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GUIDELINES FOR FORESTERS AND FOREST GUARDS TRAINING

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT & FORESTS
DIRECTORATE OF FOREST EDUCATION
P.O. NEW FOREST, DEHRA DUN - 248 006

GUIDELINES

FOR

THE TRAINING OF FORESTERS AND FOREST GUARDS BEING ORGANISED BY THE STATE GOVERNMENTS

Forestry Sector is faced with a number of new challenges due to population pressure and emerging needs of the civil society. To cope with the situation, there has to be special focus and emphasis on the human resource development aspects at all levels. Foresters and Forest Guards are at the cutting edge of the forestry hierarchy who are always in constant touch with the people catering to their forestry related needs. They are main catalysts for implementation of the forest related rules, regulations, conservation and development activities. The efficiency and effectiveness of the State Forest Department depends much on the performance level of these officials. Training of these officials, therefore, must be of high quality and standards which can be achieved through enriching and updating the course contents keeping in view the emerging needs on the forestry sector, providing adequate facilities for the training of these personnel and modification of the training Rules accordingly. The training of these levels is an exclusive domain of the state/UT governments and they have formulated their own rules and regulations for the same.

2 It has been observed that there is no uniformity in the rules for educational qualifications for recruitment to the levels of foresters and forest guards among the states/ UTs. The qualifications for the foresters vary from high school level to intermediate level. Duration of the course also varies from six months to one year. The number of subjects covered in the training course varies from 10 to 18 in various

states. Similarly, minimum educational qualifications for recruitment to the post of a forest guard varies from 6th standard to high school pass; duration of training from 3 to 11 months and the number of subjects covered in the training course vary from 3 to 10 among the various states In a few states, a large number of foresters/forest guards are not being imparted induction training even after completion of several years of service. Such untrained officials feel constrained in discharging their duties professionally and efficiently.

3 In order to maintain uniformity and professionally train the new entrants to deal with the emerging needs/trends in forestry and wildlife, the Government of India after making necessary consultations with the State/UT governments, have formulated the following guidelines for the training of the foresters and forest guards and the state training institutions imparting such trainings.

1 Performance in training to govern seniority

It is observed that in most of the cases the foresters and forest guards' trainees are treated as in-service officials and their performance in the training course does not affect seniority. As a result many of them do not take the training seriously. On the other hand, there are a few states where the training is not considered as a part of the service and such trainees are paid monthly stipend only. This creates financial disparity and puts them to certain disadvantages over the in-service trainees. To ensure proper discipline and maintain adequate seriousness in the training programme, **a provision should be made in Recruitment Rules of the state that while determining the seniority, the state will also take into account the performance during the Training. The formula for determining the seniority will give 100% weightage to the marks obtained in the competitive examination and 50% weightage to the marks**

obtained during the training. Further, during the period of training, trainees will be governed by the Training Rules of the Institution.

2 Entry point in trainings and service

It is noticed that this in-service training generally does not precede entry into the service. This creates considerable quality degradation. To bring quality improvement and proper utilization of manpower, **the entry point in training, should coincide with the entry point in the service**. If there is any backlog, the same could be cleared through organizing special courses and having larger batches (in the case of foresters and forest guards). **In order to give importance to training the official should not be confirmed in service unless he completes his training.**

3 Period of Training:

At present large variations exist in respect of duration of training of foresters and forest guards. Considering (i) contents of syllabi (ii) higher academic qualifications of Trainees and (iii) field oriented training programmes, **there should be uniform duration of six months for the training of foresters and forest guards.**

4 Minimum educational qualifications:

At present different minimum educational qualifications are being followed in different states. In the interest of service and efficiency, the following minimum educational qualifications should be adopted uniformly, by all the states.

Foresters - Class 10+2 pass with science.

Forest Guards - Class 10 pass or equivalent.

5. Medium of Training :

The medium of training at various levels should be as follows:

Foresters - The official language of the State or English.

Forest Guards - The official language of the State or English.

6. Training courses and course contents:

6.1 At present only induction training is imparted after direct recruitment to various levels. Quite often such induction training at lower levels (Forester, Forest Guards) is imparted several years after one joins the service. There is heavy backlog of untrained officials in many states. Therefore, induction training immediately after recruitment should be made mandatory.

6.2 **It is felt that adequate emphasis for practical training is not being laid in existing curricula for forestry training. Hence, the** revised course contents for the foresters and forest guards giving due weightage to practicals, field exercises and study tours is appended as Annexure I and Annexure II, respectively.

6.3 **Also, in to-day's fast changing scenario, induction training alone is not sufficient to meet the changing requirements throughout ones' career. Therefore,** the refresher courses at periodic intervals, say 3 to 5 years, be conducted for the foresters and forest guards to update their knowledge and skill. Specialized short duration courses, for those posted on specialized jobs, are also required to be conducted to improve the knowledge and skills of the officials. A list of special courses and the institutions identified is given at Annexure III.

6.4 The faculty members of Forestry Training Institutions should be imparted training under Training of Trainers (TOT) Programme. Promotion linked courses, which involve change of duties/responsibilities, should be organized from time to time.

6.5 At present there is no established time frame to review and update the existing curricula. Hence, the curricula of existing courses should be reviewed and updated at least once in every five years to meet the changing requirements. The Review Committee may start functioning during the fourth year.

7. Minimum needs of an institution for effective training:

It is felt that conditions of some of the training institutions are quite inadequate in the following aspects:

- Campus,
- Buildings,
- Faculty position,
- Vehicles,
- Equipment,
- Laboratory,
- Library,
- Other staff position,
- Incentives.

