

SCHEME & SYLLABUS OF PROPOSED EXAM FOR RECRUITMENT OF ASSISTANT HORTICULTURIST:

Scheme of Examination:

Screening Test will be objective type (MCQ) in 4 different series.

Full marks: 100

Number of questions: 100, each carrying 1 mark of accepted syllabus.

Durartion: 1 hour 30 minutes

N.B. : There will be negative marking for wrong answers as per norms.

Syllabus of Examination:

Scope and importance of Horticulture and horticultural crops: Area and Production – Imports and Exports – Nutritive value of Horticultural crops – Agro Climatic Zones of India and West Bengal in relation to Horticultural and Medicinal Plants crops.

Scope for Horticulture Development in West Bengal (especially Hilly region): Factors limiting Horticultural crop production – Climate (Rainfall, Temperature, Light Humidity, Sunshine) – Soil (pH, EC, Soil Depth) – Crops suitable for different soils –water (Quality and quantity) – Drainage.

Planning: Layout and Planting of orchards – fencing – wind breaks – spacing – systems of planting – cropping systems – Multitier cropping – cover crops – Intercrops – Mulching – weed control.

Manures and Manuring: Organic and inorganic manures – Bio fertilizers – Fertigation – Bio Agents.

Essential Elements: Functions – Deficiency symptoms – Fertilizer schedule – Time and method of application. Physiological disorders – Control measures.

Irrigation: Water requirement of different Horticultural crops – various irrigation methods including Drip, Sprinkler, Fogging, Misting and Water Stress on Horticultural crops, medicinal and aromatic plants and plantation crops – Plasticulture – Mulching types.

Training and Pruning: Principles and Methods – Canopy Architecture – Planting systems and Planting densities.

Flowering: Pollination – Fruit set – Fruit drop – Causes and Prevention – Unfruitfulness associated with External and Internal factors.

Maturity: Harvesting – Pre and Post Harvest Handling – Processing and Preservation.

Role of plant Growth regulators and their commercial applications in the Horticulture.

Seed and Vegetative Propagation: advantages and disadvantages – seed propagation – Seed Treatment – vegetative propagation – Important methods of Vegetative Propagation – Cutting – Layering – Incompatibility – Grafting – Budding – Rootstock – Scion – (Stock – Scion relationship) – Specialized parts of Propagation (bulbs, corns, tubers, offsets, runners etc.). Nursery management – seed sowing, media, soil, irrigation, nursery diseases and pests, transplanting, shade and light intensity, germination, weeding, hardening of plants.

Tropical, Subtropical, Temperate and Sub-Temperate Horticultural Crops: Climate and Soil – propagation practices spacing and planting – varieties – Nutrient water and weed management – mulching – intercropping – use of growth regulators – yield – Economics – Integrated pest and disease management – Pre and Post harvest practices – Processing and Preservation – Marketing, High density orchards. Scope of cultivation of temperate and sub-temperate fruits, flowers, vegetables, medicinal and aromatic plants in West Bengal, present area, production and productivity of temperate, sub-temperate horticultural crops of West Bengal – reasons for decline of Mandarin orange production, ways and means to rejuvenate it, area, production and productivity of it.

Fruit Crops: Kiwi, Peach, Pear, Plum, Nectarine, Strawberry, Apple, Walnut, Berries, Hazelnut, Chestnut, Avocado, Fig, minor fruits – their propagation, scope of commercialization in West Bengal.

Spice Crops: cardamom, Ginger, Turmeric, Saffron, Black Pepper, etc.

Plantation Crops: Cinchona, Tea, Coffee, Rubber, Olive etc. History of Cinchona Cultivation in India and in the world, its role in World Wars, present state in India – Darjeeling tea, production, challenges and future scope of continuous cultivation – scope of coffee production in West Bengal, present scenario and future possibilities, initiative of GTA to make a brand name ‘Kalimpong Coffee’ – commercial cultivation of rubber in West Bengal, scope of processing to make finish products – scope of cultivation in West Bengal.

Vegetable crops: Tomato, Brinjal, Bhendi, Chilli, Cucumber, Gourds, Pumpkin, Peas, Beans, Potato, tuber crops, Carrot Radish, Cauliflower, Cabbage etc. Exotic vegetable – Broccoli, Brussels, Sprouts, Asparagus, Celery, Spinach etc.

Flower Crops: Cymbidium and Tropical Orchids, Chrysanthemum, Marigold, Gerbera, Gladiolus, Anthurium, Carnation, Statice, etc.

