C.No: 779/SS/08

SCHEME AND SYLLABUS FOR THE POST OF ASST .DIRECTOR OF HORTICULTURE IN HORTICULTURE SERVICE

SCHEME

(P.G. standard)

Part-A: Written (Objective type) Examination				
Paper-1	General Studies	150 Marks	150 Questions	150 Minutes
Paper-2	Subject (Horticulture)	300 Marks	150 Questions	150 Minutes
Part-B: Oral Test (Interview)		50 Marks		

SYLLABUS

GENERAL STUDIES AND MENTAL ABILITY

1. General Science – Contemporary developments in Science and Technology and their implications including matters of every day observation and experience, as may be expected of a well-educated person who has not made a special study of any scientific discipline.

2. Current events of national and international importance.

3. History of India – emphasis will be on broad general understanding of the subject in its social, economic, cultural and political aspects with a focus on AP Indian National Movement.

4. World Geography and Geography of India with a focus on AP.

5. Indian polity and Economy – including the country's political system- rural development – Planning and economic reforms in India.

6. Mental ability – reasoning and inferences.

SUBJECT HORTICULTURE

1. FUNDAMENTALS OF HORTICULTURE

Definition, importance of horticulture in terms of economy, production, and employment generation. Nutritional value of horticultural crops. Divisions of horticulture and their importance. Horticultural stations in Andhra Pradesh. Horticultural zones of India and Andhra Pradesh.

Temperature, light, humidity, rainfall and soil requirements for horticultural crops. Selection of site for establishing an orchard, orchard plan, systems of planting and establishment of an orchard. Importance, scope and practicing of organic farming in horticultural crop production.

Nutrition of horticultural crops – assessment of nutritional requirements based on soil, tissue analysis, and field experiments. Identification of deficiency symptoms of various nutrients and methods of nutrient application. Assessment of irrigation requirements for different horticultural crops and different methods of irrigation. Pruning and training, their objectives and methods. Pollination and fruit set, problems and requirements, flower and fruit drop, stages, causes and remedial measures. Fruit thinning, objectives, advantages and disadvantages. Unfruitfulness, reasons and remedial measures.

2. PLANT PROPAGATION AND NURSERY MANAGEMENT

Introduction, principles and classification of plant propagation methods. Selection of site for commercial nursery. Ecological and economic factors. Plant propagation structures, containers and media.

Sexual propagation and its importance. Seed germination, process of seed germination. Factors affecting seed germination and pre-germination treatments and viability tests.

A sexual propagation and it's importance. Propagation of plants by cuttage, types of cuttings and factors affecting regeneration of plants from cuttings. Propagation by layerage. Methods of layerage. Factors affecting regeneration of plants by layerage.

Propagation by grafting and importance of graftage. Methods of grafting. Factors for successful graft formation and steps in graft union. Methods of budding and bud wood selection. Role of rootstocks in fruit production. Selection of rootstocks for commercial fruit plants. Production of nursery stock. Propagation of various fruit and ornamental plants. Role of growth regulators in propagation.

Importance of micro propagation of plants. Types of asceptic cultures. Types of media, preparation of media and inoculation of explants, establishment, sub culture and rooting of explants.

Establishing of *in vitro* rooted cuttings in growing media and hardening.

3. FRUIT CROPS

Area, production, importance, uses, origin, distribution, botany, classification of varieties, use of rootstocks, high density planting, climate, soils, planting methods, training and pruning, nutrition, irrigation scheduling, intercrops, weed control, problems in orchard management, flowering, fruit set, problems in fruit set, harvesting indices, harvesting, preharvest treatments, use of growth regulators, yield, grading, packing for internal and export markets, ripening methods and storage in respect of mango, banana, citrus, grape, pineapple, guava, papaya and sapota.