Hence, there is a strong case for improving the above mentioned aspects for strengthening of the institu tions. To economize expenditure and optimize resources.

i. The GOI are of the view that every state, instead of having a number of training institutes, may have one or two well-equipped institutions to ensure proper training.

ii. Forester and Forest Guard training be imparted at the same school.

iii. The annual intake capacity per batch should not exceed 40.

iv. New institute may be opened as per the norms fixed by the GOI. While opening a new institute the Director, Forest Education shall be consulted.

v. Such training Institute should be located at an appropriate place after careful scrutiny of various aspects like basic amenities and other infrastructural facilities. **Details of requirements for a Model Institution are given at Annexure IV. The list of the Foresters and Forest Guards Training Schools/ Institutions in the various states along with intake capacity of each school/institution is given at Annexure V.**

8. Selection, development and incentives to trainers:

The selection procedure of trainers in different forestry training institutes needs to be given more serious considerations. Quite often those who are posted in these institutions do not possess adequate field experience. Further, the officers with right aptitude and qualifications for training are not attracted to work in such training institutions for want of adequate incentives and facilities commensurate with the high responsibilities they are entrusted as trainers. To overcome this problem, the following should be adopted:

a. No officer until he has put in nine years of service, preferably in a field posting be considered for faculty position in any of the training Institutes. Preference may be given to those who have undergone Training of Trainers (TOT) Courses.

b. PCCF (Training)/ CCF (Training)/ CF (Training) and Head of the Training Institutions should be associated in selection of a faculty member.

c. The officer selected as faculty, if not already undergone Training of Trainer (TOT) course, should be sent for such course immediately.

9. Incentives

Trainer's job is quite challenging and demanding. A good trainer has not only to be academically sound but should also possess proper aptitude for the job. At present, quite often, difficulties are faced by training institutions to get suitable officers. In the absence of adequate incentives, selection of suitable faculty is badly affected which adversely affects the quality of training imparted in the institution. Therefore, all faculty members including the Director/ Principal of the Institution, **should be given an incentive of 15% of the basic pay as training allowance, as sanctioned by Government of India in the case of IGNFA and State Forest Service Colleges. The faculty should also be provided with rent-free residential government accommodation.**

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Deputy Inspector General of Forests (RT)

F.No.3-17/99-RT

ANNEXURES

Annexure I

In-service Training of Foresters

Distribution of lectures for six months foresters course

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
iii	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

Subject		Theory Hours	Lab Practical	F.E Saturdays	Tour Field Ex Days	
1.	Silviculture	35	5	2	10
2.	Forest Utilization	12	-	1	3
3.	Forest Protection and Law	14	2	1	2
4.	Forest Engineering	10	8	2	11
5.	Survey	20	18	2	9
6.	Forest Botany	8	10	2	5
7.	Accounts and Procedure	26	3	-	-
8.	Mensuration	12	6	4	9
9.	Wildlife Management	10	5	4	3
10.	Community Forestry & Rural Development	16	5	2	7
11.	Soil Conservation and Land Management	14	10	4	5
12	.First Aid	3	2		
Total		180	148		
Total Days			46	24	65

(Each subject carries maximum 100 marks)

Note: Each Theory Class will consist of 45 minutes and each Practical Class of 2 hours. In one working day there will be 5 Theory Classes and 1 Practical Class.

COURSE CONTENTS FOR FORESTERS COURSE

SILVICULTURE

	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 characterstic	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.	**SILVICULTRUAL SYSTEMS**	**3**	**-**	**1**
	7.1 Different systems and their merits and demerits, with applicability and resultant crop (citing examples).			
	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**	**1**	**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			
	10.5.6 Pricking out in permanent beds and polypots			
	10.5.7 Common nursery diseases, symptoms, casual organism, control and cure by application of insecticides and fungicides			
	10.5.8 Application of manures and fertilizers			
	10.5.9 Weeding, cleaning, watering and manipulation of shade			
	10.5.10 Hardening Root pruning			
	10.5.11 radation Root/shoot cuttings			
	10.5.12 Grafting/layering budding			
	10.5.13 Bamboo and its propagation through seeds, rhizome, nodes and vegetative means.			
	10.5.14 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 Thinning			
	Field Exercises on Saturdays			**2 Days**

FOREST UTILIZATION

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

		Theory	Pract	Tours
1.	**MAJOR FOREST PRODUCE**			
1.1	Structure and properties of wood- Structure of wood	1	-	-
	1.1.1 Pith, Annual ring, Heartwood, Sapwood, Grain, Texture, Medullary rays.			
1.2	Properties of wood Weight, Hardness, Strength, Flexibility, Seasoning power, Moisture content in wood, Durability, Heating power, Combustibility, Colour and Odour.	1	-	-
1.3	Defects in wood Abnormal growth	1	-	-
	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 Seasoning of timber	1	-	1
	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** (Relevant to the state only)	3	-	-
	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** (Relevant to the state only)	-	-	1
	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.	**INDENTIFICATION 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/Anchal 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 forest, 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 Exercices: 11 Days

		Theory	Pract.	FE
1.	**Building Materials**	**2**		**5**
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 requirment			
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 Definition of surveying	1	-	-
	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 Execises: 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, Tap root, 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 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 leaf.

