



NATIONAL BANK FOR AGRICULTURE AND RURAL DEVELOPMENT

SYLLABUS FOR WRITTEN EXAM FOR THE POST OF ASSISTANT MANAGERS IN GRADE 'A'

FORESTRY

THE SYLLABUS IS ONLY ILLUSTRATIVE AND NOT EXHAUSTIVE

The syllabus is illustrative and not exhaustive. The syllabus should not be considered as the only source of information while preparing for the examination. Keeping in view the nature of examination, all matters falling within the realm of the subject concerned will have to be studied by the candidate as questions can be asked on all relevant matters under the subject. Candidates appearing for the examination should also prepare themselves for answering questions that may be asked on the current/latest developments/Acts taking place under the subject(s) although those topics may not have been specifically included in the syllabus.

- Forestry - Definition, forests types and their characteristics, necessity of forests with changing and modernization of technology, inter-relationship between agriculture and forestry.
- Forest environments and environmental factors, forest community, ecological dominance, ecological adaptation and evolution, forest ecotypes.
- Regeneration of forest – Definition and objectives, natural regeneration by seed (general consideration of afforestation and reforestation, preparation of plantation area site maintenance and improvement).
- Environment factor influencing forest vegetation and productivity, physiology of leaf shedding and peeling of barks in perennial trees, physiological basis of including and breaking of dormancy in seeds.
- Silviculture – Definition, factors, affecting the site, form and life of forest trees, growth characteristics, crop morphology, differentiation of stands, forest composition and distribution.
- Silviculture Systems – Clear strip and alternate strip systems, uniform system and group system, irregular wood system, two storeyed high forest system, coppice with standard system.
- Principal groups of plants, classification of forest plants yielding economic products, origin and distribution of economically important forest flora, nature and importance of economic parts in the important families (Renunculaceae, Magnoliaceae, Anonaceae, Malvaceae, Bombaceae, Tiliaceae, Linaceae, Rutaceae, Meliaceae, Rhamnaceae, Anacardiaceae, Leguminosae, Myrtaceae, Compositae, Sapotaceae, Bignoniaceae, Libiatae, Casurianaceae, Dioscoriaceae, Palmae, Coniferae, Cycadaceae), growth characteristics, distribution, phenology,

silvicultural characters, community environment, regeneration methods and management of conifers and dicot species, species suitable for canal banks, roadside, landscape and railside plantations.

- Importance of energy plantation, quick growing species, hydrocarbon plants, biomass for thermal purposes, principles of gasification, densification, estimation of calorific value.
- Seed orchards, maintenance and selection of orchards, classes of seeds and production methods, seed extraction and processing, production of elite seedlings for improving planting value, increase through tissue culture, nursery raising, containerization.
- Microflora in forestry system, carbon cycle decomposition of organic matter, humus formation, nitrogen cycle – nitrogen fixation, nitrification, denitrification microbial transformation of phosphorous, sulphur, iron, rhizobial nitrogen fixation, role of micorrhyzae in making nutrients available, use of soil fungi or recycling organic wastes and edible mushroom production.
- Definition of social and agro-forestry, tree farming on wasteland, afforestation on hill slopes, wastelands, river banks and water tanks, cultivation of fodder trees.
- Wood structure, cellular composition – barks, sap wood, heart wood and pith, early wood, late wood, growth ring, minute structures of wood-*ty* lose and other inclusions in pores, ultrastructures of wood, compression and tension wood, physical properties of wood – reaction of heat, water, sound, light and electricity, mechanical properties of wood.
- Importance of wood and minor forest products, products utilized after minor processing – grasses, products utilized after processing – gums, resins, rubber, fibers, flosses, distillation and extraction of tanning materials and vegetable dyes, cattle feed, non-edible oilseeds, tussar and lac.
- Conversion, extraction and transportation of timbers and firewood, marketing and sales, timber depot.
- Importance of forest pathology, study of important diseases, diseases caused by fungi, mycoplasma, parasitic and non-parasitic causes, use of mycorrhizae in disease control.
- Importance of forest, pests attacking forest products, felled trees, converted timbers and seeds and their control, measures, termites in relation to forestry and timbers, beneficial forest insects – silk, lac and honeybees.
- Economics of forest management, forest conservation and development, forest products, their demand and supply forecasting, marketing of forest products.
- Forest evaluation and economic appraisal, types of appraisal, business and agricultural residues (rice straw, wheat straw, sugarcane bagasse, cotton stalk, jute sticks, hemp, banana stem and peduncle water hyacinth), pulping – mechanical

and chemical, bleaching, waste paper utilization, free species suitable for pulp making.

- Forest trees of industrial utility – eucalyptus, casuarina, acacia, bamboo. Small scale industries based on forestry – agricultural implements, furniture, musical instruments, turnery, large scale industries – veneer and plywood pulp, hard board packing case, coach building sleepers.
- Defects and abnormalities of wood, method of evaluation and measurement of natural defects, defects during processing, manufacturing defects, seasoning of wood, influence of temperature, relative humidity and air circulation, method of seasoning, air kiln and chemical, classification of timbers for seasoning schedule.
- Natural durability of timber, bamboo and thatch grasses, agencies for destruction of timber – fungi, insects, micro-organisms, preservation of wood – types of preservatives, permeability and treatability of timber, fixation of wood preservatives, hot and cold bath process, pressure process, fire protection of timber.