

# **RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER**

## **SYLLABUS OF COMPETITIVE EXAMINATION FOR THE POST OF AGRICULTURE RESEARCH OFFICER (HORTICULTURE) AGRICULTURE DEPARTMENT**

### **Part-A**

**- 40 Questions**

### **General Knowledge of Rajasthan**

#### **Unit-I: History, Culture & Heritage of Rajasthan -**

Pre & early history of Rajasthan. Age of Rajputs: Major dynasties of Rajasthan and the achievements of prominent rulers. Emergence of Modern Rajasthan: factors of socio-political awakening of 19<sup>th</sup> century; Peasants and tribal movements of 20<sup>th</sup> century; Political struggle of 20<sup>th</sup> century and the integration of Rajasthan.

Visual Art of Rajasthan - Architecture of forts and temples of Rajasthan; Sculpture traditions of Rajasthan and various schools of painting of Rajasthan.

Performing Arts of Rajasthan - Folk music and musical instruments of Rajasthan; folk dance and folk drama of Rajasthan.

Various religious cults, saints and folk deities of Rajasthan.

Various dialects and its distribution in Rajasthan; literature of Rajasthani language.

#### **Unit-II: Geography, Natural Resource & Socio-Economic Development of Rajasthan -**

Geography of Rajasthan: Broad physical features- Mountains, Plateaus, Plains & Desert; Major rivers and lakes; Climate and Agro-climatic regions; Major soil types and distribution; Major Forest types and distribution; Demographic characteristics; Desertification, Droughts & Floods, Deforestation, Environmental Pollution and Ecological Concerns.

Economy of Rajasthan: Major Minerals- Metallic & Non- Metallic; Power Resources- Renewable and Non-Renewable; Major agro based industries- Textile, Sugar, Paper & Vegetable oil; Poverty and Unemployment; Agro food parks.

#### **Unit-III: Current Events and Issues of Rajasthan and India -**

Important Persons, Places and Current events of the State. National and International events of importance. New Schemes & Initiatives taken recently for welfare & development in Rajasthan.

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.

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<b>Scheme of the examination</b>				
<b>S. No.</b>	<b>Subject</b>	<b>No. of Questions</b>	<b>Total Marks</b>	<b>Examination Duration</b>
Part-A	<b>General Knowledge of Rajasthan</b>	40	40	<b>2.30 Hours</b>
Part-B	<b>Concerned Subject (as prescribed in qualification)</b>	110	110	
	<b>Total</b>	<b>150</b>	<b>150</b>	

1. The competitive examination shall carry 150 marks and 150 questions of Multiple Choice Type questions.  
 2. There shall be one paper. Duration of Paper will be Two hours and Thirty Minutes.  
 Negative marking shall be applicable in the evaluation of answers. For every wrong answer one-third of the marks prescribed for that particular question shall be deducted.  
 Explanation: - Wrong answer shall mean an incorrect answer or multiple answers.  
उक्त पद हेतु आयोजित की जाने वाली परीक्षा के लिए ओ.एम.आर. उत्तरपत्रक में प्रश्नों के विकल्प भरने के संबंध में विशेष निर्देश:-

1. Each question has five options marked as 1, 2, 3, 4, 5. You have to darken only one circle (bubble) indicating the correct answer on the Answer Sheet using BLUE BALL POINT PEN.
2. It is mandatory to fill one option for each question.
3. If you are not attempting a question then you have to darken the circle '5'. If none of the five circles is darkened, one third (1/3) part of the marks of question shall be deducted.
4. After solving question paper, candidate must ascertain that he/she has darkened one of the circles (bubbles) for each of the questions. Extra time of 10 minutes beyond scheduled time, is provided for this.

A candidate who has not darkened any of the five circles in more than 10% questions shall be disqualified.