8.[1]THE INDIAN FOREST SERVICE (PROBATIONERS FINAL EXAMINATION) REGULATIONS, 2007

In exercise of the powers conferred by sub-section (1) read with sub-section (1A) of section 3 of the All India Services Act, 1951 (61 of 1951), and in pursuance of rule 8 of the Indian Forest Service (Probation) Rules, 1968, and in supersession of the Indian Forest Service (Probationers Final Examination) Regulations, 1968, except as respect things done or omitted to be done before such supersession, the Central Government, after consultation with the Governments of the States concerned, hereby makes the following regulations, namely:-

1. **Short title and commencement .-** (1) These regulations may be called the Indian Forest Service (Probationers' Final Examination) Regulations, 2007.

(2) Save as otherwise provided in these regulations, they shall come into force on the date of their publication in the Official Gazette.

2. **Definitions** .- (1) In these regulations, unless the context otherwise requires, -

(1) “Internal Assessment” means the assessment of the probationer based on general discipline and personality development by the Academy;

(2) "Schedule" means a Schedule appended to these regulations;

(3) All other words and expressions used in these regulations and not defined shall have the meanings respectively assigned to them in the Indian Forest Service (Probation) Rules, 1968.

3. **Final examination** .- (1) Every probationer shall, during and at or about the end of the period of training at the Academy, appear at the final examination comprising:-

(i) written and practical examinations;

(ii) exercises, tours and excursions; and

(iii) qualifying tests.

(2) The final examination shall, subject to these regulations, be held at the Academy in the manner as decided by the Director.

(3) Exercises in the field work shall be held during the course of training at the Academy according to a phased programme.

[1] The Principal regulations were published in DOPT Notification No.11041/1/2005-AIS-III dated 11.04.2007 vide GSR No.281(E) dt.11.04.2007 in supersession of the Indian Forest Service (Probationers Final Examination) Regulations, 1968

(4) The dates on which and the places at which various examinations and qualifying tests shall be held shall be fixed by the Director.

4. **Subjects and syllabus for part-I written and practical examinations and part-II exercises, tours and excursions.-** The subjects for written and practical examinations and the maximum marks allotted to each of them shall be as follows:-

(1) Part–I: Written and Practical Examinations – 865 marks

(a) The subjects for these examinations and the maximum marks allotted to each of them shall be as follows, namely :-

S.No.	Subject	Maximum Marks	
		Theory	Practical
	INTRODUCTORY PHASE		
1.	Elementary Biology (Theory) / Mathematics	10	-
2.	Elementary Biology (Practical)	-	10
3.	Overview of Forestry	10	-
4.	Forest Statistics	20	-
5.	Geology	10	10
6.	Soil Science	10	10
7.	Soil, Water and Land Management	30	
8.	Computer Awareness and Applications in Forestry	-	20
	PROFESSIONAL PHASE – I		
9.	Forest Mensuration	30	-
10.	Forest Biometry	30	-
11.	Systematic Botany	20	20
12.	Forest Ecology	35	-
13.	Silvicultural Practices	40	-
14.	Forest Economics	40	-
15.	Silvicultural Systems	20	-
16.	Forest Policies, Laws and Conventions	40	-
17.	Biodiversity Conservation	25	-
	PROFESSIONAL PHASE - II		
18.	Forest Survey	25	25
19	RS & GIS	15	15
20.	Forest Engineering	20	10
21.	Wildlife Management	35	-

22.	Forest Production	25	-
23.	Non-Timber Forest Produce	20	-
24.	Wood Technology, Harvesting and Industries	25	10
	CONVOCATION PHASE		
25.	Forest Protection	35	-
26	Forests and People	35	-
27.	Environmental Conservation	40	-
28.	Forest Administration and Accounts Procedures	30	-
29.	Silviculture Viva Voce	30	-
30.	Elective Subject	30	-
	QUALIFYING TESTS	-	-
31.	Parliamentary Attachment	-	-
32.	National Language	-	-
33.	Regional Language	-	-
34.	Motor Mechanics (Motor driving on Saturdays)	-	-
35.	First Aid and Ambulance Drill	-	
36.	Swimming	-	-
37.	Weapons Training	-	-
38.	Horse Riding	-	-
	Total	735	130

Total (Theory and Practical) = 735+ 130= 865 marks

(b) The syllabus for the written and practical examinations and exercises shall be specified in Part I of the First Schedule.

