KERALA PUBLIC SERVICE COMMISSION

SYLLABUS FOR THE POST OF

RANGE FOREST OFFICER IN

KERALA FOREST & WILDLIFE DEPARTMENT

Optional subject- Horticulture

Module 1: Fundamentals of Horticulture (20 marks)

Horticulture- Importance, divisions, classification, nutritive value, area and production, Horticultural zones in India, Commercial orchards and plantations- selection of site, planning and layout, Systems of planting, Tree forms and functions- training systems, pruning techniques, Growth and development, Bearing habits, Fruit set and fruit drop- factors affecting and measures to overcome, Causes of unfruitfulness, Seedlessness- significance and induction, Plant growth regulators- preparation and methods of application. Plant propagation- types, advantages and disadvantages, Potting and repotting- containers and media. Seed propagation- dormancy, types and methods to overcome, Asexual propagation- apomixis, polyembryony, bud sport, chimera, Propagation- by cutting, layering, grafting, budding, Stock- scion relationship, incompatibility. Plant propagation structures- green house/ glass house, hot bed, cold frame, lath house, net house, mist chamber, Nursery- site selection, layout, components, Commercial propagation of selected horticultural plants, micropropagation.

Module 2: Fruit crops (40 marks)

Importance and scope of fruit crops in India with special reference to Kerala, Classification of fruits, Cultivation practices of important tropical (banana, mango, pineapple, papaya, sapota, guava, pomegranate), subtropical (Citrus, grapes, mangosteen, avocado, litchi, Moraceous and Annonaceous fruits) and temperate (apple, pear, peach, plum, strawberry, cherry, minor fruits) fruit crops- origin, soil and climate, botany, cultivars, plant propagation, planting aftercare and management, nutrient deficiencies, cultivation problems, major pests and disease and control measures, Hi-Tech innovative practices in fruit production- Biotechnology, HDP, fertigation, protected cultivation, organic farming.

Module 3: Vegetable crops (40 marks)

Importance and scope of vegetable crops in India with special reference to Kerala, Classification of vegetables, Factors affecting vegetable production- Temperature, light, moisture, soil and nutrients, Types of vegetable gardens, Systems of vegetable cultivation- traditional and specialized, Protected cultivation, Precision farming, Cropping systems, Basic principles in vegetable production- nursery, sowing and transplanting, care and management, Irrigation management, Nutrient management, Growth regulators, Seed production, Post harvest handling, Packing and transport, Marketing, Production technology of warm season (Solanaceous, Cucurbitaceous, Leguminous, okra, amaranth, perennial vegetables and tubers) and cool season vegetables (Cole crops, Root crops, Bulb crops, Potato, Peas& Beans, salad crops& leafy vegetables)- importance, origin, taxonomy, varieties, cultivation, problems and prospects.

Module 4: Floriculture and Landscaping (40 marks)

Introduction to Landscaping and gardening- components of landscapes and gardens, History of gardening, Garden styles- formal and informal, types of gardens- Mughal, Japanese, Persian, French, Italian, English. Principles of landscaping- designing and preparation of landscape and garden plans. Garden adornments, Lawn- types, methods of establishing, maintenance. Annuals and herbaceous perennials- use, selection, design, cultural practices. Shrubs and trees- trees for landscape, avenue planting. Climbers and creepers, cacti and succulents, ferns and palms. Specialized gardening techniques- rock garden, water garden, bonsai, terrace garden, sunken garden. Indoor plants- types, display, terrarium. Commercial Floriculture- status of cut flower industry in India, problems and prospects. Cut flowers (Rose, Orchids, Anthurium), Loose flowers (Jasmine, chrysanthemum), bulbous plants, minor commercial flowers- Importance, classification, varieties, cultivation practices. Flower arrangement- principles, styles, designs, tools, containers, vase solutions, flower shows and exhibitions

Module 5: Plantation crops, Spices, Medicinal& Aromatic crops (40 marks)

Plantation crops (coconut, arecanut, oil palm, rubber, cashew, tea, coffee and cocoa), Spices (Pepper, cardamom, ginger, turmeric, cinnamon, nutmeg, clove, vanilla and allspice)- Introduction, importance, area, origin and distribution, botany, varieties, climate, soil, site selection, propagation, cultivation practices and harvesting. Seed and herbal spices and minor essential oil yielding plants. Medicinal (*Rauvolfia, Catharanthus,* Opium, *Digitalis, Dioscorea*, solanum, acorus, senna, neem, cinchona, *Kaempferia*, long pepper, Plumbago, *Indigofera* and Ocimum) and aromatic plants (lemon grass, palmarosa, citronella, vetiver), jasmine, tuberose, rose, geranium, patchouli, eucalyptus, sandal wood and other minor essential oil yielding crops- History, importance, problems and scope, cultivation practices, active principles and uses

Module 6: Post Harvest Management (20 marks)

Importance of post harvest management of fruits, vegetables and other horticultural produce, present status and future scope, Post harvest losses, physiology of maturity, ripening and senescence. Harvesting, handling, curing, grading and pre-cooling of horticultural produce, pre and post harvest treatment for extending storage life, Principles and methods of storage for fruits and vegetables- storage at ambient, low temperature and controlled atmosphere. Packing of fresh and processed products. Principles and methods of preservation- dehydration, thermal processing, chemical preservatives, fermentation, ionizing radiation. Govt. policies, regulations and specifications for fresh and processed products. Export promotion agencies and their role in export of fresh and processed products. Post harvest technology of plantation crops, spices and cut flowers.

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the questionpaper. There is no undertaking that all the topics above may be covered in the question paper.