FURTHER DETAILS REGARDING MAIN TOPICS OF PROGRAMME NO. 11/2015 (Item No. 15)

FOOD SAFETY OFFICER

FOOD SAFETY

(CATEGORY Nos. 80/2015)

PART I – FOOD TECHNOLOGY

Principles and methods of food preservation - Heat processing, pasteurization, canning, dehydration, freezing, freeze drying, fermentation, microwave, irradiation and chemical preservatives - Aseptic preservation, hurdle technology, hydrostatic pressure technology, microwave processing, microfiltration, bactofugation, ultra high voltage electric fields, pulse electric fields, high pressure processing, irradiation, thermosonication, ohmic heating, dielectric heating, infrared, induction heating, antibacterial and bacteriocins. Food fortification. Food additives. Classification, composition, manufacture, packaging, storage and defects of tomato products, other convenience foods from fruits and vegetables, beverages - tea, cocoa and coffee - pickles, chutney, sauces, spices, jam, jelley, marmalade, health drinks, restructured fruits and vegetables, preparation of fruits and vegetables, minimally processed products and Individually Quick Freezed products. Milling, processing, composition, structure, product development and byproduct utilization of cereals, pulses, millets and oil seeds. Antinutritional factors. Instant ready mixes. Packaging - materials and methods. Nutritional labeling of food. Quality control - systems and tools. Food plant sanitation. Food hygiene. Environment and waste management. Total quality management, good management practices, HACCP and codex alimentarius commission.

PART II - DAIRY TECHNOLOGY

Composition of milk- Physico - chemical properties of milk- milk hygiene- milk microbiology - Market milk: collection of milk- cooling and transportation– filtration/clarification- standardization- homogenization - pasteurization- UHT - sterilization- packaging. Tests for milk quality and detection of adulterants- dairy plant and equipment hygiene and sanitation. Definition, classification, composition, outline of manufacture, packaging, storage and defects of the following milk products: Cream, Malai, Dahi /Curd, yoghurt, Channa / Paneer, Cheese, Ice cream , Frozen desserts, Evaporated milk, Condensed milk, Milk powder, Butter, Ghee, Chakka and Shrikhand, Indigenous milk products. Foods for infant nutrition . Whey products, Edible casein products.

PART III - VETERINARY SCIENCES

Standards for organization and layout of abattoirs, handling and transport of meat animals including poultry. Ante mortem and post mortem examination. Scientific slaughtering and dressing of carcasses. Evaluation, grading and fabrication of dressed carcasses including poultry. Fraudulent substitution of meat, preservation of meat and aquatic foods. Ageing of meat. Packaging of meat and meat products. Physico-chemical and microbiological quality of meat and aquatic food and food products. Organic meat food products. Food products of genetically modified animals and marine origin. Meat as a source of disease transmission. Physical, chemical nutritional and functional characteristics of egg. Processing of Egg and egg products. Preservation and storage of egg.

PART IV - FOOD SAFETY AND ALLIED LAWS

The Food Safety and Standards Act, 2006; Rules and Regulations : Definitions - Authorities and Officers - Constitution, Functions and Powers –General Provisions as to Articles of Food, Ch. IV , SS.19 to 24- Prohibition Orders- Procedure for Investigation and Launching Prosecutions - Analysis of Food – Offences and Penalties – Defences – Adjudication. **Criminal Procedure Code, 1973** : Definitions- Cognizance of offences by Magistrate, S.190 - Complaints to Magistrate, SS. 200 to 203 – Trial of Sessions cases, SS. 225 to 237 – Trial of Warrant Cases, SS.238 to 250- Trial of Summons Cases, SS. 251 to 259 – Summary Trial, SS. 260 to 265- Appeal, SS. 372 to 394 –Bail and Bonds, SS. 436 to 450. **Indian Evidence Act, 1872**: Definitions- Expert Evidence, S.45 – Documentary Evidence, SS. 61 to 78.

