



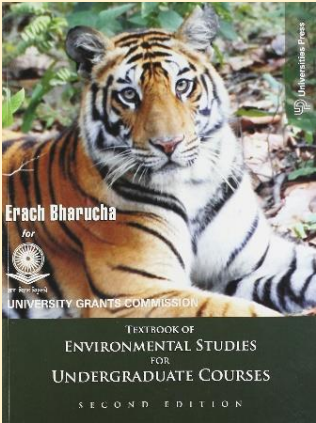
ANDHRA PRADESH PUBLIC SERVICE COMMISSION

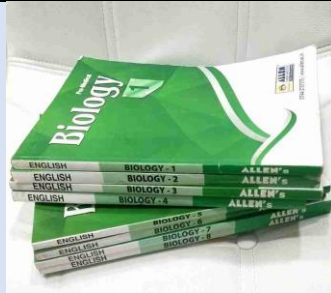
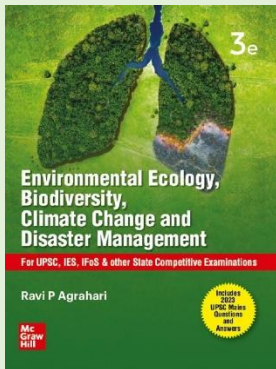


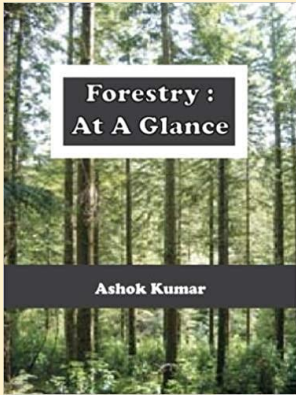
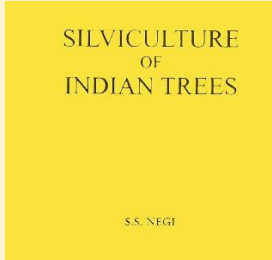
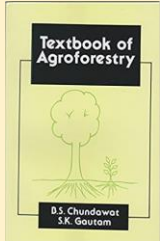
RANGE FOREST OFFICER (RFO) 2024

SYLLABUS

[Paper – IV [General Forestry-I]]

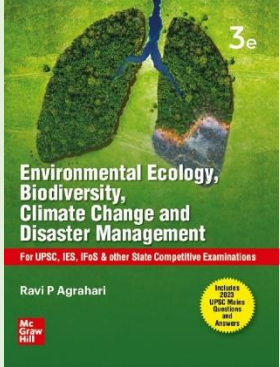
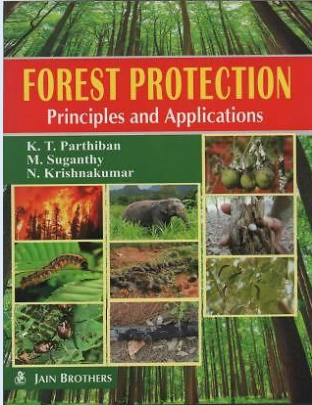
UNIT	SYLLABUS	REFERENCE RESOURCES
I	<p>RENEWABLE AND NON-RENEWABLE NATURAL RESOURCES</p> <p>a) Forest resources : Use and over-exploitation, deforestation, important case studies. Timber extraction, mining, dams and their effects on forests and tribal people.</p> <p>b) Water resources : Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.</p> <p>c) Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources.</p> <p>d) Food resources : World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity.</p> <p>e) Energy resources : Growing energy needs, renewable and non-renewable energy sources, and use of alternate energy sources.</p> <p>f) Land resources : Land as a resource, land degradation, man-induced landslides, soil erosion and desertification.</p>	 <p>https://www.ugc.ac.in/oldpdf/modelcurriculum/env.pdf</p>
II	<p>PLANT SCIENCE</p> <p>a) The diversity in the living world and biological classification.</p> <p>b) Morphology of flowering plants-modifications and functions of roots, stems and leaves.</p> <p>c) Basics of plant tissues and how they differ from animal tissues.</p> <p>d) Basic anatomical structure of wood like annual rings, grain, texture, pores, fibres, pith, rays, etc.,</p> <p>e) Seed morphology- types of seeds viz., mono-cotyledonous and di-cotyledonous, albuminous and endospermic and their development, structure, dormancy, dispersal and germination.</p> <p>f) Reproduction in plants:</p>	<p>Selected sheets of ALLEN Kota Biology or Bansal Classes Biology</p>


