The Indian Forest Service (Probationers' Final Examination) Regulations, 2016

UNION OF INDIA
India

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Rule
THE-INDIAN-FOREST-SERVICE-PROBATIONERS-FINAL-EXAMINATIO of 2016

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The Indian Forest Service (Probationers' Final Examination) Regulations, 2016Published vide Notification No. G.S.R. 270(E), dated 29th February, 2016Ministry of Personnel, Public Grievances and Pensions(Department of Personnel and Training)G.S.R. 270(E). - In exercise of the powers conferred by sub-section (1) read with sub-section (1A) of section 3 of the All India Service Act, 1951, and in supersession of the Indian Forest Service (Probationers' Final Examination) Regulations, 2007, except as in respect of 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.

(1)These regulations may be called the Indian Forest Service (Probationers' Final Examination) Regulations, 2016.(2)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,-(a)"Internal Assessment" means the assessment of the probationers based on general discipline and personality development by the Academy;(b)"Schedule" means a Schedule appended to these regulations;(c)"Academic Council" means the Academic Council constituted under regulation 8.(2)All other words and expressions used in these regulations and not defined herein but defined in the Indian Forest Service

(Probation) Rules, 1968 shall have the meanings respectively assigned to them in the said rules.

3. Final Examination.

(1)Every probationer shall during the period of training at the Academy, appear at the final examination comprising of-(a)written and practical examinations;(b)exercise, tours and excursions; and(c)qualifying tests.(2)The final examination shall, subject to these regulations, be held at the Academy in such manner as may be decided by the Director.(3)The dates and the places for conducting various examinations and qualifying tests shall be fixed by the Director.

4. Subjects for final examination.

- The subjects for final examination and the maximum marks allotted to each of them shall be as specified in the following parts, namely:-(a)Part-I : Written and Practical examinations:(i)The subjects for written and practical examinations and the maximum marks allotted to each one of them shall be as specified in the following table, namely:-Table

Sl. No.	Subject	Maximum Marks	
Theory	Practical		
	(1)	(2)	(3)
1	Elementary Biology (Theory)/Elementary Mathematics	15	10
2	Overview of Forestry	15	0
3	Forest Statistics	15	0
4	Soil, Water and Land Management	45	10
5	Forest Mensuration	35	0
6	Forest Biometry	40	0
7	Systematic Botany	25	10
8	Forest ecology	40	0
9	Silvicultural Practices	40	0
10	Forest Economics	30	0
11	Silvicultural Systems	20	0
12	Forest Policies and Laws	75	0
13	Biodiversity Conservation and Wildlife Management	100	0
14	Forest Survey	20	10
15	Remote Sensing and Geographical Information Systems	30	30
16	Forest Engineering	20	10
17	Forest Management	40	0
18	Non-Timber Forest Produce	30	0
19	Wood Technology and Forest Harvesting	40	10

20	Forest Health	30	0
21	Forests and People	30	0
22	Environmental Conservation	30	0
23	Forest Administration and Accounts Procedures	20	0
24	General Management	15	0
25	Optional Subject	30	0
26	Forestry Viva Voce	60	0
	Total	890	90

The Total Marks in Theory and Practical = 890 + 90 = 980 Marks(ii)The syllabus for the written and practical examinations shall be as specified in Part I of the First Schedule.(b)Part-II : Exercises, tours and excursions:-(i)The subjects for exercises, tours and excursions and the maximum marks allotted to each one of them shall be as specified in the following table, namely:-(A)Exercises:Table

Sl. No.	Exercise	Maximum Marks
	(1)	(2)
1	Working Plan	60
2	Integrated Watershed Management	15
3	Forest Mensuration	20
4	Forest Biometry	10
5	Forest Survey	10
6	Wildlife Techniques	20
7	Forest and Wildlife Crime Detection	15
	Total	150

(B)Tours:

Sl. No.	Tour	Maximum Marks
	(1)	(2)
1	Introductory tour	20
2	Theme based tours (minimum four numbers)	160
3	Special exposure to overseas forestry practices	40
	Total	220

Total Marks of Tours and Exercises = 150 + 220 = 370 Marks(ii)The details of exercises and tours shall be as specified in Part II of the First Schedule.(iii)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. shall be undertaken.(c)Part III - Internal assessment:(i)The internal assessment will be made at the end of each phase on the basis of general discipline and personality development during professional training which will be in two phases, namely, professional phase I and professional phase II.(ii)The duration of each phase including subjects, tours, and exercises to be covered shall be decided by the Academy.(iii)The internal assessment shall be evaluated as per the standards set up by the Academy.