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

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,** 3.1 Security deposit, Earnest Money Deposit, 3.2 Measurement Book, Remittance by Challan.	5	1	-
4.	**Procedure for transfer of charge of a section**	2	1	-
5.	**Miscellaneous Rules** 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	-	-
6.	**Code and manual** 6.1 Important Provisions 6.2 Forest organization	4	-	-

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 Units of measurement of length, area, volume, capacity, mass, density, weight. 1.2 Elementary geometry and mensuration	1	-	-
2.	**Height and diameter/girth measuring instrument** 2.1 Height measuring instruments 2.2 Calipers. 2.3 Tapes	1	1	2

3	**Volume calculation** 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	9	1	2
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** 2.1 Protected Area network in the country 2.2 Alternative resource utilization strategies to reduce pressure on the resource.	1	-	-

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			
	Captive breeding and handling of rescued animals, their rehabilltation some provisions related to Central Zoo Authority in the Wildlife (Protection) Act, animal nutrition in captivity and principles of record keeping.			
	(Amended vide Ministry's letter no.3-17/99-RT, dated February 17, 2005.)			
6.	**Management of Wildlife sanctuaries & National Parks with particulars reference to the state.**	2	-	2
Saturday Field Exercises-			**4 Days**	

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-a-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 principles of extension			
	2.1.2 Meaning and principles 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, waterfall, 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**

Annexure-II

COURSE CONTENT FOR FOREST GUARDS

TIME BUDGETING

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
	Total days required 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 146	
	326/7	
	Total days	157

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

Subjects	Theory Hours	Lab Practical	Excursion. Saturdays	Tour Days
1. Silviculture I	20	10	2	10
2. Forest Protection & Law	20	5	1	5
3. Sylviculture II	20	10	5	10
4. Survey & Engineering	30	20	5	15
5. Forest Utilisation	20	5	2	5
6. Wildlife Conservation	20	5	5	10
7. Accounts and Procedures	20	4	-	-
8. Community Forestry & Rural Development	30	5	4	10
9. Environmental Conservation	7	4	-	-
		68x2		
Total	187	136		
		323/7		
Total Days	46	24		65

(Each subject carry maximum 100 marks. Each Lecture will consist of 45 minutes and each practical will consist of 2 hours and in one working day there will be 5 lectures and one practical)

Abstract of Days-

1.	Lectures and Practicals	46
2.	Saturday Excursions	24
3.	Tour	65
4.	Formalities/ examination	22
	Total Days	157

SILVICULTURE -I

Theory - 20
A/NPracticals - 10
Saturday Ex.- 02 days
Tour Field Exercises- 10 days

1. **Introduction :**
   - Brief history of forestry in the state.
   - Overview of forest resources of the state.
   - Different categories of forests of the state.
2. **Role of Forests :**
   - Importance of forests - general and special
   - Protective/Productive/Aesthetic functions
   - Environmental Conservation
3. **Growth of tree :**
   - Tree growth, various stages of tree: seedling, sapling, pole, tree.
   - Parts of tree - stem, branches, crown.
4. **Growth of Forests :**
   - Factors affecting growth climatic, topographic, edaphic, botic.
   - Impact of underlying rocks on soil; soil / rock types of the state.
   - Concept of soil profile, important characteristics pH, nutrients, porocity.
   - Nutrient cycle, humus & soil organic matter
5. **Field Botany :**
   - Basic botany - plant morphology - leaf, stem, flower, inflorescence, fruit, seed.
   - General idea of photosynthesis - C, N, H_2O
   - Local, English, Botanical names of 50 important selected species along with their habitat, identification, characteristic.

Practicals : Identification of tree/soil-rock types
- Concepts to be developed only through practicals
- Assignments to be given for collection of herbarium specimen, field identification, features, phenology of 50 selected species.

FOREST PROTECTION AND LAW

Theory: 20
A/N Practicals: 05
Sat. Ex.: 01 day
Tour Field Exercise: 05 days

Part -A Biotic and abiotic factors :

1. **Introduction**
   - Factors responsible for depletion of forests
   - man, cattle, fire and other natural calamities.
2. **Forest Fires :**
   - Causes, types, evil & beneficial effects.
   - Preventive' measures - fire lines, early control burning.
   - Combative measures - watch towers, fire indicators, fire fighting
   - Introduction to modern fire fighting equipments
   - Reporting of fire damage.
3. **Grazing, Lopping**
   - Effects of cattle grazing on forests.
   - Preventive measures - regulation, rotational grazing, fencing in regeneration areas.
   - Introduction to grazing policy of the state vis-a-vis practices prevalent.
   - Thumb rules relating to carrying capacity of forests for cattle grazing
   - Lopping damage', Safe rules for lopping of fodder trees.
4. **Man :**
   - Illicit felling - causes and effects, introduction to control measures
   - Encroachments, maintenance of boundaries of forests, laws dealing with encroachments.
   - Shifting cultivation: definition, causes & effects, practices, viability economic/ecological.
5. **Duties and responsibilities**
   Of Forest Guards in protection of forests-extension
   Roles of people, Village Forest (Protection) Committees.

Part -B Forest Law: -

1. **Salient Features of**
   (i) Indian Forest Act, 1927
   (ii) Wildlife (Protection) Act, 1972.
   (iii) Forest (Conservation) Act, 1980.
2. **Definitions :** Forest, Cattle, Forest Produce, Forest Offences, Forest Officer.
   - Study to specific provisions of State Forest Act relating to: -
   - Legal classification of forests - RF/VF/PF.
   - Acts prohibited in different categories of forests.
   - Punishment for violation of prohibited act.
   - Special provision regarding - seizure, search and confiscation.
   - Types of permits for transit of forest produce and authority to issue them, general rules for issue and checking of permits.
   - Types of hammers - property hammer, felling hammer, passing/seizure hammer/drift timber/private timber.
   - Introduction to various acts/rules and their objects. Forest Contract Rules - Coupe delivery certificate, interim/final report, Consequence of lease - termination.
   - Rules relating to detection, enquiry and disposal of forest offences.
   - drawing up of a seizure list filing of F.I.R. recording of statement, collection of evidence. arrest and release of offenders.