Medicinal Plants: Ipecac, Chirata, Taxus baccata, cinchona and other commercially important Medicinal plants like Ashwagandha, Sweritia chirata, Rauwolfia serpentina, Valeriana jatamansi, Ocimum sanctum, Artemisia annua, Gymnema sylvestre, Catharanthus roseus, Piper longum, Withania somnifera, Andrographis paniculata, costuss peciosus, Digitalis purpurea, Stevia etc. Medicinal plants grown and used in West Bengal, commercially grown and marketed medicinal plants of Bengal, list of threatened, rare and endangered medicinal plants of Bengal, scope of commercialization of medicinal plants as alternate crop in Bengal.

Aromatic Plants: Commercially important aromatic plants notified by Govt. of India like Lemongrass, Citronella, Patchouli, Vetiver, Artemisia annua, Geranium, Mint, Ocimum Eucalyptus, Sandalwood, Lavender, etc. commercially grown and marketed aromatic plants of Bengal, list of threatened, rare and endangered aromatic plants of Bengal, scope of commercialization of aromatic plants as alternate crop in Bengal.

Ornamental gardening: Landscaping- design and principles – Types of gardens – Layout – garden components – flowering, foliage and Avenue trees – Arboretum – Shrubs – creepers and Climbers. Cacti and succulents, hedge and edge plants. Plants for rockery and water garden – Flowering annuals, Indoor plants, Fardenadornaments – arches and pergolas. Lawn – grasses – Making and maintenance. Terrace gardening, topiary Bonsai preparation, flower arrangements, urban and Peri-urban Horticulture, Kitchen garden, aeroponics, hydroponics and Herbal garden.

Organic farming: Definition of organic farming, scope of organic farming in Horticulture Crops, Certification procedure and inspection of organic production of Hort. Crops. Scientific use of microbial inoculants in Horti. Crops. Preparation and use of organic manures viz. Enriched compost, Vermi compost, Green manuring, Beejamrutha, Jeevamrutha, Panchagavya, Biodigester Vermi wash, Cow urine, Neem cake, BD-500 etc. Use of Bio-fertilizers viz. Rhizobium, Azotobacter, Azospirillum, phosphate solubilizers, Azolla, plant growth promoting rhizobacteria, VAM in different Horticultural crops. Methods of application of biofertilizers. Use of microbial consortia in composting of Agri/horticultural wastes and enrichment of compost. Microbial biocontrol agents viz. pseudomonas, Bacillus, PGPR etc. Crops suitable for organic farming.

Precision farming: Definition and implementation in Horticultural crops. Principles and practices of Integrated Farming System. Cultivation of Mushroom.

Seed science and technology: Type of seeds concept of seed quality and factors affecting it. Role and goal of seed technology. Generation system of seed multiplication, classes of seed. Different organization involve in seed production and certification. Principles of seed production, seed certification and processing. Seed testing method (Germination test, physical purity test, moisture test, TZ test etc) principles and methods of seeds storage, IPR and its utilization, PPVR and FR technique of seed production in important vegetable (Tomato, Brinjal, onion, cucurbits, root vegetable etc).

Soil science and agricultural chemistry: Importance of soil testing, soil sampling procedure for horticulture crops and interpretation. Plants nutrients – introduction, definition of nutrient, nutrients accumulation, nutrient uptake and nutrient removal. Stout criteria of essentiality. Classification of essential nutrient as primary, secondary and micro nutrient. Function and deficiency symptom of nutrient and remedial measures. Organic matter, importance of organic matter, humus, types of humus and importance of humus and organic matter. Fertilizers – definition, difference between organic manure and fertilizer. Classification of fertilizer. Problematic soil – causes and reclamation methods. Quality of irrigation water and management and integrated plant nutrient management.

Biotechnology: Conventional methods of crop improvement, selection, mutation, polyploidy and clonal selection. Plant tissue culture – History, Laboratory organization, Sterilization methods, Media preparation, Plant Growth Regulators, Micro propagation, Callus culture, Cell Culture, Protoplast Culture and Fusion, Organogenesis and Somatic embryogenesis. Application of tissue culture for crop improvement in agriculture, horticulture and forestry. Methods for Plant Conservation, Cryo preservation, Haploid production: - Anther, Pollen, Embryo and ovule culture and their applications. Somaclonal variation. Production of bio active secondary metabolites by plant tissue culture. Genetic engineering in plants. Isolation and characterization – drug development, Biopesticides, growth regulators, Biofertilizers. Value addition via bio transformation. Biocatalyst, Bioremediation, Bio fuels, Feed stock chemicals, Designer Chemicals. Hardening of micro-propagated plants.