250. marks

Grand Total of Marks in Part I, II and III = 980 + 370 + 250 = 1600 marks

5. Subjects for 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 determine, namely:-(a)Regional language:(i)The probationer should be examined in the regional language specified in the column (2) 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, the Director of the Academy shall ascertain whether the probationer is already familiar with any of them and thereafter may decide in consultation with the State Government the regional language in which the probationer shall be examined.(iii)The test shall comprise of translation, free composition, set composition, conversation and dictation.(iv)The Probationer's knowledge of grammar should be tested mainly by composition, conversation and passage for comment.(b)National language:-(i)The test shall comprise of translation, free composition, set composition, conversation and dictation.(ii)The probationer's knowledge of grammar shall be tested mainly by composition, conversation and passage for comment.(iii)Qualifying the national language is compulsory even if a probationer has studied Hindi as regional language.(c)Motor Mechanics. - 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.(d)First aid and ambulance drill. - The Probationers shall be trained and tested in first aid and ambulance drill.(e)Swimming. - The standard of training and proficiency for swimming shall be determined by the Director.(f)Weapon Training. - The probationers shall be trained and tested in the use of weapon, viz, light machine gun, rifles, pistols and revolvers.(g)Equitation Training. - The equitation training shall include the walk, trot and canter.(2)The maximum marks allotted to each of the above qualifying tests shall be as specified in the following table, namely:-Table

Sl.No.	Qualifying Tests	Maximum Marks
1	Regional Language	10
2	National Language	10
3	Motor Mechanics	10
4	First Aid and Ambulance drill	05
5	Swimming	05
6	Weapon Training	05
7	Equitation Training	05
	Total	50

6. Attendance in courses and trainings, etc.

- Every probationer shall attend the Parliament appraisal course conduct by the Bureau of Parliamentary Studies and Training (BPST), one week attachment with the reputed Non-governmental organization and such other training or courses as may be decided by Director, from time to time.

7. Minimum pass marks for examinations and standards for 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 combined, and in the exercises and tours in the final examinations under regulation 4 and to pass the qualifying tests under regulation 5:Provided that for qualifying the tests under regulation 5, the probationer shall be required to attain such standards of proficiency as the Director of the Academy may determine.

8. Academic Council.

(1)With a view to put in place a mechanism for constant review, update and improve the overall training content at the probation stage, there shall be constituted an Academic Council comprising of the following members, namely:-

1	Director, Indira Gandhi National Forest Academy (IGNFA)	Chairperson
2	Additional Director General of Forests, Ministry ofEnvironment, Forest & Climate Change, Government of India	Member
3	Professor (Academics), IGNFA	Member
4	One Associate Professor/Additional Professor (In-chargetraining need assessment unit), IGNFA	Member Secretary
5	Director of Forestry Education	Member
6	All faculty members of Indira Gandhi National Forest Academy	Member
7	Nominee of Director General, Indian Council of ForestryResearch and Education (ICFRE)	Member
8	Nominee of Director, Wildlife Institute of India	Member
9	Nominee of Director General, Forest Survey of India	Member
10	Nominee of Director, Indian Institute of Forest Management(IIFM)	Member
11	Two eminent persons from Government/Non Government Sector tobe nominated by Director, Indira Gandhi National Forest Academy	Member

(2)The functions of the Academic Council shall include the following, namely:-a. finalise the training content for each subject in every group of subjects;b. to allot and distribute the time assigned to each subject within a group of subjects;c. conduct or get conducted competency-based training needs assessment (TNA) periodically through a well organised third party, experts involving well known forest academicians and practitioners;d. obtain feedback from the field and other stakeholders;e. conduct training related research in forest management;f. conduct an annual

workshop of Principal Chief Conservators of Forests and Members (determined in consultation with State Governments) to assess the effectiveness of training to the probationers;g. consult specialised bodies and institutions for infusing new technologies, developing mechanism for institutional tie-up with national and international organisations of repute in the field of the forestry, environment, wildlife, etc.;h. conduct the annual meeting of the Academic Council to finalise the training content and publish studies, resource material, etc.;i. formulate and conduct the faculty development programmes.