Practicals : Fire lines and boundary clearances, control burning/drawing up FIR/seizure list/offence report.

SILVICULTURE-II

Theory: 20
A/N Practical: 10
Saturday Ex. 05 Days
Tour Exercise : 10 Days

1. **Introduction to the concept of forest management**
   - growth, increment, sustainability, removal, rotation.
2. **Natural regeneration/management of natural forests**
   - Introduction to growth characteristic of natural forests stand structure.

- Regeneration as pre-requisite for removal of mature trees. Silviculture systems - definition, types (high forest/coppice).
- Study of following systems with respect of characteristic of forests for application, nature of resulting crop and regeneration, distribution of harvest (diffused/concentrated).

(a) Clear felling systems coppice/uniform.

(b) Selection system.

- Method and importance of regeneration survey.
- Important marking rules for different systems.

3. **Regeneration of Bamboo, canes, reeds and grass lands.**
   - Special characteristics of these types of forest crops.
   - Classification and important cutting rules.
   - Subsidiary silvicultural operations and improvement works, cleaning of clumps, half-moon trenches.
4. **Man made forests :**
   - Need for plantations - reforestation / afforestation.
   - Steps in plantations:
   - Site and species selection
   - Nursery.
   - Preparation of plantation site
   - Plantation
   - Post-plantation works
   - Management of plantations.
   - Nursery Works : temporary/permanent, site selection. Collection of seeds/storage/treatment (details of some important species including time of fruiting, seed collection methods, seed selection, graduation), pre-treatment, viability, germination, seed requirement per Hectare plantation of important species.
   - Detailed nursery techniques: Layout, bed preparation, soil/compost preparation, polybag filling, root trainer filling, sowing, translating, grading, nursery shade, weeding, manuring and watering, use of insecticides / pesticides.
   - High Tech Nursery - Tools & Techniques
   - Preparation of planting stock, root shoot cutting, budding, grafting, layering.
   - Maintenance of nursery register.
   - Raising of tall plants.
   - **Plantation:**
     - Treatment map
     - Demarcation of plantation site
     - Preparation of plantation site, alignment & stacking.

     - Plantation layout sections, inspection paths.
     - Pitting - time and size, planting out.
     - Use of pesticide
     - Plantation root-shoot cutting
     - Clonal plantation and grafting techniques
     - Plantation season.
     - Causality replacement
     - Preparation and maintenance of plantation journal.

   Post Plantation operation :
     - Weeding/soil working - mulching, staggered-trench,
     - Manuring, fertilizer application
     - Survival growth assessment.
5. **Maintenance of Regeneration area :**
   - Tending operations, thinning-types/methods, improvement felling.
   - Survival percentage/success of regeneration
   - Climber control - necessity in young/old regeneration area.
6. **Rehabilitation of degraded forests :**
   - Rehabilitation techniques.
   - Protection, cleaning/singling, nature and properties of rooted wastes.
   - Plantation of important species
7. **Introduction to the concept of Working Plan.**

SURVEY AND ENGINEERING

Theory: 30
A/N Practical: 20
Saturday Ex.: 05 Days
Tour Field Exercises: 15 Days

Part A: SURVEY :

1. Simple knowledge on Angle, Triangle, Circle, Area of triangle, Rectangle, Square, Circle and Cylinder.
2. Chain survey: -
   (a) Testing the accuracy of a chain
   (b) Elementary idea on chain survey and its applicability.
   (c) General idea about ranging, offset and optical square & compass.
3. Elementary principles of map reading.

Part B: MEASUREMENT :

1. Measurement of diameter and girth of the standing trees.
   (a) Breast height measurement under different situations.
   (b) Measurement with caliper and tape, advantages and disadvantages.
2. Measurement of height, Haga altimeter, shadow and stick method.
3. Simple calculation of basal area and volume of trees.
4. Calculation of volume of stacked timber.
5. Field records and rules for marking and enumerations.
6. Calculation of crop height, top height and girth of trees.
7. Calculation of mortality percentage in a plantation, Inter sampling.
8. Manpower planning with reference to out-turn of works.

Practicals :

Layout of sample plot, preservation plots, objectives, types of initial and periodic measurement, maintenance and demarcation of a forest coupe, boundary line of a forest, various types of measurement of tree, calculation of plot area/volume of timber-Log, sawn & stacked.

Part C: FOREST ENGINEERING :

I. Building materials -

(a) Stone - Different kinds of stone, collection.
(b) Bricks -characteristics of 1st Class bricks. No. of bricks required for 100 cft. of brick works
(c) Brief idea about tile, lime cement, sand and metal chips.
(d) Mortar - Lime, cement and mud
(e) Concrete - Lime, cement and R.C.C.
(f) Plastering and Painting, cement plaster, mud plaster, preparation of surface for plastering and painting, curing and its objects.

II. Building Construction :

1. (a) Selection of site.
   (b) Foundation, plinth, super structure, floor, masonry walls (Brick & Stones).
2. Doors and Windows: Pannel, Batton, Glazed (Introduction only).
3. Roof: Different types of roof- Asbestos, Tile, Thatch, R.C.C.

III. Miscellaneous :

1. Wells - (a) Selection of site - Dug well/Tube well.
   (b) Elementary idea about construction, repair and cleaning, purification of water.
2. Problems Simple volumetric and area calculation of various works such as earthwork, whitewashing and ascertaining the quantities of building materials used in brick and stone masonry.