4. VEGETABLE CROPS

Importance of vegetables in human diet and national economy. Detailed study regarding origin and distribution, area and production, importance, nutritive value, botany, varieties, soil and climatic requirements, seed treatment, seed sowing/nursery raising, transplanting, nutrition, irrigation, intercultural operations, physiological disorders, harvest indices, harvesting, post harvest handling, curing, storage and usage of plant growth regulators in vegetable crops like tomato, brinjal, chillies, sweet pepper, potato, okra, cucurbitaceous crops like cucumber, pumpkin, ridege gourd, snake gourd, bitter gourd, bottle gourd, melons like water melon and must melon, leguminous vegetables like cluster bean, French bean, dolichos bean, pea and broad bean, cole crops like cabbage, cauliflower and knolkhol, root crops like radish, carrot, beetroot and turnip, bulb crops like onion and garlic, tuber crops like sweet potato, tapioca, amorphophallus, colacasia, dioscorea and yam, leafy vegetables like amaranthus, palak, Roselle, perennial vegetables like drumstick, coccinia and murraya.

5. PRESERVATION OF FRUITS AND VEGETABLES

Importance and scope of fruit and vegetable preservation in India. Principles of preservation by heat, low temperature, chemicals and various methods of preservation Selection of site for processing, processing unit layout and precautions for hygienic conditions of the unit. Preservation of fruits and vegetables through canning, bottling, freezing, dehydration, drying, ultraviolet and ionizing radiations.

Micro-organisms associated with spoilage of fruit and vegetable products. Spoilage of canned products-hydrogen swell, filipper, dent, leaker etc., Biochemical changes associated with spoilage of fruit and vegetable products. Preservatives and colours permitted and prohibited in India.

Different kinds of equipments used in processing. Preparation of jams, jellies, marmalades, candies, crystallized and glazed fruits, preserves, chutneys, pickles, ketchup, sauce, puree, syrups, juices, squashes and cordials.

6. PLANT PHYSIOLOGY (INCLUDING C3 & C4 PLANT) PHOTOSYTHESIS RESPIRATION ETC. GROWTH REGULATION & HARMONES

Nomenclature of plant growth substances. Plant growth substances and their classification. History, occurrence, distribution, mode of action, movement, mechanism of action and function of auxins, gibberellins, cytokinins, ethylene, inhibitors, retardants, phenolic substances and morphactins.

Role of plant growth regulators in seed and bud dormancy, juvenility, maturity and senescence, flowering, pollination, fruitset including parthenocarpy, fruit growth, fruit drop and fruit ripening (climacteric and non-climacteric) and fruit colour development, tuber and bulb formation and sex expression and extension of shelf life in fruits, vegetables and flowers. Role of growth regulators in plant propagation.

6(a) ENTOMOLOGY

Commonly occurring pests, life cycle of pests, control measures.

6(b) PATHOLOGY

Commonly occurring diseases, life cycle of bacteria, fungal parasites, control measures.

7. COMMERCIAL FLORICULTURE

Area, production, importance, uses, origin, distribution, classification of varieties, propagation, environmental factors affecting growth and flowering, soils, nutrition, irrigation, weeding, special techniques of production such as controlling growth and production of flowers, use of growth regulators, harvesting, postharvest handling, extension of shelf life of flowers of commercial flower crops such as rose, chrysanthemum, jasmine, carnations, gladiolus, anthurium, tuberose, china aster, marigold, crossandra and gerbera.

8. GREENHOUSE MANAGEMENT OF HORTICULTURAL CROPS

Importance, uses, scope and production of horticultural crops in greenhouse. Status and development of greenhouse production of horticultural crops in the world and India. Development, constraints, research needs and future of protected culture of horticultural crops in India and A.P. Points to be considered before establishing a greenhouse. Types of greenhouses, classification of greenhouses based on the shapes, material used, utility and cladding material used. Size and arrangement of greenhouses and characteristics of various greenhouse cladding materials, greenhouse benches etc.,

Management of light, temperature (greenhouse heating and cooling), CO_2 and relative humidity inside the greenhouse.