9. 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.First Schedule(See regulation 4)

Part I – Syllabus for Indian Forest Service Probationers' Final Examinations

1. Elementary Biology and Elementary Mathematics. - (1) Elementary Biology.

(a)Botany.(i)Theory. - Classification of plant kingdom; morphology-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, conduction of water and mineral salts; metabolism-photosynthesis, respiration; nitrogen fixation and reproduction.(ii)Practical. - Laboratory work terminology related to morphology, identification of plant twig, description of stem, leaves and inflorescence, description of a flowers and their different parts, different modifications of parts (roots, stem, leaf and inflorescence), use of flora for field identification of tree species.(b)Zoology. - Classification of animal kingdom-economic importance and distinguishing features of different classes.(2)Elementary Mathematics. - Fundamentals of algebra, arithmetic, geometry, trigonometry, mensuration, use of logarithms and graphs.

2. Overview of Forestry. - Introduction to forest service, forestry and wildlife management; forest administrative structure: Ministry of Environment, Forests and Climate Change, forest department in the States; history of management of forests; emerging trends in forestry sector; 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; introduction to forest laws and policies; forestry research and training.

3. Forests Statistics. - Role of statistics in forestry and wildlife management; definitions; organization of data and its representation; measures of central tendency; measures of dispersion; frequency distribution; probability theory; normal and "t" distributions and their applications; tests of significance; correlation and regression: definition, covariance, simple linear regression, least square fit method, coefficient of correlation; multiple regressions; forest sampling: necessary concepts and terminology, population, degrees of freedom, sampling size, intensity, variation and error; analysis of variance.

4. Soil, Water and Land Management. - (1) Geology. - (a) Theory. - Geological structures and their topographic expressions; mineral constituents for 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.(2)Soil science. - (a) Theory. - Physicochemical and biological properties of forest soils, classification and survey of forest soils, improvement of problem soils (Acidic, alkaline and sodic soils).(b)Practical. - Soil analysis in laboratory; study and description of forest soil profile; collection of soils samples and analysis of important physio-chemical properties.(3)Soil conservation. - Soil conservation, its scope and role in national economy; erosion agencies, extent, causes, effects and controlling measures; land use classification; land capability classification; land use maps and land capacity mapping.(4)Watershed management. - Watershed - definition, classification and characteristics; water harvesting structures; watershed management planning - preparation and analysis of integrated watershed management project.(5)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.(6)Waste land management. - Identification and classification of wastelands; reclamation and afforestation techniques; National Perspective Plan; management of wastelands; wasteland maps and atlas.

5. Forest Mensuration. - Need, objective, accuracy, units; tree diameter measurement- measuring instruments-wooden scale, calipers, tape bark gauge and methods of use, errors, their elimination; tree height measurement - methods - ocular, instrumental, non-instrumental, Christens Hypsometer, Smythies' Hypsometer, improvised calipers; Abney's topographical level-theory and demonstration; Haga Altimeter; Spiegel Relaskop; error sources and their correction; height of leaning tree, problem solving; tree stem form - Metgzer'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 and preparation of volume tables - graphical method, derivation of 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; habitat variables- basal area, canopy area, crown stem diameter, cover, density, diversity etc; techniques for estimating habitat variables and place of measurement,

6. Forest biometry. - Measurement of forest crop - diameter, height, age and volume; calculation of current annual increment and mean annual increment of stand; yield tables and 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.

7. Systematic botany. - (1) Theory. - Systematic botany of Indian forest plants following Bentham and Hooker's system; salient features of the following families viz. Magnoliaceae, Dipterocarpaceae, Meliaceae, Sterculiaceae, Leguminosae, Rosaceae, Lythraceae, Myrtaceae, Rhizophoraceae, Asteraceae, Rubiaceae, Lauraceae, Anacardiaceae, Cupuliferae, Verbenaceae, Euphorbiaceae, Poaceae, Orchidaceae, Coniferae; Ethno-botany and its importance in forest and protected areas and their management.

(2)Practical. - Floral parts, dissection and characteristics of one specimen each of five families with identification of species.