FOREST UTILIZATION

Theory: 20
A/N Practicals: 5
Saturday Ex.: 02 days
Tour Field Exercises: 5 days

PART-A: WOOD PRODUCTS

1. **Wood Products: Timber and Fire-wood.**
   (a) Implements used in felling and logging - Axe, Saws, general rules for economic felling, advantages/disadvantages of different modes of felling.
   (b) Season for felling.
   (c) Method of conversion - Logging, squaring, rough dressing and squaring, machine sawing, description of converted timbers, railway sleeprs.
   (d) Grading

2. **Disposal of Timber :**
   (a) Working of Government agency.
   (b) Working by purchasers including Forest Corporation and co-operative societies.
   (c) Various types of depots - Forest depot, Transit depot, Sale depot.
   (d) Records/returns for a, b, c. above

3. Use of timbers of common species, introduction to wood seasoning and wood preservation.

4. Common defects in timber such as abnormal growth dry rot, red rot, heart rot, borer attack, bends and twist, climber attack and different kinds of shakes.

5. **Fuel-wood and charcoal : -**
   (a) Method of cutting, collection, stacking of fuelwood.

(b) Method of measuring (by volume and by weight) drying percent.

(c) General idea about demand/supply of firewood, fuel saving devices smokeless improved chullha, biogas plants, solar cookers.

PART - B: NON-TIMBER FOREST PRODUCTS (N.T.F.P.)

Relevant to state, in brief: -

(a) Name and use of important items of N.T.F.P. such as Sabai grass, Lemon grass, Rosa grass, Thatch grass, Barks, Honey, Wax, Resin, Gums, Lac, Tussar cocoons, katha, Mohua, Dyes.

(b) Use of oil seed (Sal, Neem, Eucalyputus, Rosa, Khus etc.).

(c) Working of Tendu Leaves (for specific states only).

(d) Important Medicinal plants. Trees, Herbs, Shrubs-techniques of ex-situ conservation

(e) Forest foods: tuber, leaves, fruits, seeds, etc.

WILDLIFE CONSERVATION

Theory: 20
A/N Field Practicals:
Saturday Excursion: 5 Days
Tour Field Exercises: 10 Days

1. **Introduction, Importance of wildlife**
   - Aesthetic, recreational and cultural values
   - Economic values (Financial value to state and individual).
   - Scientific values
2. **Management of Wildlife**
   - Protected Area Network in the country
   - Alternative resource utilization strategies to reduce pressure on the resource.
3. **Field techniques in Wildlife**
   - Census techniques: definition, objects, methods, track & trails, Kill evidences, marking total Block counts.
   - Techniques of scientific compatibility, field techniques in wildlife management, data collection and assessment techniques viz. vegetation sampling, density
   - Monitoring techniques for large herbivores and carnivores with emphasis on species of regional importance.
   - Habitat assessment and monitoring

   - Damages caused by wildlife
   - Habits and habitats-migration, migratory birds, breeding seasons; habitats of important birds and animals.
   - Evidences for prevalence of wildlife.
     (a) Foot prints of animals with paws, pugmarks, animals with hooves, bird tracks, preparation of foot print traces and preparation of plaster casts.
     (b) Feeding signs on kills, recognizing kills made by tiger.
     (c) Wildlife remains.
     (d) Dropping and pellets.
4. **Distribution of Wildlife in India with particular reference to state.**
5. **Legal Instruments, Law and Policy Significance and provisions**
   - Indian Forest Act, 1927
   - Forest (Conservation) Act, 1980
   - Wildlife (Protection) Act 1972 as amended in 1991
6. **Management of Wildlife sanctuaries and National parks with particular reference to the state.**
7. **Management of Wildlife habitat**
   (a) General principles
   (b) Salt licks, water holes, water towers, meadow development.
   (c) Zoo management, Captive breeding, enclosures of different types.Handling of rescued animals, their rehabilitation, animal nutrition in captivity and principles of record keeping.

(Amended vide Ministry`s letter no. 3-17/99-RT,dated Februray 17,2005)

   (d) Concept of Safari Park.

ACCOUNTS AND PROCEDURES

Theory: 20
A/N Practicals: 04

1. Different types of vouchers for payment, muster rolls, measurement books, their preparation and maintenance, register of sanctioned works, completion reports, lost or missing receipts/vouchers.
2. Procedure of handing over - taking over charges, charge reports.
3. Leave Rules - Earned Leave, Casual Leave, Leave without pay, Half pay leave, Commuted Leave.
4. Travelling Allowance Rules and preparation of T.A. bills and T.T.A. bills
5. Maintenance of consumable store register, register of stores, tools/plants, writing off of unserviceable stores.
6. Basic elements of labour laws.
7. Organizational structure of the department - practical

COMMUNITY FORESTRY AND RURAL DEVELOPMENT

Theory: 30
A/N Practicals: 5
Saturday Excursions:04 days
Tour field Exercises: 10

1. **Introduction-Definition and, scope**
2. **Components of Community Forestry**
   - Agro-forestry, farm forestry, urban forestry, recreational forestry.
   - Strip plantation along road, canal, railway line.
   - Community plantation - Village wood lot, role of community
   - development, protection of village forests and distribution & marketing of produce:
   - Decentralized nurseries - Kisan, School, Mahila etc.
   - Social security plantation.
3. **Motivation and Extension**
   - Method of extension.
   - Farmers camps, nature awareness camps, forest protection camps.
4. **Participatory Forest Management**
   - Need for role of community in forest regeneration and protection.
   - Interaction with local people for explaining programme and assessing their needs.
   - Village level societies, forest protection committee, role of NGOs in participatory forest management. Mahila Mandal, Tree Growers Co-operative Societies etc.
   - Role of forest guards in the societies.
   - Techniques for collection of data/information for preparation of micro-plan by involving people (PRA & RRA Techniques).
5. **Watershed management - Basic Concept.**

PRACTICAL EXERCISE

- Collection of data of village communities on different forms for preparation of Micro Planning.
- Role of Forest officials in Village Forest .