(2) **Part –II Exercises, tours and excursions - 385 marks**

(a) The subjects of exercises and names of tours and the maximum marks allotted to each of them shall be as follows:

Sl. No.	**Exercises and tours**	**Maximum Marks**
A. EXERCISES:		
1.	Working plan	60
2.	Road Alignment	20
3.	Integrated Watershed Management	20
4.	Forest Mensuration	15

5. Wildlife Techniques		10
6. Wildlife Crime Detection		10
7. Participatory Rural Appraisal and Microplan preparation		20

B. TOURS:

1. Introductory Tour		30
2. Hill Tour		40
3. West India Tour		40
4. South India Tour		40
5. East India Tour		40
6. Central India Tour		40
(Exercises and Tours)		
	TOTAL	385

(b) The details of exercises and tours shall be as specified in Part II of the First Schedule.

(c) Local excursions for field botany, bird watching, night patrolling, visit to timber depot and other forest based industries, disposal of seized or unclaimed timber through tender, impact of soil erosion, entomology, pathology, wood harvesting, biometry, etc. shall be undertaken.

(3) Part –III Internal Assessment :- 250 marks

(a) The **Internal Assessment** shall be made at the end of each term or phase, that is, Initiation and Introduction Phase (Term-I), Professional Phase-I (Term-II), Professional Phase-II (Term-III) and Convocation Phase (Term-IV).

(b) The internal assessment will be assessed on the basis of general discipline and personality development and for each term, the marks will be awarded by the faculty members concerned.

(c) The internal assessment shall be evaluated as per the standards set up by the Academy.

Grand Total: Part I, II and III = 865+385+ 250 = 1500 marks

5. **Qualifying tests.**- (1) Every probationer shall also be required to obtain such standards of proficiency in the following subjects as the Director of the Academy may, with the prior approval of Central Government, determine:-

(i) A regional language, specified in the second column of the Second Schedule against the cadre to which he is allocated;

(ii) Where more than one regional language is shown against the cadre concerned, Director of the Academy shall ascertain whether the probationer is already familiar

with any of them and thereafter decide in consultation with the State Government, the regional languages in which the probationer should be examined;

(iii) The test shall comprise of translation, free composition, set composition, conversation and dictation;

(iv) The probationer's knowledge of grammar shall be tested mainly by composition, conversation and passage for comment;

(v) Pass in Hindi is compulsory who studied Hindi as a regional language under clause (i);

(vi) The test in regional language and Hindi will comprise translation, free composition, set composition and conversation;

(vii) The probationer's knowledge of grammar shall be tested mainly by composition, conversation and passage for comment;

(viii) The probationers shall be trained and tested in First Aid and Ambulance Drill;

(ix) The probationers shall be trained and tested in the use of weapon, viz., light machine gun, rifles, pistols, and revolvers;

(x) The standard of training and proficiency for swimming shall be determined by the Director.

(xi) The Probationers shall be trained in the mechanics of petrol and diesel engines; four stroke and two stroke engines; fuel system; ignition system; lubrication system; transmission system; cooling system; fault detection and daily checks and also in driving motor vehicles.

(xii) The Equitation training shall include the walk, trot and canter and the maximum marks allotted to each of the above shall be as follows:

(i)	Regional Language	--	10
(ii)	National Language	--	10
(iii)	First Aid	--	05
(iv)	Weapon Training	--	05
(v)	Swimming	--	05
(vi)	Motor Mechanics and Motor driving	--	10
(vii)	Equitation Training	--	05
	Total		50

6. **Minimum pass marks for examinations and standards of qualifying tests.-** Every probationer shall obtain in each group of subjects, as mentioned in the Third Schedule, a minimum of fifty per cent marks at the written and practical examinations and exercises in the final examinations under regulation 4 and to pass the qualifying

tests conducted by the Director, under regulation 5 by such standards as he may specify.

7. **Interpretation.-** Where any doubt arises as to the interpretation of any of the provisions of these regulations, the matter shall be referred to the Central Government who shall decide the same.

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FIRST SCHEDULE
(See regulations 4(1) and 4(2))

Part I- SYLLABUS FOR THE INDIAN FOREST SERVICE PROBATIONERS' FINAL EXAMINATION

Introductory Phase

1. Elementary Biology and Elementary Mathematics:

(A) Elementary Biology:

(i) Botany:

(a) Theory. - Morphology–classification of plant kingdom; parts of an angiospermic plant, the seed, germination, root, stem - their functions and modification; the leaf, inflorescence, flower and fruit. Histology - the cell, the tissues, cell division, histology of stems, root and leaf. Secondary growth, physiology– absorption, and conduction of water and mineral salts, metabolism– photosynthesis, respiration, nitrogen fixation and reproduction. Tree Genetics–genetics and its application to plant improvement, DNA finger printing.

