

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SYLLABUS FOR SCREENING TEST FOR THE POST OF

ASSISTANT SOIL CONSERVATION OFFICER (AGRICULTURE),

FOREST DEPARTMENT

SOILS

Introduction to various surveying and leveling instruments e.g. Chain survey, Plane table survey, Dumpy level, Abney level, hand level, etc.

Contours, contouring and their characteristics. Contour surveying by Theodolites and Tachometer methods. Contour Drawing by different methods.

Soils: Definition of soil, important soil physical properties and their importance, soil organic matter, its composition and decomposition, effect on soil fertility, soil reaction; saline and sodic soils, quality of irrigation water, essential plant nutrients, their functions and deficiency symptoms in plants, important inorganic fertilizers and their mode of action in soils.

Soil conservation planning, land capability classification, soil conservation in special problematic areas such as hilly, arid and semi-arid regions, waterlogged and wet lands.

HYDROLOGY

Introduction; hydrologic cycle; precipitation, rainfall measurement, mass curve, hydrograph, mean rainfall depth.

Interception; infiltration; evaporation; evapotranspiration-estimation and measurement; runoff - factors affecting run off and its measurement; stage and velocity, rating curve, extension of rating curve; Estimation of peak runoff rate and runoff yield by Rational, Cook and Curve number methods.

Head water flood control methods, retards and their location; flood routing - graphical methods of reservoir flood routing.

SOIL AND WATER CONSERVATION ENGINEERING

Introduction; Soil erosion : Causes, types and agents of soil erosion; water erosion - forms of water erosion, mechanics of erosion; gullies and their classification, stages of gully development; soil loss estimation - universal and modified soil loss equations.

Erosion control measures: Agronomical and vegetative measures - contour cropping, strip cropping, mulching; contour vegetative hedge. Mechanical measures - terraces - level and graded, broad base, PRT, SWT, bench terraces and their design, layout procedure, terrace planning. Drainage line treatment measures, Temporary and Permanent gully control structures. Insitu conservation measures for non-arable lands. Bunds - contour bunds, graded bunds and their design; Gully and ravine reclamation.

Wind erosion : Factors affecting wind erosion, types and mechanics of wind erosion, soil loss estimation, wind erosion control measures - vegetative, mechanical measures, wind breaks & shelter belts, sand dunes stabilization.

Grassed water ways and their design; introduction to water harvesting techniques; introduction to stream water quality and pollution.

WATERSHED PLANNING AND MANAGEMENT

Watershed management - problems and prospects; watershed based land use planning, watershed characteristics, factors affecting watershed management, hydrologic data for watershed planning, watershed delineation, delineation of priority watershed, use of remote sensing in assessment and planning of watershed.

Rainwater conservation technologies - in-situ and storage, design of water harvesting tanks and ponds; water budgeting in a watershed; effect of cropping system, land management and cultural practices on watershed hydrology.

Evaluation and monitoring of watershed programmes; people's participation in watershed management programmes; Planning and formulation of project proposal; Cost Benefit analysis of watershed projects.

Agriculture : Definition and scope of agronomy, classification of crops, effects of different weather parameters on crop growth and development. Soil-water-plant relationship and water requirement of crops, weeds and their control, crop rotation, cropping systems, mono-cropping, double cropping, relay cropping and mixed cropping.

Study of wheat, maize, bajra, bengal gram, green gram, black gram, groundnut and mustard crops with reference to soil and climate requirements, seedbed preparation, improved varieties, seed rate, time and method of sowing, manuring, fertilisation, intercultural operations, weed control, irrigation, crop protection and their area, production and productivity in Rajasthan.

Scope and importance of Horticultural crops, soil and climatic requirements for fruits, vegetable and floriculture crops, improved varieties, criteria for site selection, layout and planting methods, nursery raising and micro propagation methods, plant growing structures, pruning and training, fertilizer application, fertigation, irrigation methods, post harvest practices, management of orchards. Introduction to hi-tech horticulture, package of practices for cultivation of mango, guava, aonla, ber, pomegranate and citrus. Nursery raising of forest tree species, Agro-forestry, its scope and suitable trees for Agro-forestry for dry regions, different agro forestry models, silvicultural practices for major forest species of Rajasthan.

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Pattern of Question Papers:

1. Objective Type Paper
2. Maximum Marks : 100
3. Number of Questions : 100
4. Duration of Paper : Two Hours
5. All Questions carry equal marks
6. There will be Negative Marking

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