Group exercise on Motivation and Communication skill.
Evaluation of various extension strategies.

ENVIRONMENTAL CONSERVATION A GENERAL OVERVIEW

Theory: 7
A/N Practicals: 4

a. Overview of Forestry scenario including problems, proposals concepts of Environmental Conservation
b. Ecotourism

FIRST AID

Total Lecture Hrs: 3
Pract/Field Ex.: 2

	Theory	Practical	Field
Syllabus as prescribed by Medical authorities For having certificates of First Aids.	3	2	-

ANNEXURE-III

MINIMUM TRAINING FACILITIES INCLUDING FACULTY STRENGTH AND OTHER INFRASTRUCTURE NEEDED IN A FORESTRY TRAINING SCHOOL

Considering the workload, each School should have at least the staff strength and other infrastructure as shown below to ensure that the training is imparted to the officers properly. Services, which can be outsourced from the market, have not been included in the staff list.

FACULTY AND STAFF

1.	Principal	01
2.	Faculty Members	03
3.	Head Clerk	01
4.	Computer Operator	01
5.	Accountant	01
6.	Senior Clerk	01
7.	Junior Clerk	02
8.	Librarian	01
9.	Caretaker	01
10.	Physical Training instructor	01
11.	Drivers	03
12.	Peons	01
13.	Class Room. Attendants	02
14.	Chaukidar	01
15.	Cleaner	02

VEHICLES :		
1.	Maruti Gypsy	01
2.	Bus	02
BUILDINGS AND EQUIPMENT		
1.	Institute Building	01
2.	Hostel with Mess and Common room/lounge	02
3.	Rest House	01
4.	Slide Projector	01
5.	Overhead Projector	01
6.	Television	01
7.	VCP/VCR	01
8.	Telescope	10
9.	Binoculars	04
10.	Digital Camera	01
11.	Video Camera	01
12.	Computers	30
13.	Photo Copier Machine	01
14.	Fax Machine	01
15.	Generator sets	04
16.	Others (Tents, Survey & Mensuration Instruments)	As per requirement
17.	Furniture & furnishings	As per requirement
18.	Library	Well equipped library with latest books & journals

Annexure IV

SPECIAL COURSES AND INSTITUTIONS IDENTIFIED FOR THE PURPOSE

Forest Management is witnessing paradigm shift due to its fast changing priorities and strategies, inter-sectoral linkages and people centered approach. As a result, role of the forest official has undergone a sea change; from traditional manager of a defined field to that of a facilitator and catalyst of environmental conservation, rural development and social change. His knowledge and skills must, therefore, be updated and enhanced to fully address the emerging trends in forestry. Further, there are certain assignments entrusted to the officer from time to time, which necessitate specialized training and advance studies. Having fully realized the importance of trainings for human resource development, the Government of India are of a considered opinion that short duration special courses need to be conducted in various specialized Institutions in the country. Based on enabling immediate objectives, the courses may be of capsule module pattern ranging from seven days to one month. The Government of India has identified 28 such relevant courses and also various suitable Institutions, which are given in alphabetical order as under:

1. **Agro-forestry**
   i. Central Agro-forestry Research Institute, Jhansi.

2. **Alternative/ Non conventional Sources of Energy**
   i. Non -conventional Energy Development Agencies of various states/UTs.
   ii. The Energy & Resources Institute, New Delhi.

3. **Biodiversity Conservation and Assessment: National Parks/ Sanctuaries/ Eco-development/ Wildlife Management/ Captive Breeding / Gene-pool Conservation.**
   i. Wildlife Institute of India, Dehradun
   ii. Botanical Survey of India, Kolkata
   iii. Zoological Survey of India, Kolkata
   iv. Bombay Natural History Society, Mumbai
   v. Foundation for Rehabilitation of Local Health Traditions (FRLHT), Bangalore
   vi. Kerala Forest Research Institute, Peechi, Thrissur, Kerala

4. **Biomedical Systems in India.**
   i. Institutes of the Indian Council of Forestry Research and Education (ICFRE).
   ii. Himalaya Drugs, Dehradun.
   iii Shantikunj, Haridwar.
   iv. Jadi Booti Shodh Sansthan, Gopeshwar, Uttaranchal
   v. Directorate of Ayurveda and its Institutes
   vi. Central Drug Research Institute (CDRI), Lucknow.
   vii. Foundation, for Rehabilitation of Local Health Traditions (FRLHT), Bangalore.

5. **Computer Applications in Forestry**
   i. SFS College, Dehradun and Coimbatore
   ii. Indian Institute of Remote Sensing, Dehradun.
   iii. Forest Survey of India, Dehradun.
   iv. National Informatics Centres.
   v. Forestry Training Institute, Kanpur.

6. Corporate Management

i. Indian Institute of Corporate Management, Delhi.
ii. Management Development Institute, Gurgaon.
iii. Indian Institute of Forest Management, Bhopal.
iv. Vaikunth Mehta Institute of Co-operative Management, Pune

7. Ecotourism, Recreational Forestry and Landscape Management

i. Wildlife Institute of India, Dehradun.
ii. Institute of Planning and Architecture, Delhi.

8. Environmental Impact Assessment

i National Environmental Engineering Research Institute (NEERI), Nagpur.
ii Wildlife Institute of India, Dehradun.
iii Center for Environmental Education, Ahmedabad.