(b) Practical. - Laboratory work and excursions, terminology related to morphology sessions, identification of plant twig, description of stem, leaves and inflorescence, description of a flower, their different parts, different modifications of parts (roots, stem, leaf and inflorescence), classification of animals (insects), use of flora for field identification of tree species.

(ii) Zoology:

Classification of animal kingdom–economic importance and distinguishing features of different classes.

(B) Elementary Mathematics:

Fundamentals of algebra, arithmetic, geometry, trigonometry, mensuration, use of logarithms, graphs and introductory calculus.

2. Overview of Forestry:

Introduction to forest service, forestry and wildlife management, Forests as subject of Concurrent List of the Constitution of India. Forest Administrative Structure**:** Ministry of Environment and Forests, forest department in the States.

(a) Forests and forestry. - Forest map of India, history of management of forests, emerging trends, forest geography of the world – factors influencing the distribution of forests, critical analysis of forest resources, forestry practices, concept of conservation, preservation and management of natural resources with respect to the management of

forests in India. Forest policies, forestry research and training, different international conferences/commission/ conventions and institutions, their relevance to Indian context, different organizations relevant to forestry on global basis (Websites).

(b) Forest Statistics:

Basic Statistical Methods.- Role of statistics in forestry and wildlife management, definitions, organization of data and its representation, measures of central tendency, measures of dispersion, frequency distribution, Z-table, T- distribution, probability theory analysis of variance, test of significance, null hypothesis. Correlation and regression: definition, simple linear regression, least square fit method, coefficient of correlation and multiple regressions covariance. Forest sampling: necessity concepts and terminology. Population, degrees of freedom, sampling size, intensity, variation and error. Sampling Design: concept, simple random sampling and stratified random sampling, problems regression equation with forestry examples. Multivariate Techniques: principal component analysis, discriminant analysis, cluster analysis, logistic regression. Data transformations, and special techniques, ordination.

(3) Geology:

(a) Theory. - Geological structures and their topographic expressions. Mineral constituents of various rocks and their effect on soil properties, parent materials leading to different types of soils.

(b) Practical. - Identification of important rocks and field excursion to get an idea about different rocks.

(4) Soil Science:

(a) Theory. - Physicochemical and biological properties of forest soil, classification and survey of forest soils. Improvement of problem soils (Acidic, alkaline and sodic soils).

(b) Practical. - Soil Science – analysis in laboratory, study and description of forest soil profile. Collection of soils samples and analysis of important physico–chemical properties.

(5) Soil, Water and Land Management:

(a) Soil conservation.- Soil conservation, its scope and role in national economy. Erosion – agencies, extent, causes, effects and controlling measure. Land use classification, land capability classification. Land use maps and land capacity mapping.

(b) Watershed Management..- Watershed - definition, classification and characteristics. Water harvesting structures, watershed management planning – preparation and analysis of integrated, watershed management project.

(c) Land Management.- Introduction, historical review of land use pattern and degradation, rational land use policy. Cattle and their fodder requirement, grass lands in India – distribution, management and improvement and carrying capacity. Fodder resources of India, forest grazing and its management.

(d) Waste Land Management.- Identification, classification, reclamation and afforestation techniques, National Perspective Plan, management of wastelands, wasteland maps and atlas.

6. Computer Awareness and Applications in Forestry:

Introduction to computers, the computer hardware and software, operating systems, single user and multi-users, word processing, computer virus, data base management, report generation, electronic spread sheet, power point presentations, development of application software, management information systems (MIS), data communication, local area network (LAN), operations research packages, use of software in working plan preparation.

Professional Phase – I

(i) Forest Mensuration.- Need, objective, accuracy units, habitat variables - basal canopy area, crown stem diameter, cover, density, diversity, etc. Techniques for estimating habitat variables, place of measurement, justification rules of breast height measurement, measurement instruments - wooden scale, callipers, tape bark gauge and methods of use, errors, their elimination, comparison. Height measurement – methods, principles - ocular, instrumental, non-instrumental. Christen's, Smythies hypsometer, improvised calipers. Abney's topographical Abney's level-theory demonstration. Haga altimeter, Spiegal relaskop, error sources correction, height of leaning tree, problem solving, Tree stem form - Metsger's theory, form factors, quotient height, taper table, volume measurement of felled trees, stacked logs - empirical formulae and problem solving, volume measurement of standing trees - methods, concept, classification, application, volume tables, preparation of volume tables - graphical method, local volume table from general volume table, regression equation method, problem solving, measurement of age - methods of estimation, concept of growth rings, increment – current annual increment and mean annual increment, increment percent, increment boring, demonstration of Pressler's borer. Stump analysis - theory and demonstration, stem analysis – theory, demonstration and problem solving.