8. Forest Ecology. - The environment : main environmental and ecological factors; climatic factors, soil and edaphic factors; physiographic factors biotic factors and abiotic 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 poly climax theories, kinds of succession; invasive alien species; plant and animal adaptations; introduction and ecological classification of plants; climate, vegetation types, phyto-geographical zones and zoogeographical zones of India; ecological indicators; classification of forest types with emphasis on Champion and Seth's classification.

9. 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 (tree 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; tree Genetics-genetics and its application to plant improvement, plus trees, laying of seed orchards, planting stock improvement.

10. 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 forest and its contribution to gross domestic products (GDP), national resource accounting and monetization of intangible service of forest, 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.

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

12. Forest Policies and Laws. - (1) 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 in the country's developmental policies/initiatives; other State level policies relevant to forestry.

(2)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 States; the Wildlife (Protection) Act, 1972 and Rules, the Biological Diversity Act, 2002, the Intellectual Property Rights Act, 1974 and the Environmental (Protection) Act, 1986.

13. Biodiversity Conservation and Wildlife Management. - (1) Biodiversity Conservation. - (i) Concepts of biodiversity: Gene to ecosystem level diversity; global bio geographic classification; hot spots of biodiversity; endemism; concept of umbrella, flagship, keystone and Indicator species.

(ii)Bio geographic classification of India: Zones, provinces and biomes level, representative faunal associations.(a)Introduction to animal kingdom: classification and essential features.(b)Conservation of biodiversity: IUCN categories of protected areas; history of wildlife management in India; protected areas system in India- national parks, wildlife sanctuaries, conservation reserves and community reserves; special category areas: biosphere reserves, natural world heritage sites, project tiger, project elephant, project snow leopard etc., wildlife management in other countries.(c)Ecotourism-Concept, fundamental principles, visitor impacts, tools for addressing impacts, few case studies; interpretive planning.(d)Wildlife health management. - Introduction to wildlife health management, determinants of disease, transmission of infection, major disease of wildlife, emerging infectious diseases (EIDs) of zoonotic importance, diseases of migratory birds, concept of one health, disease investigations and field procedures, disease management, planning prevention and control of diseases in wildlife, human health risks from global environment changes, bio-warfare, bio-terrorism and animal diseases as weapons.(e)Ex-situ conservation: Ex-situ management of wild animals: theory and practices of Ex-situ conservation, element of zoo management: planning and management of animal facilities; world zoo conservation strategy; national zoo policy; central zoo authority, recognition of zoo rules etc.(f)People & protected areas :Biodiversity conservation and community participation- issues, concept of eco development for wildlife conservation, communities and community participation, biodiversity register, local

traditional knowledge and practices in conservation, institutions and institution building process, planning eco development; relocation and rehabilitation of villages from inviolate areas, existing policy and legal framework, case studies for eco development and resettlement; role of extension for local villages and schools, media management and public relations.(2)Wildlife management. - (a) Habitat Ecology: Introduction to the concept of plant and animal succession; concept of habitat, different types of habitats i.e. forests, grassland, deserts, freshwater, marine, estuarine, wetland, animal habitat use patterns; concept of habitat preference & critical habitats; edge effect, niche, limiting factors, role of fire, grazing and other natural calamities like floods, cyclones, tsunami etc. in habitat modification; invasive species and their control, mapping of wildlife resources, Protected Area (PA) Network; Island biogeography & protected area design.(b)Population Ecology & Conservation Biology: Life history traits; patterns of population growth, density dependent and independent mechanisms; concept of population viability analysis (PVA), carrying capacity, meta-population and evolutionary significant units (ESU); monitoring and estimation of wild animals: case study of tiger; endangered species management - principles & practices of reintroduction, restocking; preparation of recovery Plans.(c)Illegal trade in wildlife species and products: Wild animals and animal products in illegal trade and methods (involvement of local people, instruments used, trade routes, trans-boundary issues in illegal trade (inter division, interstate, international), control measures (intelligence gathering, data base of criminals, crime charts, crime mapping, deceptions used, electronic surveillance devices, study of crime scenes, forensics, collection and preservation of evidence, arrest, interrogation, investigation, preparation of case records, court procedures etc.), case studies on successful prosecutions.(d)Human wildlife conflict & mitigation: Nature, causes and mitigation of depredation by wild animals: case studies from India and abroad; wild animal barriers, role of communities in management of conflict situations, crowd control, role of district administration.(e)Management of animal in distress and their rehabilitation: Introduction to physiology of stress, shock and trauma, safe capture of wild animals - equipments and techniques, basic pharmacology of immobilisation drugs, drug classification, legal aspects, immobilisation of ungulates, carnivores and mega herbivores , management of elephants in musths, transport of wild animals, design of transport cages, rehabilitation and monitoring.