9. Environmental and Resource Economics

i Indian Institute of Financial Management, Gurgaon.
ii. Indian Institute of Forest Management, Bhopal.
iii. Institute of Economic Growth, New Delhi.

10. Extension and Personnel Management

i Indian Institute of Mass Communication, New Delhi.
ii. Extension Education Institute, Nilokheri, Karnal, Haryana.
iii. National Institute of Rural Development, Hyderabad.

11. Fodder Management

i. Indian Grassland and Fodder Research Institute, Jhansi.
ii. Central Arid Zone Research Institute, Jodhpur.
iii. Tamil Nadu Agricultural University, Coimbatore.

12. Forest based industries

i. Ballarpur Paper Mills, Ballarshah (Chandrapur).
ii. WIMCO, Bareilly.
iii. Indian Plywood Industries Research and Training Institute, Bangalore.
iv. Sandalwood Research Centre, Bangalore.

13. Genetics and Tree Breeding

i. Institutes of Indian Council of Forestry Research and Education.
ii. Indian Tobacco Company. Bhadrachallam.
iii. BIOTRIM, Thiruvananthapuram
iv. Kerala Forest Research Institute, Peechi, Thrissur, Kerala
v. State Forest Research Institute, Uttar Pradesh, Kanpur.

14. Human Resource Development, Management and Planning

i. Indian Institute of Public Administration, Delhi.
ii. National Institute of Rural Development, Hyderabad.
iii. Institute of Rural Management, Anand (Gujarat).
iv. Administrative Training Institutions of States.

15. Integrated Area Development

i. National Institute of Rural Development, Hyderabad.
ii. Institute of Rural Management, Anand (Gujarat)..

16. Joint Forest Management

i State Forest Service Colleges and Forest Range Officers s Colleges.
ii Indian Institute of Forest Management, Bhopal
iii Forestry Training Institute, Kanpur.

17. Non-Timber Forest Produce - Species Conservation and Development

i Forest Research Institute, Dehradun.
ii Indian Institute of Forest Management, Bhopal.

18. Orchid Culture and Maintenance of Orchidarium

i. Sikkim Orchidarium, Gangtok.
ii. Orchid Research Center, Tippi, Arunachal Pradesh.

19. Policy and Legal Issues

i State Forest Service Colleges, Dehradun/ Coimbatore.
ii Center for Environmental Research and Advocacy, Bangalore.
iii Indian Institute of Public Administration, Delhi.
iv Institute of Judicial Training and Research, Lucknow

20. Project Formulation

i Indian Institute of Forest Management, Bhopal.
ii Institute of Defence Research, Mussoorie.
iii Forestry Training Institute, Kanpur

21. Remote Sensing and GIS Applications

i. Indian Institute of Remote Sensing, Dehradun
ii. Forest Survey of India, Dehradun.
iii. Wildlife Institute of India, Dehradun.
iv. National Remote Sensing Agency, Hyderabad
v. Andhra Pradesh Forest Academy, Dulapalli, Hyderabad
vi. Space Application Centre, Ahmedabad

22. Research Methodologies including statistical designs

i. Institutes of Indian Council of Forestry Research and Education.
ii. Indian Statistical Institute, Calcutta.
iii. National Environmental Engineering Research Institute, Nagpur

23. Rural Development and Management

i. Institute of Rural Management, Anand (Gujarat).
ii. Banking Institute of Rural Development, Lucknow
iii. Vaikunth Mehta Institute of Cooperative Management, Pune.
iv. National Institute of Rural Development, Hyderabad.

24. Soil Conservation and Watershed Management

i. Central Soil and Water Conservation Research Institute, Dehradun.
ii. Central Arid Zone Research Institute, Jodhpur.
iii. National Bureau of Soil Survey and Land Use Planning, Nagpur.
iv. State Forest Service College, Dehradun.
v. Institutes of Indian Council of Forestry Research and Education (ICFRE).
vi. French Institute, Auroville (Pondicherry).

25. Survey, Inventories and Management Plans

i. Wildlife Institute of India, Dehradun.
ii. Forest Survey of India, Dehradun and its regional offices.
iii. Space Application Centre, Ahmedabad.
iv. Regional and State Remote Sensing Centres.
v. Botanical Survey of India, Kolkata.
vi. Zoological Survey of India, Kolkata.

26. Training of Trainers

i. Administrative Training Institutes at Nainital/ Mysore/ Shimla/ Jaipur/Guwahati.
ii. Indian Institute of Public Administration, Delhi
iii. Institute of Training and Management, New Delhi.

27. Use of Pesticides/ Fungicides/ Insecticides/ Manures and Fertilizers/ Growth Hormones

i. G.B. Pant university of Agriculture and Technology, Pantnagar, Uttaranchal
ii. Dr. Y.S. Parmar University of Agriculture and Forestry, Solan, Himachal Pradesh.
iii. Tamil Nadu Agricultural University, Coimbatore.
iv. Agricultural University, Jorhat
v. Acharya Narendra Dev Agriculture University, Faizabad.

28. Wood preservation techniques/ seasoning and use of fire retardants.

i. Forest Research Institute, Dehradun
ii. Institute of Wood Science and Technology, Bangalore.
iii. Indian Plywood Industries Research and Training Institute, Bangalore.

29. Zoo Management

i. Wildlife Institute of India, Dehradun.
ii. Jawaharlal Nehru Zoological Park, Hyderabad
iii. National Zoological Park, New Delhi.