(ii) Forest Biometry.- Measurement of forest crop–diameter, height, age and volume, calculation of current annual increment and mean annual increment of stand, yield tables, mathematical models. Stand structure–even aged and uneven aged, management of sample plots, forest inventory– planning and design, alternatives, sampling, execution, compilation and reporting, forest sites-classification and evaluation, quality classes and site index models, stand growth and its current estimation and production – various methods.

Plant and Animal Biomass Estimation: Basic concepts, simple indices of biomass, estimators for actual biomass estimation, sample counts

(iii) Systematic Botany:
(a) Theory. - Systematic botany of Indian forest plants following Bentham and Hooker's system, Salient features of the following families Magnoliaceae, Dipterocarpaceae, Meliaceae, Sterculiaceae, Leguminosae, Rosaceae, Lythraceae, Myrtaceae, Rhizophoraceae, Asteraceae, Rubiaceae, Lauraceae, Anacardiaceae, Cupuliferae,

Verbenaceae, Euphorbiaceae, Poaceae, Orchidaceae, Coniferae, Ethnobotany and its importance in forest and protected areas and their management.

(b) Practical. - Floral parts, dissection and characteristics of one specimen each of fifteen families with identification of species. Field botanization, Identification of plant or tree species during various tours.

(iv) Forest Ecology.- The environment: main environmental and ecological factors, climatic factors, soil and edaphic factors, physiographic factors and biotic factors. Ecosystems: components of ecosystem, forest biomes: deserts - cold and hot deserts, grasslands, tidal forests, wetlands, climatic climax forests, secondary forests: Major ecosystems - terrestrial and aquatic ecosystems, biotic components of ecosystems: communities, populations, groups and individuals forest productivity, energy and its flow in ecosystem, biogeochemical cycles, autecology, population ecology, ecological genetics, synecology, succession and climax, monoclimax and polyclimax theories, kinds of succession, invasive alien species, plant and animal adaptations. introduction and ecological classification of plants. Climate, vegetation types, phytogeographical zones and zoogeographical zones of India, ecological indicators; classification of forest types with emphasis on Champion and Seth's classification.

(v) Silvicultural Practices.- Silviculture-foundation and practices, relationship between silvicultural practices and forest environment, regeneration: natural and artificial, objectives, principles, methods and alternatives, basic principles of nursery and afforestation techniques (trees and bamboo both) recent techniques of production and out planting of bare root and container seedlings, afforestation in problem sites, energy plantations, urban forestry planning, costing and records of regeneration operations, silviculture of some important Indian trees and their regeneration methods, seed quality testing, regeneration techniques of important species and site treatment, plus trees, laying of seed orchards, planting stock improvement.

(vi) Forest Economics.- Relevance of economics to forestry, factors affecting supply of forest products, production theory as applied to forestry; production function. Market-main features, different forms and types of competition, cost and revenues, marginal cost and marginal revenue. Overview of economics of world forestry, land use productivity and opportunity cost, forest valuation – cost of conservation, application of forest economic principles to forestry operations. Marketing of forest products: forestry sector and national economy, tangible and intangible goods and services from forests and its contribution to gross domestic product (GDP), national resource accounting and monetization of intangible service of forests, investment criteria, Benefit cost analysis, internal rate of return (IRR), sensitivity analysis and their application. Classification of use and non-use values, direct and indirect valuation techniques, clean development mechanism and economics of carbon sequestration.

(vii) Project Formulation.- Project formulation, implementation, monitoring and evaluation.

(viii) Silvicultural Systems.- Definition, scope, objective and classification, systems-clear felling, shelter wood, selection, coppice, Indian modifications and applications, conversion from one system to other, silviculture systems for bamboos, gregarious flowering; management; conversion from pure to mixed bamboo forests.

(ix) Forest Policies and Laws:

(a) Forest policies.- Policy formulation, procedures and development. Background and critical evaluation of forest policies of 1894, 1952 & 1988 and their objective assessment. Relevance of 1988 forest policy to country's developmental policies/initiatives. Other state level policies relevant to forestry.

(b) Forest Laws.- The Indian Forest Act, 1927, general provisions and detailed study. The Forest (Conservation) Act, 1980 and the Forest Conservation Rules. Constitutional provisions for protection of forests and wildlife. Functioning of forest courts, special forest laws, amendments, Acts and Orders of the State. The Wildlife (Protection) Act, 1972 and rules, the Biodiversity Act, 2002, the Intellectual Property Rights Act, 1974 and the Environmental (Protection) Act, 1986.

