

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SYLLABUS FOR SCREENING TEST FOR THE POST OF AGRICULTURE RESEARCH OFFICER (HORTICULTURE) AGRICULTURE DEPARTMENT

PART-A

General Knowledge of Rajasthan

Unit-I

Historical Rajasthan: Pre and Proto-historical sites of Rajasthan. Important historical centers of early Christian Era. Prominent rulers of major Rajput dynasties of Rajasthan and their achievements & contributions – Guhilas- Sisodiyas, Chauhans, Rathores and Kachchawas.

Emergence of Modern Rajasthan: Agents of Social Awakening in Rajasthan during 19th and 20th Centuries. Political Awakening: role of newspapers and political institutions. Praja Mandal movement in various princely states in 20th century. Integration of Rajasthan.

Art of Rajasthan: Architectural tradition of Rajasthan- temples, forts and palaces from ancient to modern period; Various schools of paintings developed during medieval period; Classical Music and Classical Dance, Folk Music & Instruments; Folk Dances & Drama.

Language & Literature: Dialects of Rajasthani language, Literature of Rajasthani language and Folk literature.

Religious life: Religious communities, Saints and Sects in Rajasthan. Folk Deities of Rajasthan.

Social Life in Rajasthan: Fairs and festivals; Social customs and traditions; attires and ornaments.

Geography of Rajasthan:- Broad physical features- Mountains, Plateaus, Plains & Desert; Major Climatic types; Major rivers and lakes; Major forest types and distribution; Population growth, Density and Distribution; Desertification, Droughts & Floods; Environmental pollution and Ecological concerns.

- 30 Questions

PART-B
(HORTICULTURE)

1. **Fruit Production:** Importance, scope and constraints of horticulture including arid and semi arid of fruit production, commercial varieties of regional, national and international importance, recent trends in propagation, rootstock influence, planting systems, root zone and canopy management, pruning, nutrient and water management, fertigation, role of bio-regulators, abiotic factors limiting, physiology of flowering, pollination, fruit set and development, physiological disorders- causes and their remedies, maturity indices, harvesting, grading, packing, storage, plant protection measures and ripening techniques of:-
 - A. Mango, banana, papaya, sapota, jack fruit, aonla, pomegranate, phalsa, ber, datepalm and other minor fruits viz. lasoda, mulberry, fig and tamarind, karonda.
 - B. Apple, plum, litchi, strawberry, walnuts, grapes, guava, citrus, custard apple and other minor fruits viz. bael, jamun, ker and pilu.
 - C. Climate change and fruit production, biodiversity and conservation of fruits, export oriented fruit production and cropping system of fruit production.

2. **Vegetable Production:** Importance, scope and constraints in vegetable production, botany and taxonomy, climatic and soil requirements, commercial varieties/hybrids, sowing/planting times and methods, seed rate and seed treatment, nutritional and irrigational requirements, intercultural operations, weed control, mulching, physiological disorders, harvesting, post-harvest management, plant protection measures and economics of crop production.
 - A. Tomato, brinjal, hot and sweet peppers, potato, okra, cowpea, cluster bean, cucurbitaceous crops, colocasia and sweet potato and green leafy vegetables.
 - B. Cabbage, cauliflower, knol-khol, sprouting broccoli, carrot, radish, onion, garlic and peas.
 - C. Types of vegetable gardening, hydroponic, rooftop vegetable gardening and protected cultivation of vegetable crops.

3. **Seed Production:** Definition of seed; DUS test, scope of vegetable seed industry in India, genetically and agronomical principles of seed production, methods of seed production, use of growth regulators and chemicals in vegetable seed production, methods of hybrid seed production, categories of seed, maintenance of nucleus, foundation and certified seed, seed certification, seed standards, physiological maturity, seed harvesting and extracting, curing, drying, grading, seed processing, seed coating and pelleting, packaging, storage of seeds, agro techniques for seed production of solanaceous, cucurbits, leguminous vegetables, cole crops, bulb crops, leafy vegetable and okra.