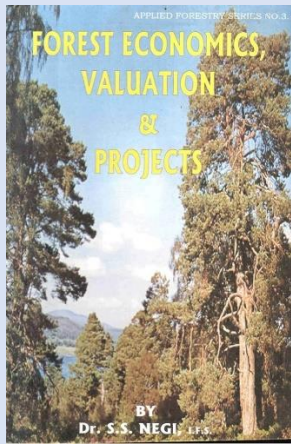
	<p>g) Sexual incompatibility and sexual methods of reproduction in plants-Pollination, fertilization, hybridization and development of the fruit.</p> <p>h) Asexual and vegetative methods of reproduction</p> <p>i) Principles of Plant propagation- production of varieties and hybrids.</p> <p>j) Absorption and conduction of water and minerals salts translocation- transpiration, photosynthesis, respiration, digestion and assimilation of food, anabolism and catabolism-deficiency symptoms of essential elements, role of plant growth regulators in plants.</p> <p>k) Basic principles of inheritance and variation and molecular basis of inheritance with special emphasis on DNA & RNA.</p> <p>l) The most common diseases of plants, important factors affecting infections and the chemical, biological and genetic methods of disease control.</p>	
III	<p>BIODIVERSITY AND ITS CONSERVATION</p> <p>a) Definition and value of biodiversity, genetic, species and ecosystem diversity,</p> <p>b) Biodiversity at global, National and local levels,</p> <p>c) Hot spots of biodiversity, causes of biodiversity losses, need and the measures for biodiversity conservation.</p> <p>d) Major biomes of India, major abiotic factors that influence the life of organisms, responses of the organisms to such factors, adaptations for withstanding the extremes in the environment and population ecology.</p>	<p>Can refer to any book on Ecology, Environment, and Biodiversity or this one</p> 
IV	<p>SOIL SCIENCE & GEOLOGY</p> <p>a) Geological formation of the rocks and minerals of India.</p> <p>b) Earth and its layers-domains of earth Types - of rocks and their formation. weathering process of rocks- factors affecting soil formation-physical, chemical and biological properties of soil; minerals, their types and their conservation.</p> <p>c) Soil conservation - definition, causes for erosion, types - wind and water erosion; conservation and management of eroded soils/areas, windbreaks, shelter belts; sand dunes; reclamation of saline and alkaline soils, waterlogged and other wastelands. Role of forests in conserving soils.</p> <p>d) Maintenance and build-up of soil organic matter; forest leaf litter and composting; Role of microorganisms in ameliorating soils; N and C cycles</p>	<p>http://ecoursesonline.iasri.res.in/course/view.php?id=125</p>

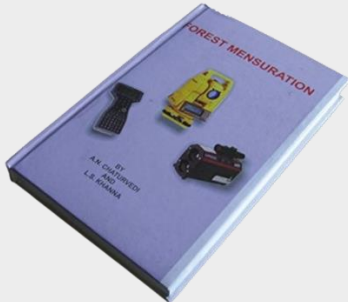
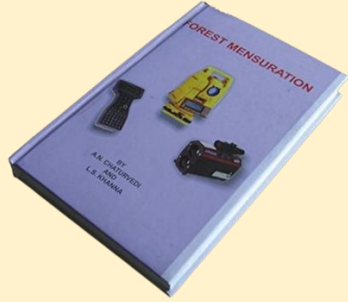
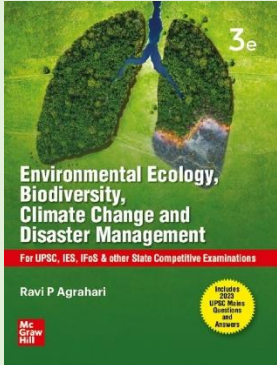
V	<p>WATER RESOURCE MANAGEMENT AND WATERSHED MANAGEMENT</p> <p>a) Basics of surface and subsurface water resources, pollution of water and water resource management.</p> <p>b) Concepts of watershed; role of mini-forests and forest trees in overall resource management, forest hydrology, watershed development.</p> <p>c) Water-harvesting and conservation; groundwater recharge and watershed management; the role of integrating forest trees, horticultural crops, field crops, grass and fodders.</p>	<p>http://ecoursesonline.iasri.res.in/course/view.php?id=10</p>
VI	<p>SILVICULTURE, AGROFORESTRY, SOCIAL FORESTRY, COMMUNITY FOREST MANAGEMENT</p> <p>a) General Silvicultural Principles; ecological and physiological factors influencing vegetation, natural and artificial regeneration of forests, methods of propagation, grafting techniques; site factors;</p> <p>b) Nursery and planting techniques — nursery beds, polybags and maintenance, water budgeting, grading and hardening of seedlings, special approaches, establishment and tending</p>	<p style="text-align: center;">L.S. Khanna or</p> 
	<p>c) SILVICULTURE OF THE FOLLOWING ECONOMICALLY IMPORTANT SPECIES grown in Andhra Pradesh such as – (1) <i>Acacia nilotica</i> (2) <i>Azadirachta indica</i>, (3) <i>Dendrocalamus strictus</i>, (4) <i>Casuarina equisetifolia</i>, (5) <i>Dalbergia sisoo</i>, (6) <i>Embllica officinalis</i>, (7) <i>Eucalyptus spp.</i>, (8) <i>Gmelina arborea</i>, (9) <i>Pterocarpus marsupium</i>, (10) <i>Pterocarpus santalinus</i> (11) <i>Santalum album</i> (12) <i>Tectona grandis</i>, (13) <i>Melia dubia</i> and (14) <i>Leucaena leucocephala</i></p>	<p>Silviculture of Indian Trees by S. S. Negi</p> 
<p>d) AGROFORESTRY : scope and necessity; role in the life of people and domestic animals and in integrated land use, planning especially related to soil and water conservation, water recharge, nutrient availability to crops, nature and eco-system preservation including ecological balances through pest-predator relationships and providing opportunities for enhancing biodiversity, medicinal and other flora and fauna.</p> <p>e) Agro forestry systems under different agro-ecological zones, selection of species and role of multipurpose trees and NTFPs, techniques, food, fodder and fuel security.</p> <p>f) Objectives, scope and necessity of social forestry.</p>	<p>Can refer –</p> <p>https://agritech.tnau.ac.in/forestry/agroforestry_index.html</p> <p>or</p> <p>http://ecoursesonline.iasri.res.in/course/view.php?id=157</p> <p style="text-align: center;">or</p> 	