(x) Biodiversity Conservation.- Concepts of biodiversity and wildlife conservation, world conservation strategy, threats to biodiversity, assessing biodiversity, biodiversity indices and their calculation, habitat and ecosystem diversity in India with special emphasis on wetland and marine ecosystems, biodiversity outside the forested habitats and landscape approach to biodiversity conservation. Biodiversity conservation in managed forests. Agencies: International Union for Conservation of Nature categories, landscape and ecosystem approach, biosphere reserves, biodiversity hotspots and mega-biodiversity; national and international organization (International Union for Conservation of Nature, Global Environment Facility, World Conservation Monitoring Centre, etc.), schemes of Ministry of Environment and Forest on wildlife sector and biosphere reserves etc, migratory flyways, threats to migrant populations. Biogeographic distribution of some major species of Indian fauna, rare and common species of wildlife of the Himalayas, Peninsular India, Western and Eastern Ghats; North-eastern India, desert and coastal areas, islands etc., International Union for Conservation of Nature classification of status of species of wild flora and fauna. Endangered species and critical hot spots, National Biodiversity Strategy and Action Plan, biodiversity registers.

Professional Phase – II

(i) Forest Survey:

(a) Theory .- Introduction, object and scope, scales and errors, measurement of distance-chain survey. Measurement of angles, chain compass survey, plane table survey. Levelling and topographic survey, area calculation, copying, enlargement and reduction. Maps and map reading - geodesics and projection systems, Global Positioning System, survey of forest areas - boundary demarcation pillars. Forest land organization - compartments, blocks, beats, sections, range, protected area boundaries. Revenue and forest record keeping systems. Use of Global Positioning System for forest land survey and land record maintenance.

(b) Practical.- Chain survey field work and plotting, chain and compass survey field work and plotting, plane table survey field work and survey plotting using Global Positioning System, actual survey of forest blocks and boundary verification in the field, map reading in field to locate points from a map on the ground and also from ground to map, using Global Positioning System, Survey of India Maps.

(ii) Remote Sensing and Geographical Information Systems:

(a) Theory.- Basic principles, types and scope of remote sensing, introduction to aerial photography and photogrammetry, measurements from aerial photographs, photo-interpretation, area determination and forest mapping, use of aerial photographs in forest inventory and management, introduction to various types of satellites and sensors– resolution and form of data available, acquisition and interpretation of satellite data for forestry purpose, thematic mapping, vegetation mapping, Geographical Information System and its use in forest management.

(b) Practical .- Stereoscopic vision test, identification of objects and interpretation of aerial photographs, measurements on aerial photographs, thematic maps, visual interpretation of satellite imagery, digital interpretation of satellite imagery. Introduction to Geographical Information System data capture - scanned maps, images, Global Positioning System survey data, digitization and building queries - area, length and other calculations.

(iii) Forest Engineering:

(a) Theory .- Building construction, quality of materials, specification and field checks, site selection, planning and construction of forest structures, site selection and construction, preparation of estimate of a building, requirement of building material for construction, plinth area and cube rate estimates, analysis of rates, foundation design for load bearing walls, forest roads-classification, geometric design, alignment and earth work estimation, construction designs in areas prone to floods, cyclones and earthquakes etc,. design of retaining wall and construction etc., bridges- designs of forest bridges, small culverts, causeways, water harvesting structures and soil conservation works – check dams, anicuts, spill ways, design of river training works etc, design of water harvesting structures in habitat management; locations, watch towers, design of coastal shelters, design and construction of buildings with bamboo as resource material.

(b) Practical .- Drawing–plan, elevation and section of buildings, check–dams, bridges with span up to 6 m, estimating earth work from longitudinal section.

(iv) Wildlife Management: Wildlife management in India, Indian wildlife conservation strategy. Wildlife habitats: factors influencing carrying capacity, limiting factors: food, shelter, water, soil, edges, ecotones, interspersion, juxtaposition, seasons biotic stresses etc., population ecology population structure and biotic potential, population dynamics, population growth, life tables and survivor curves, saturation density and intermediate stages, management of small populations, introduction, re-introduction and re-stocking, capture and translocation, monitoring and research. Control of problem animals, (with special reference to those animal species which are involved in severe human-animal conflict issue). Wildlife health management. Wildlife behaviour studies: Introduction to animal behaviour Methods to study animal behaviour, broad patterns of social and breeding behaviour of major animal species of India. Conservation strategies-ex situ and in-situ: species based and area based approaches, captive management, zoos, Central Zoo Authority. Protected area network: International Union for Conservation of Nature categories, landscape and ecosystem approaches, protected area management, management planning, policy issues; Human Dimensions: traditional conservation ethics and practices, issues pertaining to settlements in and around PAs, mitigating interface conflict, eco-development, ecotourism, anti-poaching strategies. Wildlife (Protection)