14. Forest Survey. - (1) 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.

(2)Practical. - Chain survey- field work and plotting, chain and compass survey, field work and plotting, plane table survey field work and survey plotting. map reading in field to locate points from a map on the ground and also from ground to map.

15. Remote sensing and geographical information systems. - (1) Theory. - Rationale & relevance, information need and geomatics; spatial database, spatial data - non spatial data; basic concepts of remote sensing, types of remote sensing, applications of remote sensing technology; concept of geo stationery & sun synchronous satellites; optical & microwave remote sensing; data acquisition by the sensor; electromagnetic waves - spectrum; absorption, emission and scattering; Spectral characteristics - signature; spectral characteristics of vegetation; different regions of vegetation reflection spectra; digital satellite data; concept of bands - multi spectral data; concept of false color composites; resolutions of satellite data; different satellite data; pixels of different resolutions data; scale and coverage of data; minimum mappable area; cost of satellite data; satellite data procurement; aerial photography; elements of interpretation; interpretation key; visual interpretation of satellite data; digital interpretation of satellite data; advantages - disadvantages; ground trothing (appreciation of satellite image) tone, scale, pixel size; digital image processing of satellite data; data pre processing; geometric rectification; projection parameters ; projection system; datum; spheroid; visual enhancement; concept of stretching, contrast enhancement; characteristic of vegetation; NDVI; Information extraction; classification algorithms; unsupervised classification; supervised classification; change analysis; applications of remote sensing in forestry; forest cover mapping; mapping TOF; forest fire detection & monitoring; stratification of forests application in working plan; RADAR & LIDAR remote sensing; map composition; geographical information systems (GIS)- definition and concept; raster and vector data; point, line and polygon; geographical positioning system (GPS)- applications, maps, data sources and procurement.

(2)Practical. - (a) Remote sensing: Appreciation of satellite images; satellite data processing; classification of image; change analysis(b)Global positioning system (GPS): Hand held Differential GPS ; boundary demarcation using DGPS(c)GIS: Familiarisation with the concept and software; Google earth-pro.

16. Forest Engineering. - (1) 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, designs 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.

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

17. Forest Management. - 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, evaluation of intensive management decisions-spacing and thinning; economics of thinning and rotation; classical approaches to forest yield regulation-principles and its application to Indian forests; decision methods for forest management and planning; working plan.

18. Non-timber forest produce. - (1) 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 institutionalising cultivation; non-timber forest products concerned with animal products.

(2)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 utilisation, sustainable harvest able limits and non-destructive harvesting, value addition, bio-prospecting and bio-discovery.(3)Trade, marketing and industries: National and international trade, export import (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.

19. Wood Technology and Forest Harvesting. - (1) Wood Technology

(a)Theory. - 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 utilisation.(b)Practical. - Identification of timber with key for important timbers, wood seasoning and wood preservation.(2)Forest 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 decision and planning-road design, work study and costing of operations, marketing; 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 of other uses; grading of wood; record keeping.

20. Forest Health. - (1) 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 (head-loads), 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 (FIR), 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.

(2)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 nearby forest area to focus on different pathogens.

21. Forests and People. - (1) 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.

(2)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.(3)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.(4)Participatory Forest Management. - 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.

22. Environmental Conservation. - (1) 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 environment, India's international obligation, pollution control administration, environment audit and eco mark, policy and constitutional provisions, environmental policy.

(2)International Conventions. - Relevant provisions of Kyoto protocol, global warming, climate change, Convention on Biological Diversity, United Nations Framework on Convention on Climate Change, United Nations Forum on Forestry, important forest related international instruments, REDD Plus.

23. Forest Administration and Accounts Procedures. - (1) Forest Administration: Organisational 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(ACRs), 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.

(2)Forest Accounts. - Difference between forest accounts and revenue accounts; departmentalised 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 officers (DDOs); 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; DDOs; maintenance of group 'D' staff general provident fund accounts.

24. General management. - Organisational behaviour- structure and suitability, motivation, leadership, group-dynamics, management of conflict and stress, human resource management, manpower planning, selection, placement, career development , management communication-types and skills; production and operation management-forecasting, methods in work-study, performance and productivity; material management.

