

**FURTHER DETAILS REGARDING MAIN TOPICS OF
PROGRAMME NO. 12/2015/ONLINE (Item No. 4)**

JUNIOR MANAGER (QUALITY ASSURANCE)

KERALA STATE CIVIL SUPPLIES CORPORATION LIMITED

(CATEGORY Nos. 337/2014)

PART I: CROPS, SOIL AND WATER

- Crops – classification of crops based on agronomic, botanical, ontogeny, growth habit – growth – definition and factors affecting growth – yield contributing characters – harvest index – vegetative propagation of crops – setts, slips, tubers, rhizomes, etc. – methods of sowing – crop nutrition – classification of nutrients – fertilizers – straight and complex fertilizers, nitrogenous, phosphatic and potassic fertilizers; speciality fertilizers – customised fertilizers and 100 per cent water soluble fertilizers; methods for improving nutrient use efficiency, biological nitrogen fixation and biofertilizers
- Rice (including speciality rices) , wheat, maize, millets, tapioca, potato, yams and aroids, sugarcane, groundnut, sesamum, sunflower, safflower, linseed, important pulses, banana, mango, coconut, cashew, spices and condiments – origin, geographic distribution, economic importance, botany and growth phases, varieties, harvesting, processing, conversion ratios (ratio between harvested and economic produce)
- Soil – definition; different kinds of rocks; soil physical properties – soil structure, soil texture, particle density, bulk density, porosity; soil profile - soils of India and Kerala; soil organic matter – composition and properties; soil organisms; soil taxonomy and its characteristics
- Soil moisture constants – Evapotranspiration and consumptive use – potential evapotranspiration and reference crop evapotranspiration – crop coefficient – irrigation water quality criteria and its management
- Water management of principal crops, critical stages of crops, depth and schedule of irrigation – rice, wheat, banana, coconut, cowpea, sugarcane and vegetables
- Weeds – harmful effects, classification of weeds, crop weed association – crop associated weeds, crop bound weeds and season bound weeds – critical period of crop weed competition – aquatic weeds and parasitic weeds
- Agroclimatic and agroecological classification of India and Kerala
- Organic farming, natural farming, conventional farming, sustainable agriculture - Current status of organic farming -Initiatives in India and Kerala- National Programme for Organic Production (NPOP)
- Operational structure of NPOP-Accreditation agencies- Certification Agencies

- National Standards for Organic Products (NSOP)-inspection and certification procedures, labeling and marketing
- Marketing and export potential of organic produce

PART II: SEED TECHNOLOGY

- Introduction to Seed Production, Importance of Seed Production, Deterioration of crop varieties, Factors affecting deterioration and their control; Maintenance of genetic purity during seed production
- Seed quality; Definition, Characters of good quality seed,
- Different classes of seeds; Breeder seed, Foundation seed, Certified seed, Registered seed, Hybrid seed, Improved seed, Composite seed, etc. Foundation and certified seed production of rice and vegetables (varieties & hybrids);
- Seed certification, procedure for seed certification, field inspection and field counts etc.; Seed Act and Seed Act enforcement, Central Seed Committee, Central Seed Certification Board, State Seed Certification Agency, Central and State Seed Testing Laboratories;
- Duties and powers of seed inspectors, offences and penalties; Seed Control Order 1983, Seed Act 2000 and other issues related to seed quality regulation.
- Seed Drying: Forced air seed drying, principle, properties of air and their effect on seed drying, moisture equilibrium between seed and air, Heated air drying, types of air distribution systems for seed drying, Seed processing: air screen machine and its working principle.
- Different upgrading equipments and their use
- Establishing a seed testing laboratory; Seed testing procedures for quality assessment
- Seed treatment, Importance of seed treatment, types of seed treatment, equipment used for seed treatment,
- Seed packing and seed storage, factors affecting seed longevity during storage and conditions required for good storage,
- General principles of seed storage, measures for pest and disease control, temperature control, Seed marketing, marketing structure, marketing organization; Factors affecting seed marketing.
- Physical analysis of Field and Horticultural crops
- Moisture tests of Field and Horticultural crops
- IPR- definition, concepts and components; IPR policies and issues in Indian scenario
- Intellectual Property Rights, Patenting, WTO, Plant Breeders Rights
- GM crops