Act,1972: case laws pertaining to wildlife offences, Convention of International Trade in Endangered Species of Wild Flora and Fauna management authority , provisions of Indian Penal Code, Criminal Procedure Code and the evidence Act relevant to wildlife offences, Wildlife Forensics, Wildlife Rules, Biodiversity Act, 2002, international conventions and treaties, EXIM policy, National Wildlife Action Plan, 2002. Role of government agencies in monitoring and controlling wildlife related policies across the country. National Zoo Policy, conservation projects on threatened flora, fauna and ecosystems:

(v) Forest Production : Introduction, object and principles, resource base-present and future demands, current practices, valuation and appraisal-methods for trees, stump age, even aged and un even aged stand, non-timber forest products, concepts of normal forest, increment and yield, sustained yield, sustainable forestry, rotation, evaluating intensive management decisions-spacing and thinning, Economics of thinning and rotation. Classical approaches to forest yield regulation-principles and its application to Indian forests.

(a) Non-timber forest produce.- Introduction, types of Non-Timber Forest Products, resource assessment. Cultivation practices- detailed cultivation practices of commercially important species including medicinal plants etc. including economics and marketing strategies, credit, financing, training and extension on institutionalizing cultivation. Non-Timber Forest Products concerned with animal products.

(b) Conservation and sustainable harvesting.- Livelihood issues related to Non-Timber Forest Products, subsistence economy, role or scope in Participatory Forest Management**,** red list of International Union for Conservation of Nature and schedule VI of Wildlife (Protection) Act, 1972. Methods of in-situ and ex-situ conservation, concept of sustainable utilization, sustainable harvestable limits and non-destructive harvesting, value addition, bio-prospecting and bio-discovery.

(c) Trade, marketing and industries- National and international trade EXIM Policy, certification, demand and supply developing sound marketing and pricing strategies cottage and small industries for rural development. Supply of raw material to industries. patenting and traditional knowledge issues, conventions related to Non-Timber Forest Products.

(vi) Wood Technology, Harvesting and industries:

(a) Wood Technology.- Wood anatomy, scope, structure, physical features and strength properties of wood, evaluation of defects and abnormalities for various uses. Wood seasoning, preservation-concepts and practices, other improvement techniques of timber utilization.

(b) Wood Harvesting.- Definition, scope, terminology. Basic logging hand tools and power chain saws-operation and maintenance. Felling operations, dragging, transporting-various methods and equipments. Loss in process. Management of departmental harvesting. Investment decisions and planning-road design, work study and costing of operations, marketing.

(c) Wood Based Industries.- Establishment of forest based industries. Policy on raw material supply and problems. Composite wood products and their manufacture. Paper industries, saw milling-techniques and equipment. Wood based small and cottage industries in rural development. Wood for other uses. Grading of wood. Record keeping.

(d) Wood Technology-

Practical.- Identification of timbers with key for important timbers, wood seasoning and wood preservation.

Convocational Phase

1. Forest Protection:

(a) General protection.- Agencies causing forest damage – fires, man, cattle, insects, pathogens, nature of damage, forest fire – damage, control and protection, monitoring by Government of India, state and division level, damage assessment with the help of Remote Sensing and Geographical Information System, forest fire management plan and budgetary provisions, illicit felling unrecorded removal (headloads) uncontrolled grazing, shifting cultivation, encroachment – problem and remedial measures, eviction procedures. Protection measures at divisional level – issuance of preliminary offence report, seizure, raid, First Information Report, court cases. Timber depot and its maintenance, disposal of seized and unclaimed timber, transit of forest produce etc. Damages by atmospheric agencies – control measures. Disaster Management – basic concept of disaster management plan. Participatory Forest Management for protection, intelligence gathering.

(b) Pests and diseases.- Common forest insect pests and their control with the help of various case studies related to the field, excursion to nearby forest area for Sal borer attack and demonstration of tree-trap method. Diseases of trees – symptoms causal organism, identification and control measures with the help of case studies, excursion to near by forest area to focus on different pathogens.

2. Forests and People:

(a) People and Forest Interface.- Emerging trends in natural resource management, forest- people interface, concept of common property resources, human population growth or structure and its implications for the natural environment, social development initiatives in India, Human Development Report, overview of rural and tribal development programmes, role of Non-Governmental Organisations, alternative approaches to development, integrated development, eco-development, alternative resource management, systems- privatization, public management, collective management, common property institutions and development.