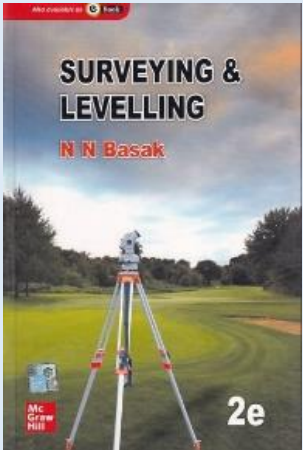
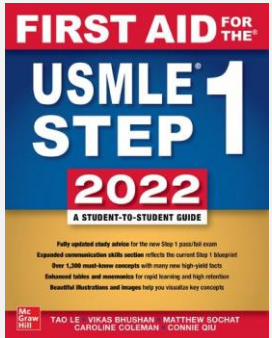
	g) Genesis, principles, objectives and methodology of Community Forest Management in Andhra Pradesh	http://forests.telangana.gov.in/Documents/People'sForestry/JFMINAP.htm or http://ifs.nic.in/Dynamic/pdf/JFM%20handbook.pdf
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[Paper – IV [General Forestry-II]

UNIT	SYLLABUS	SOURCE
I	<p>ECOSYSTEM & WILDLIFE</p> <p>a) Concept of an ecosystem, Structure and function of an ecosystem, the rate of biomass production, GPP, NPP, decomposition and energy flow through different trophic levels. Ecological pyramids and ecological succession.</p> <p>b) Introduction, types, characteristic features, structure, functions and services of the ecosystems such as Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries),</p> <p>c) Wildlife of India, endangered species of India; sanctuaries and national parks of India and Biological rhythms.</p>	<p>Can refer to any book on Ecology, Environment, and Biodiversity or this one</p> 
II	<p>FOREST PROTECTION WILDLIFE BIOLOGY</p> <p>a) Injuries to forest - abiotic and biotic destructive agencies, insect — pests and disease, effects of air pollution on forests and forest die back.</p> <p>b) Susceptibility of forests to damage, nature of damage, cause, prevention, protective measures and benefits due to chemical and biological control.</p> <p>c) General forest protection against fire, equipment and methods, controlled use of fire, economic and environmental costs;</p> <p>d) Timber salvage operations after natural disasters.</p> <p>e) Role of afforestation and forest regeneration in absorption of CO₂.</p> <p>f) Rotational and controlled grazing, different methods of control against grazing and browsing animals;</p> <p>g) effect of wild animals on forest regeneration,</p> <p>h) Human impacts: Forest encroachment, poaching, grazing, live fencing, theft, shifting cultivation and control.</p>	