PART III: POST HARVEST MANAGEMENT

- Physiology of maturity, ripening and senescence in cereals, pulses, fruits and vegetables, spices and condiments, tea, coffee, cashew, sugarcane.
- Maturity indices and harvesting of vegetables for vegetable purpose and seed purpose.
- Post harvest losses, phases of loss and measures to reduce the losses, post harvest handling, respiration and storage preservation and preservatives used in fruits and vegetables

- Winnowing- working principle, Cleaning- principles & properties, effectiveness of cleaning,
- Different cleaners and separators- length separator, cyclone separator, specific gravity separator, colour sorter, separators based on surface texture, working principles,
- Drying, principles, classification- conduction, convection and radiation driers, moisture contents, theory of grain drying.
- Drying- Constant and falling rate of drying, efficiency of drying.
- Types of dryers- mechanical dryers, batch, continuous, mixing and non mixing dryers-working principles.
- Fruits and vegetables- cleaning and grading, methods of grading, equipment for grading of fruits and vegetables.
- Storage, grain storage, types of storage structures- traditional, improved and modern storage structures.
- Storage of fruits and vegetables- Effect of temperature, Relative humidity and gas composition, traditional storages, Modified and Controlled atmosphere storage structures.
- Size reduction- Principles and equipment for size reduction.
- Post harvest pest and disease management – fruits and vegetables
- Pests of stored products- introduction, causes of storage losses
- Coleopteran and lepidopteran pests of stored products
- Management of stored product pests – preventive and curative methods
- Rodent management - principles and methods of control-physical, biological and mechanical methods.
- Rodenticides - acute poisons, chronic poisons, fumigants. Fumigation, baits, baiting and rat proofing

PART IV: AGRICULTURAL MARKETING

- Agricultural Marketing – concepts and definitions – scope – subject matter
- Market and Marketing-meaning-definition-elements of a market
- Classification of market-based on commodity, location, volume of business, time, competition
- Agricultural Marketing-approaches-functional (Exchange function, physical marketing function, facilitating functions)-institutional (agencies, channels)-commodity
- Producer's surplus-meaning-types-marketable and marketed surplus importance- factors affecting
- Marketing efficiency-meaning-definition-estimation of marketing costs/margins for farm commodities-measures to improve marketing efficiency and tools for risk management-co-operative marketing futures trading-contract farming
- International trade-Domestic Vs International trade-theories of international trade-theory of absolute advantage
- Globalization and Liberalization-WTO-AOA (market access, domestic support, export subsidies)

- Agricultural price policy in India-objectives-role of CACP in agricultural price policy-Administered prices (support price, procurement price, levy price, statutory minimum price, issue price)

PART V: FOOD CHEMISTRY AND MICROBIOLOGY

Food Chemistry: WATER – Definition, classification, sources and functions. Determination of water content and water activity. CARBOHYDRATES- Definition, classification, Sources, properties and functions. Disaccharides, Trisaccharides and polysaccharides. LIPIDS- Definition, classification, Sources and functions. Chemistry, Occurrence, Composition and properties. PROTEINS- Definition, classification, Sources and functions. Chemistry of amino acids and proteins. Major food proteins and their sources. Determination of proteins. ENZYMES- Definition, classification and Chemical nature. PIGMENTS AND FLAVOURS- Definition, classification, Sources and functions. Occurrence, chemistry, and changes during processing. VITAMINS- Definition, classification, Sources and functions,. MINERALS- Definition, classification, Sources and functions.