(b) Gender Analysis .- Gender perceptions in planning, concept of gender based role, needs and priorities in relation to resource, use and management, committee survey methods including the participatory learning methods, gender impact analysis.

(c) Social Analysis.- Importance of social perspectives in development work, displacement and resettlement of local communities with respect to creation of protected areas, legal situations, Protected Areas managers role and responsibility in resettlement, characteristics of an ideal resettlement scheme- what can go wrong and how to forestall these problems, Protected Areas- People Mutual Influence Zone Analysis.

(d) Participatory Forest Management.- Participatory development process, Stakeholders and SWOT Analysis, rapid rural appraisal, participatory rural appraisal, social forestry programmes, joint forest management- State Joint Forest Management orders: A comparative view, issues and challenges in Joint Forest Management, natural afforestation programmes, forest development agencies, participatory monitoring and evaluation, conflict resolution.

3. Environmental Conservation:

(a) Environment.- Environmental degradation: pollution – different types, effects, global warming, ozone layer depletion, acid rain, principles of environmental conservation, critical measures, environmental monitoring, environment impact assessment of projects, concept of sustainable development, strategy for sustainable energy use Environment management, education, waste management, coastal zone regulation, river cleaning project, regulation of hazardous substances, free trade and environment, India's international obligation, pollution control administration, Environment audit and eco mark,, policy and constitutional provisions, environmental policy.

(b) International Conventions.- Relevant provisions of, Kyoto-protocol, Convention on Biodiversity. Intellectual Property Rights and Patenting, Indian Patents Act.(3rd Amendment) Convention on International Trade in Endangered Species, United Nations Framework Convention on Climate Change, United Nations Forum on Forestry, Ramsar Convention, convention on migratory birds, whaling commission & other important forest related legally binding international instruments. Access and benefit sharing, Panchayats (Extension to the Scheduled Area) Act, 1996.

4. Forest Administration and Accounts Procedures:

(a) Forest Administration.- Organizational Setup (Organogram) of the forest department in the states and Government of India, managing through office, managing through field. Range Inspection: forms, records and registers. Manuals of office procedure, performance appraisals, writing Annual Confidential Reports, disciplinary rules, legal matters. Election process, assembly and parliamentary questions, committees etc. E-governance policy and guidelines. Management Information System, Forestry planning and budgeting, asset management.

(b) Forest Accounts.- Difference between forest accounts and revenue accounts. Departmentalized accounting system. Budget, revenue receipts, custody and payment of government money, control of expenditure and reconciliation. administrative and financial powers, delegation of financial powers, forest officers as Drawing-cum-Disbursing Officer's audit - internal audit. Personal Deposit Account and Personal Loan Account, accounts code etc. Stores - purchase, maintenance, write-off. Miscellaneous expenditure. General instructions. Withdrawal from government account personal claims. Contingent charges. Disbursements. Income tax, procedure for cheque-drawing

Drawing-cum-Disbursing Officers. Maintenance of group 'D' staff General Provident Fund accounts.

5. Elective Subject: The probationer shall be required to opt for one of the topics from the suggested list in the first phase of probation period for advanced study under guidance of a resource person. The list of the topics shall be provided during the first phase. Director's decision shall be final in selection of the topic. During the first year, the probationer will undertake advanced studies and shall prepare a paper and make presentation. Finally, a dissertation submitted by the Probationer will be evaluated by a committee to be constituted by the Director.

Part II – EXERCISES, TOURS AND EXCURSIONS

A. Exercises:

1. **Working Plan Exercise.-** Preliminary working plan report; field work –stock mapping, checking of maps, compartment description, collection of data, evaluation of past practices and management alternatives, estimation of demand and availability of bio-resources, biotic stresses, sustainable production limits, administrative and socio-economic limitations etc. Use of Remote Sensing and Geographic Information System during working plan preparation, Working Plan exercise on National Code of Working Plan, management prescriptions for the forest areas outside the government owned forests.

2. **Road Alignment Exercises**.- Survey, alignment, drawing and cost estimation of forest roads

3. **Integrated Watershed Management**.- Selection of macro and micro watershed, data collection, socio–economic survey, formulation of an integrated watershed development project comprising various sectoral development plans.

4. **Forest Mensuration Exercise**.- Stem analysis, stump analysis, increment boring, sample plot lay out, enumeration

5. **Wildlife Techniques Exercise.-** Ecosystem approach to wildlife management-study of different aspects of wildlife management plan, population estimation techniques, study of man-animal conflicts, habitat studies, ecotourism and eco-development etc.

