

ANNEXURE - A**SYLLABUS FOR ASSISTANT SOIL CONSERVATION OFFICERS' EXAMINATION****PAPER-I****Unit-I:**

General agriculture: Importance, Trend in agriculture and allied sectors, Present day problems and remedial measures, Government policies. (20 marks)

Unit-II:

Natural Resources : Land, Water, Forest, Energy – their use, exploitation, conservation, equitable use of resources for sustainable lifestyle; Plant Ecosystem; Biodiversity and its conservation; Environmental Pollution; Natural Disasters and their management; Organic farming and Sustainable agriculture; Conservation agriculture; Agricultural waste management; Climate change and agriculture. (20 marks)

Unit-III:

Soil forming processes; Soil physical properties: texture, structure, density and porosity; Soil water retention, movement and availability; Soil reaction-pH, soil acidity and alkalinity; Soil organic matter: influence on soil properties and soil fertility; Soil organisms: macro and micro organisms, their beneficial and harmful effects; Soil pollution: behaviour of pesticides and inorganic contaminants, prevention and mitigation of soil pollution; Soil quality and health. (20 marks)

Unit-IV:

Weather and crop growth; Tillage and tilth; Seed and sowing; Cropping systems and Integrated Farming Systems; Crop nutrition-essential nutrients- their functions and deficiency symptoms in plants; Nutrient sources-organic manures-fertilizers-biofertilizers-Integrated Nutrient Management; Water and weed management in field, horticultural and plantation crops; Plant protection; Harvesting, storage and value addition. (20 marks)

Unit-V:

Economic importance, production and protection technology of important field crops- rice, maize, finger millet, pulses and oilseeds, cotton, sugarcane, potato; Importance and scope of fruit and plantation crops – production and protection technologies for the cultivation of fruit and plantation crops-mango, banana, citrus, guava, litchi, papaya, pineapple, pomegranate, jackfruit, coconut, areca nut, cashew, tea, coffee, rubber; Nursery techniques and their management; Nutrition garden. (20 marks)

PAPER-II

Unit-VI

Agroforestry-objectives and potential; Agroforestry system- sub-system and practice. Planning for agroforestry-constraints, diagnosis and design methodology, selection of tree crop species for agroforestry; Agroforestry for food, feed, fuel and nutritional security, soil improvement-carbon sequestration, microclimate amelioration, industrial requirement; Ecotourism-concept and importance in Indian perspectives. (20 marks)

Unit-VII

Rainfed agriculture: problems and prospects; Rainfall analysis; Drought-classification, causes and impacts, drought management strategy; Crops and cropping systems, soil moisture and rain water conservation-*in-situ* and *ex-situ* storage, water harvesting and recycling, contingent crop planning under aberrant weather conditions, dryland horticulture; Watershed planning based on land capability classes and hydrologic data, watershed delineation and prioritization; Water budgeting in a watershed; Integrated watershed management-concept, objectives components, arable lands – agriculture and horticulture, non-arable lands – forestry, fishery and animal husbandry; Watershed programme – execution, follow-up practices, maintenance, monitoring and evaluation; Participatory watershed management – role of watershed associations, user groups and self-help groups; Planning and formulation of project proposal for watershed management programme including cost-benefit analysis. (20 marks)

Unit-VIII

Soil and water conservation – issues and importance; Causes and agents of soil erosion; Water erosion: Hydrologic cycle, precipitation and its forms, Runoff estimation, Forms of water erosion. Gully classification and control measures. Principles of erosion control: Introduction to contouring, strip cropping, contour bund, graded bund and bench terracing, grassed water ways and their design; Water harvesting-principles, importance and techniques: Runoff harvesting-short-term and long-term techniques; Water harvesting structures – farm ponds-percolation pond-dug-out and embankment reservoir types, tanks and subsurface dykes; Wind erosion: mechanics of wind erosion, types of soil movement; Principles of wind erosion control and its control measures. (20 marks)

Unit-IX

Wasteland-causes, distribution and sustainable wasteland development- Government policies, Participatory approach; Soil conservation structures, Afforestation, Shifting cultivation, Optimal land use options; Reclamation of Saline, Sodic, Acid, Waterlogged, Eroded, Compacted, Flooded, Polluted soils and Mine spoils; Desertification- impact and causes, prevention and control measures; Bio remediation of soils through multipurpose tree species; Remote sensing and GIS in diagnosis and management of problem soils; Land capability and land suitability classification. (20 marks)

Unit-X

Protected cultivation : importance and scope, controlled conditions, method and techniques, canopy management, Irrigation and fertigation, liquid fertilisers and their solubility and compatibility, insect pest and disease management; Production of quality planting materials, cultivation of high value crops and off-season production in green houses; Components of precision farming: Remote sensing, Geographical Information System (GIS), Differential Geo-positioning System (DGPS), Variable Rate applicator (VRA), application of precision farming in agriculture. (20 marks)