Food Microbiology: Historical Development, Morphology and General cytology of Microorganism, Physiology and Reproduction of Microorganisms, Growth and destruction and control of microorganisms, Food borne illness. Microorganisms in Atmosphere, Food Products and their control.

PART VI: FOOD PROCESSING AND PRESERVATION

Food processing industries/institutions/food scientists of importance in India. Food attributes viz. colour, texture, flavour, nutritive value and consumer preferences. Causes of food spoilage, sources of microbial contamination of foods, food borne illnesses, water activity and its relation to spoilage of foods. Spoilage of processed products and their detection. Principles and methods of food preservation. Methods of food preservation such as heat processing, pasteurization, canning, dehydration, freezing, freeze drying, fermentation, and chemical additives. Refrigerated and modified atmosphere storage. Aseptic processing, hurdle technology. Use of non-thermal food processing technologies

PART VII: TECHNOLOGY OF PLANT AND ANIMAL FOODS

Technology of Milk and Milk Products: Dairy plant operations-pasteurization, standardization, homogenization, sterilization, storage, transport and distribution Technology of cream, butter, ghee, cheese, condensed milk, evaporated milk, whole and skimmed milk powder, ice-cream, butter khoa, and paneer.

Technology of Meat / Fish / Poultry Products: Chemistry and microscopic structure of meat tissue. Ante-mortem inspection. Slaughter and dressing of various animals and poultry. Post mortem examination. Rigor mortis. Factors affecting meat quality. Curing, smoking, freezing,

canning and dehydration of meat, poultry and their products. Structure and composition of egg and factors effecting quality. Preservation of eggs. Quality indices of fish.

Fruits and Vegetable Processing: Thermal processing, steps in canning of different fruits, and vegetables; Dehydration and dehydrated products. Solar drying. Intermediate moisture foods. Technology of RTS, Squash, Crush, Syrup, Jam, Jelly, Marmalade, pickles, chutneys and sauces. Beverages, tea, cocoa and coffee processing.

Food grain Processing: Structure, composition of different grains like wheat, rice, barley, oat, maize and millets. Anti-nutritional factors in food grains and oilseeds. Milling of grains. Technology of Breads, Biscuits, cakes, doughnuts, buns, pasta goods, extruded, confectionary products, breakfast and snack foods. Rheology of wheat and rice flour. Oilseeds: edible oilseeds, composition and oilseed processing. Protein concentrates, isolates and their use in high protein foods.

PART VIII: FOOD ANALYSIS AND QUALITY ASSURANCE

Theory and principles of Colorimeter, spectrophotometer, chromatographic techniques, polarimeter, AAS, flame photometer and flourimeter.

Analysis of moisture content, Ash content, nitrogen and crude protein, Fat, sugars, fibre and food additives and contaminants using different methods.

Quality- Definition, Quality attributes-physical, chemical, nutritional, microbial and sensory. Objectives, importance and functions of quality control. Quality systems and tools used for quality assurance. The principles and practices of food plant sanitation. Food and hygiene regulations. Environment and waste management. Food adulteration, food safety. Sensory evaluation, panel screening, selection methods. Total quality management in food industry. Quality assurance, Quality control, Quality evaluation and Quality audits. ISO 9000, 22000. Food safety and HACCP principles. GMP, GHP, SSOP and SOP. ISO standards for Quality control labs. Food Safety and Standards Act 2006 International & national food laws and regulations.

PART IX: GENERAL KNOWLEDGE, CURRENT AFFAIRS & RENAISSANCE IN KERALA

Salient Features of Indian Constitution

Salient features of the Constitution - Preamble- Its significance and its place in the interpretation of the Constitution.

Fundamental Rights - Directive Principles of State Policy - Relation between Fundamental Rights and Directive Principles - Fundamental Duties.

Executive - Legislature - Judiciary - Both at Union and State Level. - Other Constitutional Authorities.