6. **Wildlife Crime Detection.-** Wildlife crime control procedures to deal with, critical analysis, intelligence gathering and evidence collection techniques with reference to in general forests and wildlife in particular

7. **Participatory Rural Appraisal and Microplan Exercise.-** Need, objectives, tools of Joint Forest Management techniques, Rapid Rural Appraisal, Participatory Rural Appraisal, different concepts, socio economic survey, preparation and finalization of microplans.

B. Tours: The details shall be finalized by the Director every year depending on the requirements of the course. All field tours are theme based and the probationers shall be

exposed to the specific forestry activities related to the concerned State or region during their field tours.

1. Introductory Tour.- Familiarization with forest flora and fauna, operation, different terminology of forests, features and factors, altitudinal zonation and technique to identify a species in the forest.

2. Hill Tour.- Study of Western Himalayan ecosystem, working plans and management of coniferous forests and temperate broad–leaved species, botanization during trek, visit to Central Staffing Scheme or Externally Aided Projects project sites.

3. **West India Tour.-** Soil conservation, grassland management and pasture development, ravine and wasteland reclamation, combating desertification, habitat management of wild ass sanctuary, habitat management of Gir National Park, semi arid and arid conditions, desert areas – Arresting sand dunes and desertification, saline areas, soil and moisture conservation works.

4. South India Tour.- Study of Shola forest and Rain forest ecosystem, Silviculture and management of main species of South India, bio-diversity of tropical forest in Silent Valley, Coastal Zone Regulation.

5. East India Tour.- Coastal ecosystem management, marine resources and Protected Area management, Mangrove management, Zoo management, shifting cultivation, impact and its control, natural regeneration of Sal, high altitude Protected Areas management.

6. Central India Tour.- Silviculture and management of main species of Central and Peninsular India, management of teak forests, Protected Area management and eco-development, Marine ecosystem and development of ecotourism

C. Excursions.- Local excursions for field botany, bird watching, night patrolling, visit to timber depot and other forest based industries, disposal of seized or unclaimed timber through tender, impact of soil erosion, entomology, pathology, wood Harvesting, biometry etc.

Second Schedule

{See regulation 5 (1)(i)}

State	Regional Languages
(1)	(2)
Andhra Pradesh	Telugu or Urdu
Assam-Meghalaya	Assamese, Bengali, Khasi or Garo
Bihar	Hindi
Chhatisgarh	Hindi

Gujarat	Gujarati
Haryana	Hindi or Urdu
Himachal Pradesh	Hindi
Jammu and Kashmir	Urdu, Kashmiri or Dogri
Jharkhand	Hindi
Karnataka	Kannada
Kerala	Malayalam
Madhya Pradesh	Hindi
Maharashtra	Marathi
Manipur-Tripura	Manipuri, Bengali or Hindi
Nagaland	Nagamese in Roman Script
Orissa	Oriya
Punjab	Punjabi (in Gurumukhi script) or Hindi
Rajasthan	Hindi
Sikkim	Nepali
Tamil Nadu	Tamil
Uttar Pradesh	Hindi
Uttaranchal	Hindi
West Bengal	Bengali or Hindi
Arunachal Pradesh, Goa, Mizoram and Union Territories	Assamese, Hindi, Malayalam, Marathi, Tamil, Urdu or Gujarati

Third Schedule

(See regulation 6)

Sl. No.	Group	Subject
1.	Basic Sciences	Elementary Biology (Theory) or Mathematics
		Elementary Biology (Practical)
		Systematic Botany
2.	Earth Sciences	Geology

		Soil Science
		Soil, Water and Land Management
3.	Applied Sciences	Forest Statistics
		Computer Awareness and Applications in Forestry
		RS and GIS
4.	Forest Survey and Engineering	Forest Survey
		Forest Engineering
5.	Ecological Sciences I	Forest Ecology
		Environmental Conservation
6.	Ecological Sciences II	Biodiversity Conservation
		Wildlife Management
7.	Silviculture	Silvicultural Practices
		Silvicultural Systems
		Silviculture Viva Voce
8.	Forestry I	Forest Mensuration
		Forest Biometry
9.	Forestry II	Wood Technology, Harvesting and Industries
		Non-Timber Forest Produce
10.	Forestry III	Forest Production
		Forest Economics
11.	Forestry IV	Overview of Forestry Forests and People
12.	Forest Protection and Policies	Forest Protection
		Forest Policies, Laws and Conventions
13.	Forest Administration & Accounts	Forest Administration and Accounts Procedures
14.	Project Assignment	Special Paper

[These regulations have been made effective from 1st August 2005 as the probationers of the examination 2004 are being imparted training as per these regulations]