III	<p>FOREST UTILIZATION</p> <p>a) Traditional and improved/modern tools used in logging, wood seasoning, wood/timber preservation,</p> <p>b) logging-transport methods,</p> <p>c) Physical properties of wood and their importance in the identification of timber species.</p> <p>d) Uses of important MFP/NTFP species available in the forests of A.P.</p> <p>e) List of plants known to be antidotes of snake and scorpion poisoning</p>	
IV	<p>ANIMAL MANAGEMENT</p> <p>a) Animal management – animal ailments and treatments.</p> <p>b) Definition of some animals like human beings, wolves, jackals, lions rabbits etc., based on incisors- canine/cuspids, pre-molars and molars,</p> <p>c) Poisonous and non-poisonous snakes of India, symptoms following the snake bite, treatment of snake bite.</p> <p>d) Role of nutrition in animal health and production.</p> <p>e) Nutrition deficiencies and their management.</p> <p>f) Morphological features of a bird and the concept of migration in birds and the ecological importance of birds</p>	<p>Internet / Google books</p>
V	<p>ECONOMIC ZOOLOGY</p> <p>Beneficial and harmful insects include insect vectors of human diseases, Industrial fish, prawns and molluscs of India, Non-poisonous and poisonous snakes of India, Venomous animals, wasps, and honey bees.</p>	<p>Internet/ Google / Any book</p>
VI	<p>FOREST ECONOMICS, FOREST LEGISLATION AND ADMINISTRATION</p> <p>a) Forest economics – fundamental principles, cost-benefit analyses; estimation of demand and supply;</p> <p>b) Forest economics – investment planning, depreciation, working capital, types of costs viz., gross, fixed, variable, marginal & opportunity costs.,</p> <p>c) Methods employed for investment calculations such as Net surplus method, payoff time method, present value or capital value method, internal interest method, and capital cost method.</p> <p>d) Forest Legislation-History of forest development; the essence of Indian Forest Policy of 1894, 1952 and 1990. National Forest Policy -1988.</p>	<p>Forest Economics :</p>  <p>Legislation : Internet (for updated laws)</p>

	<p>e) Forest laws, necessity; general principles, AP Forest Act-1967; Forest Conservation Act-1980; Wildlife Protection Act-1972 and their amendments; Application of Indian Penal Code to Forestry.</p> <p>f) Forest Administration : Indian Forest Service, AP State Forest Service, AP State Forest Subordinate Services, AP Forest Department structure and activities</p>	<p>Administration : State forest dept website</p>
<p>VII</p>	<p>FOREST INVENTORY</p> <p>a) Scope and objectives of Forest inventory.</p> <p>b) Complete enumeration vs. sampling, need for sampling, basic concepts in sampling, designing large-scale sample surveys, sampling and non-sampling errors, simple random sampling.</p> <p>c) Properties of a good estimator, estimation of sample size, stratified random sampling, systematic sampling cluster sampling, and ratio and regression methods of estimation under simple and stratified random sampling.</p>	
<p>VIII</p>	<p>FOREST MENSURATION & REMOTE SENSING</p> <p>a) Statistics : population parameters- measures of central tendency and dispersion, aim of sampling, sampling methods, regression.</p> <p>b) Methods of measuring — diameter, girth, height and volume of trees; form-factor; volume estimation of the stand, current annual increment; mean annual increment, Yield calculation, yield and stand tables:</p> <p>c) Forest planning, evaluation and monitoring tools and approaches for integrated planning.</p> <p>d) Modern instruments used in forest mensuration like Relaskop, Altimeter, Wedge Prism, Planimeter etc.,</p> <p>e) Basic principles of Remote sensing- Air photo interpretation GIS, GPS, and GNSS.</p> <p>f) Forest cover monitoring through remote sensing;</p>	
<p>IX</p>	<p>ENVIRONMENTAL SCIENCES</p> <p>a) Definition, scope and importance, need for public awareness on environmental issues.</p> <p>b) Environmental Pollution: Definition, Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution & Nuclear hazards.</p> <p>c) Solid waste Management: Causes, effects and control measures of urban and industrial wastes.</p>	

	<p>d) Social Issues and the Environment: From Unsustainable to Sustainable development.</p> <p>e) Urban problems related to energy, Water conservation, rain water harvesting, Resettlement and rehabilitation of people; its problems and concerns,</p> <p>f) Environmental ethics: Issues and possible solutions, Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, Wasteland reclamation, Consumerism and waste products.</p> <p>g) Necessity of Environment Protection Act-1986, Air (Prevention and Control of Pollution) Act-1981, Water (Prevention and control of Pollution) Act-1974, APWALTA-2004.</p>	
<p style="text-align: center;">X</p>	<p>FOREST SURVEY & ENGINEERING</p> <p>a) Basics of Survey and forest Engineering – bearings, Offsets- types of concrete, painting, varnishing, glazing, pointing, plastering.</p> <p>b) Road alignment- main considerations in road alignment,</p> <p>c) Types of roads depending upon the duration of the use of road,</p> <p>d) Use of ghat tracer, Dumpy level, IOP level and Theodolite.</p>	
<p style="text-align: center;">XI</p>	<p>FIRST AID</p> <p>a) Primary goal, key aims and types of the first-aid.</p> <p>b) First Aid- first aid for bleeding, drowning, venomous insects, burns and scalds, shock, unconsciousness, fits, fainting, sunstroke, sprains, wounds, and fractures.</p>	 <p style="text-align: center;">Download book</p>