Centre-State Relations - Legislative - Administrative and Financial.

Services under the Union and the States.

Emergency Provisions.

Amendment Provisions of the Constitution.

Social Welfare Legislations and Programmes

Social Service Legislations like Right to Information Act, Prevention of atrocities against

Women & Children, Food Security Act, Environmental Acts etc. and Social Welfare

Programmes like Employment Guarantee Programme, Organ and Blood Donation etc.

RENAISSANCE IN KERALA

Towards A New Society

Introduction to English education - various missionary organisations and their functioning- founding of educational institutions, factories, printing press etc.

Efforts To Reform The Society

(A) Socio-Religious reform Movements

SNDP Yogam, Nair Service Society, Yogakshema Sabha, Sadhu Jana Paripalana Sangham, Vaala Samudaya Parishkarani Sabha, Samathwa Samajam, Islam Dharma Paripalana Sangham, Prathyaksha Raksha Daiva Sabha, Sahodara Prasthanam etc.

(B) Struggles and Social Revolts

Upper cloth revolts, Channar agitation, Vaikom Sathyagraha, Guruvayoor Sathyagraha, Paliyam Sathyagraha, Kuttamkulam Sathyagraha, Temple Entry Proclamation, Temple Entry Act, Malyalee Memorial, Ezhava Memorial etc.

Malabar riots, Civil Disobedience Movement, Abstention movement etc.

Role Of Press In Renaissance

Malayalee, Swadeshbhimani, Vivekodayam, Mithavadi, Swaraj, Malayala Manorama, Bhashaposhini, Mathnubhoomi, Kerala Kaumudi, Samadarsi, Kesari, Al-Ameen, Prabhatam, Yukthivadi, etc

Awakening Through Literature

Novel, Drama, Poetry, *Purogamana Sahithya Prasthanam, Nataka Prashtanam*, Library movement etc

Women And Social Change

Parvathi Nenmenimangalam, Arya Pallam, A V Kuttimalu Amma, Lalitha Prabhu.Akkamma Cheriyan, Anna Chandi, Lalithambika Antharjanam and others

Leaders Of Renaissance

Thycaud Ayya Vaikundar, Sree Narayana Guru, Ayyan Kali.Chattampi Swamikal, Brahmananda Sivayogi, Vagbhadananda, Poikayil Yohannan(Kumara Guru) Dr Palpu, Palakkunnath Abraham Malpan, Mampuram Thangal, Sahodaran Ayyappan, Pandit K P Karuppan, Pampadi John Joseph, Mannathu Padmanabhan, V T Bhattathirippad, Vakkom Abdul Khadar Maulavi, Makthi Thangal, Blessed Elias Kuriakose Chaavra, Barrister G P Pillai, TK Madhavan, Moorkoth Kumaran, C. Krishnan, K P Kesava Menon, Dr.Ayyathan Gopalan, C V Kunjuraman, Kuroor Neelakantan Namboothiripad, Velukkutty Arayan, K P Vellon, P K Chathan Master, K Kelappan, P. Krishna Pillai, A K Gopalan, T R Krishnaswami Iyer, C Kesavan. Swami Ananda Theerthan , M C Joseph, Kuttippuzha Krishnapillai and others

Literary Figures

Kodungallur Kunhikkuttan Thampuram, KeralaVarma Valiyakoyi Thampuram, Kandathil Varghese Mappila. Kumaran Asan, Vallathol Narayana Menon, Ulloor S Parameswara Iyer, G Sankara Kurup, Changampuzha Krishna Pillai, Chandu Menon, Vaikom Muhammad Basheer. Kesav Dev, Thakazhi Sivasankara Pillai, Ponkunnam Varky, S K Pottakkad and others

GENERAL KNOWLEDGE AND CURRENT AFFAIRS

General Knowledge and Current Affairs

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 question paper. There is no undertaking that all the topics above may be covered in the question paper.