



NABARD

NATIONAL BANK FOR AGRICULTURE AND RURAL DEVELOPMENT

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

AGRICULTURE ENGINEERING

(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.)

Engineering in agriculture and rural life. Soil and water resources of India, present status of utilization and scope. Hydrological process; evapo-transpiration, infiltration and run off; soil erosion and soil loss estimation; design and construction of mechanical soil conservation structures, farm-ponds and reservoirs. Hydraulic of open channel, design of irrigation and drainage channels. Design work estimation and equipment for land development. Design and construction of dug and tube-wells; water – lifts and pumps design, construction, operation and maintenance; conveyance and distribution of water, measurement of water flow; water application methods. Drainage theory, drainage characteristics of different types of soils, design and installation of surface and sub-surface drains, drainage in respect to salt affected soils. Legal aspects relating to land water.

Agricultural mechanization; merits and demerits of traditional equipment; sources of farm power; commercial and non-commercial, renewable and non-renewable sources of energy, scope and economics. Thermodynamic principles, design features, construction details and performance characteristics of engines, power tillers, tractors and bulldozers. Functional requirements, principles of working, construction, operation, repair, maintenance and economics of seedbed preparation, planting, transplanting, sowing, fertilizer application, inter-culture, spraying and dusting, harvesting, threshing and transport machinery; package of implements for major crops like rice, wheat, sorghum, maize, gram, pigeon pea, groundnut, rapeseed/mustard, potato, sugarcane, cotton, etc. Farm machinery manufacture, testing, test codes and standards in India.

Agricultural produce management, marketing and profit sharing, post-harvest engineering and technology in India. Properties of agricultural produces and by-products. Principles, constructional details, operation and management of cleaners, graders, dryers, burr mill, hammer mill, roller mills, cane crushers, expellers, hullers, pearlers, modern rice mills, dalmill, solvent extraction. Thermal processing, canning preservation, pasteurisers, can washers. Farm structures, farm stead planning; layout of farm buildings, rural roads, farm fences, cost estimation. Psychrometry, heat and vapour flow in farm building; calculation of heating and cooling loads, heat transfer and insulation. Principles, of refrigeration and air – conditioning, storage engineering, functional, structural and thermal design of grain bins, silos, godown and cold storage. Storage engineering, structures and equipment for livestock and rural home waste handling and management, rural water supply and sanitation. Rural electrification, illumination, electrical safety.