/RRA Exercises	-	3	1
2.2	Extension aids	2	-	-
2.2.1	Different kinds of extension aids their application and suitability			
2.2.2	Selection of aids for effective Communication			
2.2.3	Technique of handling posters, charts, bulletin; boards.			
2.2.4	Audio visual aids: still films and movie, Projections, public address system, video films, their handling and application.			

Saturday Field Exercises- 2 Days

SOIL CONSERVATION AND LAND MANAGEMENT

Total Lecture Hrs : 14

A/N Practicals : 10

Saturday Ex.

4days

& Field Practicals : 5
days

		Theory	Pract	F P.
1.	Introduction	1	-	-
1.1	Definition & scope. Hydrological cycle its importance, rainfall characteristics. Extent and causes of erosion.			
1.2	Causes of soil erosion, deposition, exhaustion, accumulation of toxic salts and water-logging. normal and accelerated erosion; agencies-wind, water, gravity, glaciers.	2	-	-
1.3	Types and process of erosion by water -splash erosion(rain drop) sheet, rill, gully (its shape including stages of its formation), hole, tunnel, water fall, bank erosion, wave erosion, land slides subsidence, avalanches, glaciers and snow slide. Factors affecting erosion by water.	3	-	1
1.4	Wind erosion and factors affecting it	1	-	-
1.5	Other modes of soil deterioration – salt accumulation, water logging, mining, industrial wastes.	1	-	1

1.6	Land capability classification and utilization.	1	-	-
1.7	Soil conservation in forest area management of wooded areas – systems, closures, methods of extraction, contour trenching, gully plugging, check dams etc.	3	2	1
1.8	Soil conservation in wastelands gullied lands, river banks, inundated lands and saline lands.	1	3	1
1.9	Soil conservation in grasslands and their management.	1	5	1
	Or			
1.10	Wind erosion control in dry and desert areas, sand dune fixation, wind breaks, shelterbelts and their role.			
	Or			
1.11	Soil conservation in Catchments and Basins – watershed management.			
	Saturday Field Exercises- 4 Days			