

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER
SCHEME & SYLLABUS FOR THE POST OF ASSISTANT
CONSERVATOR FOREST & FOREST RANGE OFFICER GRADE Ist
COMPETITIVE EXAMINATION, 2018
FOREST DEPARTMENT

OPTIONAL SUBJECT - AGRICULTURE

Unit-I

Agro-climatic zones of India and Rajasthan. Ecosystem, concept and determinants of ecosystem, Elements of crop production. Classification of crops. Climatic variables. Basics of weather forecasting. Modern concepts of tillage. Conservation agriculture. Fertilizers, foliar application. Plant nutrients: occurrence, cycling in soils and their availability. INM concept. Cropping and farming systems. Organic farming: principles, objectives, certification, labelling and accreditation process. Water resources of India and Rajasthan. Methods and systems of irrigation. Water management in major crops. Soil plant water relationship. Quality of irrigation water, CU,WR, drainage. Concept, scope and problems of dryland agriculture. Watershed, moisture conservation practices, Monsoon, Contingent crop Planning. Agronomy of important crops. Scope and Principles of weed management. Weed biology and ecology. Herbicidal selectivity. Adjuvants.

Soils of Rajasthan and India, Essential plant nutrients, their functions, deficiencies and toxicities, Soil fertility and productivity, Nutrient recommendations. Formation and management of saline, saline sodic, sodic and acid soils. Micro-organisms in soils and their role. Physical, Chemical and Biological properties of soil. Clay minerals, Soil reaction and buffering capacity.

Unit-II

Importance of fruits, vegetables and flowers. Planting system, training, pruning, intercropping. sexual and asexual methods of propagation. Nursery and raising of seedlings. Cultivation practices of mango, papaya, banana, guava, citrus, ber, datepalm, bael, pomegranate, root crops, onion, cauliflower, cucurbits, okra, chilli, rose, marigold, Aloe vera, isabgol, sonamukhi. Principles and methods of fruit and vegetable production. Role of plant growth regulators in horticulture. Hi-tech horticulture and protected cultivation.

Unit-III

Cell and cell division. Mendelian principles of heredity, Multiple alleles and blood groups. Linkage and crossing over, changes in chromosome, polygenes and continuous variations, cytoplasmic inheritance, genetic material, modes of reproduction and pollination, apomixes, self – incompatibility and male sterility, domestication, acclimatization, introduction; centre of origin, Plant genetic resources of important crops and forest trees of Rajasthan, its utilization and conservation. Variation – its causes and importance. Principles and breeding methods of self & cross pollinated and vegetatively propagated crops of Rajasthan. Breeding for biotic and abiotic stresses, heterosis and inbreeding depression, polyploidy, mutation and mutation breeding, release and notification of varieties, Patenting, PPV&FR Act 2001, Plant Breeders and & Farmer's Rights. Seed technology, seed production of important crops of Rajasthan, minimum seed certification standards. Seeds Act, Seeds Control Order.

Unit-IV

Classification of animal kingdom with special reference to wild life, economically important insects and mites upto family level. Morphology and anatomy of grasshopper. Study of ecosystems and wild life conservation. Insect dominance. Concept and principles of IPM, Components of IPM: Physical, mechanical, cultural, chemical (including novel insecticide molecules), biological, legal and other modern approaches. Identification, nature of damage, bionomics and management of insect-pests and mites of agricultural and forest importance with special reference to Rajasthan. Lac culture, sericulture and apiculture.

Unit-V

Milestones in plant pathology and nematology. Terms and concepts of Plant Pathology. General introduction to plant pathogenic organisms (Fungi, Bacteria, Nematodes Virus, Viroids). Causes and classification of plant diseases. Classification of plant pathogenic fungi, bacteria and nematodes. Morphology, growth, nutrition and reproduction of fungi and bacteria. Phanerogamic parasites. Symptoms, etiology and management of important diseases of major cereals, pulses, oilseeds, fruits, vegetables, spices & cash crops. Principles and methods of plant disease management.

Unit-VI

Meaning and scope of Economics. Basic concept : Goods and services, desire, want, demand, utility, cost and price, wealth, capital, income and welfare. Agricultural economics : meaning, definition, characteristics of agriculture, importance and its role in economic development. Demand : meaning and definition, kinds of demand, law of demand, demand schedule and demand curve, determinants of demand. Supply: Stock v/s supply, law of supply, supply schedule, supply curve, determinants of supply. Cost: Cost concepts, short run and long run cost curves. Concepts of rent, wage, interest and profit. National income: Meaning and importance, concepts of national income accounting and approaches to measurement. Tax : meaning, direct and indirect taxes, agricultural taxation, GST. Credit needs and its role in Indian Agriculture. Agricultural credit : meaning, definition and classification. 3 R's, 5C's and 7P's of credit. Sources of agricultural finance : institutional and non-institutional sources. Financial statements- Balance Sheet and Income Statement. Meaning, concept and principles of farm management. Law of returns and returns to scale. Farm business analysis. Importance of farm records and accounts in managing a farm, farm inventory, balance sheet, profit and loss accounts. Meaning and importance of farm planning and budgeting, Concept of risk and uncertainty in agriculture production.

Unit-VII

Chemistry of carbohydrates, lipids, proteins and plant (phyto) hormones. Chemistry of Nucleic acids and their functions. Outlines of metabolism of carbohydrate, lipid and protein. General account of enzymes, coenzymes and secondary metabolites. Brief out lines of plant tissue culture and plant biotechnology. Molecular markers and their application in Agriculture. Photosynthesis and photorespiration. Respiration. Physiology of flowering, Photoperiodism. Physiology of growth, PGRs and their role. Seed development, germination and dormancy.

Unit-VIII

Meaning and definition of extension education, philosophy of extension, process of extension education, basic concepts in extension (need, knowledge, attitude, skill, behavior, objectives, rural leadership and motivation). Rural social institutions, caste, family and social groups. Extension programmes in India. Teaching-learning process, teaching methods, use of audio-visual aids in training &

communication process. Organizing trainings, front line demonstrations, field days, kisan mela, exhibition, campaign. Writing reports, radio talks, news, writing of farm literature and scientific information.

Unit-IX

Importance of silviculture, agroforestry and its branches and importance. Forest regeneration, tending operations, Forest mensuration in brief. Cultivation and management of important fodder and timber tree species of Rajasthan.

Unit-X

Agricultural Engineering : Farm power and machinery, bullock and tractor drawn implements, Tools, Measurements of irrigation water, Water lifting devices.

Agriculture Statistics. Measurement of Central Tendency, Standard error and deviation, Correlation, Regression, Test of Significance, F & Chi Square test, Experimental designs-CRD, RBD, SPD.

Unit-XI

Importance of Livestock and Poultry in national economy, Important Indian and exotic breeds of cattle, buffalo, sheep and goat. Breeding, Feeding, housing and health management in livestock and poultry. Factors affecting milk yield and composition. Importance of dairy and poultry products.

Note :- **Pattern of Question Paper**

- 1. Objective type paper**
- 2. Maximum Marks : 200**
- 3. Number of Questions : 120**
- 4. Duration of Paper : Three Hours**
- 5. All questions carry equal marks.**
- 6. There will be Negative Marking.**