4. **Propagation and Nursery Management:** Importance and scope of plant propagation and nursery management, sexual propagation, cellular basis for propagation, apomixes, polyembryony, chimeras, principal factors influencing seed germination of horticulture crops, dormancy, hormonal regulation of germination

and plant growth, seed quality, treatment, packing, storage, certification, Asexual propagation- rooting of cuttings, physiological, anatomical and bio chemical aspects of root induction in cuttings, layering-principle and methods. Budding and grafting- selection of elite mother plants, methods, establishment of bud wood bank, stock, scion and inter stock relationship. Rejuvenation of old orchards through top working, progeny orchard and scion bank. Micro propagation- principles and concepts. Techniques- in vitro clonal propagation, direct organogenesis, embryogenesis, micro grafting, meristem culture, shoot tip grafting/micro grafting. Nursery-types, structures, components, planning and layout. Nursery management and practices for healthy propagule production and recent trends in propagation.

5. **Floriculture and Ornamental Gardening** : Importance and scope of floriculture in India, varietal wealth and diversity, propagation, nursery management, pro-tray nursery under shade nets, transplanting techniques, soil and climatic requirements, precision farming techniques, water and nutrient management, weed management, training and pruning, pinching and disbudding, special horticultural practices, use of growth regulators, physiological disorders and remedies, IPM and IDM, flower forcing and year round flowering, harvesting techniques, post harvest handling and grading, packing and storage, value addition, concrete and essential oil extraction of cut/scented roses, chrysanthemum, gerbera, gladioli, tuberose, carnation, dahlia, Jasmine, marigold, gaillardia, ixora, lilies, aster and cut foliage. Landscape gardening, styles of gardening, different features of garden, arboretum, shrubbery, fernery, palmatum, arches and pergolas, edges and hedges, climbers and creepers, cacti and succulents, herbs, annuals and flower borders and beds, ground covers, carpet beds, establishment and maintenance of lawn. Bio-aesthetic planning, theme parks, indoor gardening, eco-tourism, xeriscaping and hardscaping, waterscaping and non-plant components.
6. **Spice Crops Production**: National and international importance of spice crops, climatic and soil requirement, commercial varieties, hybrids, sowing, planting time and methods, seed rate and seed treatment, nutritional and irrigation requirements, intercultural operations, weed control, mulching, physiological disorders, harvesting and post harvest management, plant protection measures, organic resource management, organic certification, quality control and protected cultivation of clove, cinnamon, turmeric, ginger, garlic, coriander, fenugreek, cumin, fennel, ajowain, dill, celery and vanilla.
7. **Breeding of Vegetable Crops**: Origin, botany, taxonomy, cytogenetics, breeding objectives, breeding methods (introduction, selection, hybridization, mutation), varieties and varietal characterization, resistance breeding for biotic and abiotic stress, quality improvement, biotechnology and their use in breeding in vegetable crops of potato, tomato, brinjal, peppers, okra, peas and beans, gourds, melons, pumpkins, cabbage, cauliflower, carrot, radish, sweet potato, onion, broccoli and underutilized vegetable crops.

8. **Post Harvest Technology of Horticultural Crops:** Importance and scope of PHT & preservation, maturity indices, harvesting, minimal processing, practices for specific market requirements, influence of post-harvest practices, enzymatic and non-enzymatic changes, respiration, transpiration of fruits & vegetables, physiology and biochemistry of fruit ripening factors leading to post-harvest losses, pre-cooling, methods of storage-ventilated, refrigerated, MA & CA storage, physical injuries and disorders, packaging methods and transportation, principles and methods of preservation, food processing, canning, fruit juice beverages, pickles, jam, jellies, sauces and ketchup, candies, preserves, dried and dehydrated products and food safety standards, nutritionally rich products, fermented fruits and beverages and processing waste management. Recent trends in food preservation, food additives, ripening of fruits and vegetables.

- 120 Questions

Pattern of Question Paper:

1 Objective Type Paper

2 Maximum Marks: 150

3 Number of Questions: 150

4 Duration of Paper: 2.30 Hours

5 All Questions carry equal marks

6 Medium of Screening Test: Bilingual in English & Hindi

7 There will be **Negative Marking**

(For every wrong answer, one-third of marks prescribed for that particular question will be deducted)