25. Optional subjects. - (1) The Probationers shall be required to opt for any three of the subjects from the set of subjects offered during the probation period for developing the relevant skills.

(2)The list of the topics shall be decided by the Academic Council.(3)Director's decision shall be final in allotment of the subjects.

Part II – Exercises, Tours and Excursions

(1)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, management prescriptions for the forest areas outside the government owned forests.

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

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

4. Forest Biometry Exercise. - Planning an inventory for a forest area; collection of crop parameters like crop dia, crop height, crop age, site quality, volume of stand increment etc; carbon stock estimation of forest areas.

5. Forest Survey Exercise. - Survey, alignment, drawing of longitudinal profile and cross section of drainage and use of total station.

6. 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.

7. Forests & 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.

(2)Tours. - The details of the following tours shall be finalized by the Director every year depending on the requirements of course in which the probationers shall be exposed to the specific forestry activities related to the concerned State or region during their field tours.(1)Introductory Tour. - Familiarisation 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)Theme Based Tours. - A minimum of four theme based tours shall be organized, covering the following themes:(a)Silviculture and Forest Management(b)Wildlife Management(c)Zoo management and Urban Forestry(d)Best Practices on all topics(3)Special Exposure to Overseas Forestry Practices. - The probationers will be taken to foreign countries for a period not exceeding two weeks to study the forest and natural resource management practices, research and development initiatives and the best practices in those countries and the details regarding the countries to be visited shall be decided by the academic council.(3)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) (a)]

S. No.	State	Regional Language
	1	2
1	Andhra Pradesh	Telugu or Urdu

2	Assam-Meghalaya	Assamese, Bengali, Khasi or Garo
3	Bihar	Hindi
4	Chhatisgarh	Hindi
5	Gujarat	Gujarati
6	Haryana	Hindi or Urdu
7	Himachal Pradesh	Hindi
8	Jammu and Kashmir	Urdu, Kashmiri or Dogri
9	Jharkhand	Hindi
10	Karnataka	Kannada
11	Kerala	Malayalam
12	Madhya Pradesh	Hindi
13	Maharashtra	Marathi
14	Manipur-Tripura	Manipuri, Bengali or Hindi
15	Nagaland	Nagamese in Roman Script
16	Orissa	Oriya
17	Punjab	Punjabi (in Gurumukhi script) or Hindi
18	Rajasthan	Hindi
19	Sikkim	Nepali
20	Tamil Nadu	Tamil
21	Uttar Pradesh	Hindi
22	Uttarakhand	Hindi
23	West Bengal	Bengali or Hindi
24	Arunachal Pradesh, Goa, Mizoram and Union Territories	Assamese, Hindi, Malayalam, Marathi, Tamil, Urdu or Gujarati

Third Schedule(See Regulation 7)

Sl. No.	Group	Subgroups	Subject
1	Forest Ecology and Silviculture	Group I	i. Overview of Forestry
			ii. Elementary Biology
			iii. Systematic Botany
		Group II	i. Forest Ecology
			ii. Silviculture Practices
			iii. Silvicultural Systems
2	Forest Resource Management and Planning	Group III	i. Forest Survey
			ii. Remote Sensing and Geographical Information

System			
iii. Forest Management and Planning			
Group IV	i. Forest Mensuration		
ii. Forest Statistics			
iii. Forest Biometry			
3	Applied Sciences	Group V	i. Elementary Mathematics (for biology Probationers only)
ii. Forest Engineering			
Group VI	i. Wood Technology and Forest Harvesting		
ii. Soil conservation and land management			
4	Wildlife and Environment	Group VII	i. Biodiversity conservation and wildlife management
ii. Environment conservation			
5	Forest-People interface	Group VIII	i. Forest and people
ii. Non Timber Forest Products			
iii. Forest Economics			
6	Forest Protection	Group IX	i. Forest Policy and Law
ii. Forest Health			
7	Forest Administration and Management	Group X	i. Forest administration and accounts procedure
ii. General management			
8	Optional subjects	Group XI	Optional Subjects
9	Forestry Viva Voce	Group XII	Forestry Viva Voce

[These regulation have been made effective from 1st September, 2014 as the probationers of the examination, 2013 are being imparted training as per these regulations.]