Various types of growing media used and their suitability for different horticultural crops. Preparation of growing media and its pasteurization. Management of nutrients through fertigation.

Detailed production technology in respect of tomato, cucumber, rose, carnation, gerbera, chrysanthemum and anthurium under greenhouse/polyhouse.

9. MEDICAL, AROMATIC, SPICE, CONDIMENT AND PLANTATION CROPS

Origin, importance, export potential, varieties, climate, soil requirements, propagation and planting and after care, mauring, irrigation, training, pruning, harvesting, yield and post harvest handling, curing and processing practices, storage methods, and distillation of essential oils of the following crops.

Medicinal Plants

Aloe, amla(aonla), stevia, ashwagandha, dioscorea, opium poppy, sarpangandha, steroids bearing *solanum, Phyllanthus amarus, chakramani, madhunasaini, sweet flag, Catharanthus, roseus, isabgol, fox glove, belladona, senna, tinospora, annatto, coleus, safed musli and asparagus.*

Aromatic Crops

Citronella, lemon grass, palmarosa, vettiver, geranium, davana, mint lavender and vanilla.

Spices and condiments

Turmeric, ginger, coriander, fenugreek, cardamom, pepper, cinnamon, clove, nutmeg and cumin.

Plantation Crops

Coconut, cashewnut, oil palm, betelvine, coffee, tea, cacao, arecanut and rubber.

10. ORNAMENTAL GARDENING AND LANDSCAPE ARCHITECTURE

Need for bioaesthetic planning, places suitable for bioaesthetic planning-towns, cities, villages, schools, temples, road side, parks, ghats of rivers and canals, platforms, railway lines, public and private buildings, institutes and places of worship. Study of ornamental trees, shrubs and climbers used in bioaesthetic or landscape gardening. Study of cacti, succulents and bonsai. Principles of garden designs, types of gardens-japanese, English and Moghul gardens. Various features of gardens such as paths, garden walls, fencing, steps, edges, hedges, arches, pergolas, shrubbery, topiary, rockery, flower beds, lawns, fountains, statues, water garden, conservatory and glass or greenhouse. Indoor plants, and their management.

Flower arrangement – principles, styles, containers and holding solutions.

11. DRY LAND HORTICULTURE AND WATERSHED MANAGEMENT

Dry land horticulture farming, introduction, definition, dry climate and their classifications with reference to India in general and Andhra Pradesh in particular. Importance of horticultural crops in dry land, yield potential of agriculture and horticulture crops in dry lands. Fruits and vegetables crops suitable for dry land farming. Adaptive features of dry land fruit crops for drought and salinity.

Watershed management, objectives, approaches, steps in watershed development planning, land use capability, classification, soil and rain water conservation, water harvesting measures in watershed area. Problems and prospects under water shed. Alternate water use system.

Cultural practices like planting, training, pruning, nutrition and water management and harvesting of important dry land fruits viz., ber, pomegranate, custard apple, phalsa, fig, aonla, jamun and tamarind.

12. SOCIAL AND FARM FORESTRY

Introduction – forests in India, forest policy and law, gap between demand and supply of forest products. Principles of general silviculture.

Social forestry – need, objectives and scope, choice of species for fuelwood, fodder, smaller timber and timber, their culture, propagation, application of agro-techniques and economic benefits, management of social forestry plantations nurseries and their practices.

Afforestation on different problematic sites. Voluntary organizations and their role in promoting afforestation programmes. Maintenance and conservation of village woodlots. Energy plantations. Social forestry for watershed management.

Farm forestry – objectives and role, need for shelter belts and wind breaks, types of farm forestry.

Agro forestry – need, objectives, scope, principles and practices of agro forestry systems, choice of the tree species, and management implications.

Forest products, their processing and use.

Sd/- Secretary
01/07/2008