30. Water Harvesting/Conservation
31. Modern Nursery Techniques
32. Experiences in Joint Forest Management
33. Intelligence gathering and crime detection
34. Managing high visitor pressure eco-tourism sites
35. Systematic management (office management, Database/asset management)

Annexure V

LIST OF FORESTERS AND FOREST GAURDS TRAINING SCHOOLS IN THE VARIOUS STATES

Sl. No.	Name of School State/U.T.	Foresters Course		Forest Guard's Course	
		Duration Months	Capacity	Duration Months	Capacity
1.	**Andaman & Nicobar Islands**				
	Andaman & Nicobar Islands Forest Training School, Wimberlygung	12	30	6	30
2.	**Andhra Pradesh**				
	Andhra Pradesh School of Forestry, Yellandu, Khammam Distt.	12	50	6	50x2
3.	**Arunachal Pradesh**				
	Arunachal Pradesh Forest School. Namsanemukh.	12	50	6	50
4.	**Assam**				
(1)	Assam Forest School Jalukbari	12	50	6	50
(2)	Assam Forest Guard School, Makum,	---	---	9	50
5.	**Chhattisgarh**				
(1)	Forestry Training College Jagdalpur	12	50	6	50
(2)	Forest Guard Training College, Mahasamund.	12	50	6	50
(3)	Forest Guard Training College, Shakti.	12	50	6	50

6. Goa				
Forest Training School Sattari,	12	30	6	30
7. Gujarat				
Forestry Training School Ta Mandavi, Surat.	6	80	4	80
8. Haryana				
Haryana Forest Service Training School, Injure	11	50	6	50
9. Himachal Pradesh				
(1) Himachal Pradesh Forest Training School, Chail, Solan.	12	50	6	50
(2) Foresters Training Center, Sunder Nagar,	12	50	6	50
(3) Kuther Training Center	12	50	6	50
10. Jammu and Kashmir				
(1) Kashmir Forestry Training, School Chitternar, Bandipora	12	50	6	50
(2) S G School, Miransahib, Jammu	12	50	6	50
(3) Forest Guards Training School Doomi, Jammu	12	50	6	50
11. Jharkhand				
(1) Foresters Training School Chaibasa		50		50
(2) Forest Guards Training School Mehlong, Ranchi		50		50
(3) Forest Guards Training School Hazaribagh		50		50
12. Karnataka				
Forest Training Institute, Belgaum.	12	50	6	50

13. Kerala				
(1) Kerala Forest School, Walayar Palakkad, Kerala.	12	50	6	50
(2) Kerala Forest School, Arippa	12	50	6	50
14. Madhya Pradesh				
(1) Forest Guard Training School, Shivpuri.	12	50	6	50
(2) Forest Guard Training School, Ranipur.	12	50	6	50
(3) Forest Guard Training School, Pachmari.	12	50	6	50
(4) Forest Guard Training School, Govindgarh.	12	50	6	50
(6) Forest Guard Training School, Lakhnadoun.	12	50	6	50
(7) Forest Guard Training School, Jhabua.	12	50	6	50
(8) Forester Training School, Betul.	12	50	6	50
(11) Forester Training School, Amarkantak.	12	50	6	50
(12) Forest Rangers School, Jabalpur	12	50	6	50
15. Maharashtra				
(1) Central Forest Rangers College, Chandrapur	12	50	6	50

(2) Maharashtra Forest Rangers College, Chikaldara	12	50	6	50
(3) Forest Guards Training School ,Shahpur	12	50	6	50
(4) Forest Guard Training School, Jalna	12	50	6	50
(5) Foresters Training School, Pal, Jalgaon	12	50	6	50
16. Manipur.				
Manipur Forest School (Forester/ Forest Guards)	12	50	6	50
17. Meghalaya.				
Forestry Training School, Shillong (Meghalaya).	12	50	3	50
18. Mizoram				
Forest Education & Research Institute, Aizawl	11	50	9	50
19. Nagaland				
Forestry Training School, Dimapur	12	50	6	50
20. Orissa				
(1) Moony Forest Guard Training School, Angul	12	50	6	50
(2) Forest Guard Training School, Kunanria, Nayagarh	12	50	6	50
(3) Forest Guard School, Daha	12	50	6	50
(4) Nicholson Forester's School, Champua, Keonjhar.	12	50	6	50

(5) Foresters Training School, G.Udayagiri, Phulbani.	12	50	6	50
(6) Forest Training School Jeypore.	12	50	6	50
(7) Foresters/VFW Training School, Bhubaneshwar.	12	50	6	50
21. Punjab				
Forestry Training institute, Hoshiarpur.	12	50	6	50
22. Rajasthan				
(1) Forestry Training Institute, Jaipur	12	50	-	-
(2) Maru Van Training Centre, Pali Road, Jodhpur	12	50	6	50
23. Tamil Nadu				
Tamil Nadu Forest School, Vaigaidam, Madurai	12	100	6	120
24. Tripura				
Sepahijala Forest Training School	12	50	6	50
25. Uttar Pradesh				
(1) Forestry Training Institute, Kanpur	11	50	11	50
(2) Forest Guard Training Centre Vandevi, (Mau)	11	50	11	50
(3) Forest Guard. Training Centre Pratapgarh.	11	50	11	50

(4) Forest Guard Training Centre, Kotwa (Mirzapur)	11	50	11	50
(5) Forest Guard. Training Centre Bayport, (Agra).	11	50	11	50
(6) Forest Guard, Training Center Hastinapur (Meerut).	11	50	11	50
26. West Bengal.				
(1) Forestry Training Centre, Jhargram.	12	60	6	60
(2) Forestry Training Centre, Rajabhatkhawa.	12	30	6	30
(3) West Bengal Foresters School Downhill, Darjeeling, (West Bengal)	12	30	6	30

(A.K. Goyal)
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July 1, 2004