PART V - NUTRITIONAL BIOCHEMISTRY AND FOOD ANALYSIS

Chemical composition of food: Carbohydrates, lipids, proteins, fiber, vitamins, and minerals – characteristics, sources, physiological and biochemical functions, daily requirement, digestion and absorption. Biological value of proteins (BV), Protein efficiency ratio (PER), Digestability coefficient, Net protein Utilization, Net Protein Ratio(NPR), Chemical Score, Free Radicals and Antioxidants**.** Energy value of foods, Respiratory Quotient (RQ), Determination of Basal Metabolic Rate (BMR), Determination of energy metabolism during work, Energy expenditure for various types of activities, Recommended Daily Allowance (RDA), Specific Dynamic Action (SDA) of foods, Balanced diet formulation. Analytical techniques used in detection of adulteration of food: Principle, procedure and detectors of chromatographic techniques (Column, paper, TLC, HPLC and GC), Spectroscopic techniques (IR, UV, MS and AAS). Food Analysis – moisture content, ash, fat, carbohydrate, crude fibre, crude protein, sodium, potassium, calcium, and phosphates. Food adulteration: common adulteration, contamination and pesticide analysis. Oils and Fats - Iodine value and saponification value.

PART VI - MICROBIOLOGICAL, BIOTECHNOLOGICAL AND MEDICAL ASPECTS

Microscopy, staining and culture techniques, sterilization techniques, culture media, factors influencing microbial growth, growth curve, thermal death time and thermal death points, D-value, Z- value. Sources of microorganisms in food, perishable, semi perishable and non-

perishable foods, intrinsic and extrinsic parameters influencing microbial content of food, Food spoilage-types, causes and indications. Control of spoilage-pre-harvesting and post harvesting food processing. **Food Borne Diseases:** Definition , Classification (Food borne intoxications & Food borne infections), neurolathyrism, aflatoxins, Ergotism, Epidemic dropsy, Typhoid fever, Salmonellosis, Staphylococcal intoxication, Botulism, Bacillus cereus food poisoning, *E.coli* diarrhea, Cholera, Shigellosis, Brucellosis, **Food poisoning:** Types of food poisoning, method of investigation of food poisoning, prevention and control- food sanitation, refrigeration, surveillance. **Food handlers:** medical examination of food handlers, infections transmitted by food handlers, education of food handlers. **Adulteration of foods:** Health hazards. **Sanitation of eating places:** minimum standards, storage of uncooked foodstuffs, waste disposal, water supply and washing facilities. Fermented foods- types, production, organisms involved, advantages and disadvantages, spoilage of fermented foods. Microbiological analysis of food and water- qualitative and quantitative, indicator organisms, coliforms, detection of pathogens, molecular techniques for detection of microbes. Microbiological standards of food and water. Water purification for domestic and municipal purposes. Sewage treatment. Application of enzymes in food industry, production of food flavor and colour. Enzyme immobilization and applications. Use of amylase, invertase, protease, pectinase and cellulase in food industries. Bioreactors. Single-Cell Proteins. Molecular detection of food contamination. Genetically modified food and their labelling.

PART VII - AGRICULTURAL SCIENCES

Post harvest handling : Physiology of maturity, ripening and senescence in cereals, pulses, fruits and vegetables. Maturity indices and harvesting of vegetables. Post harvest losses, phases of loss and measures to reduce the losses. 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. Size reduction- Principles and equipment for size reduction. Edible mushrooms. **Stored product pests and their management –** preventive and curative methods. **Rodent management :** principles and methods of control; Rodenticides - acute poisons, chronic poisons, fumigants. Fumigation, baits, baiting and rat proofing.

PART VIII - INDIAN NATIONAL MOVEMENT & RENAISSANCE IN KERALA

1) INDIAN NATIONAL MOVEMENT - PERIOD FROM 1857 TO 1947.

2) 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, Swadeshabhimani, Vivekodayam, Mithavadi, Swaraj, Malayala Manorama, Bhashaposhini, Mathnubhoomi, Kerala Kaumudi, Samadarsi, Kesari, AI-Ameen, Prabhatham, 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 Thampuran, KeralaVarma Valiyakoyi Thampuran, 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

PART IX - MENTAL ABILITY AND TEST OF REASONING

Calculation & Logic - Coding & Decoding – Classification – Synonym – Antonym -Letter & Number Series - Odd Man Out – Analogy - Common Sense Test - Alphabetical Arrangement of Words - Date and Calendar - Sense of Direction - Etc.

PART X- GENERAL ENGLISH

Grammar - Agreement of Subject and Verb - Confusing Adjectives and Adverbs - Comparison of Adjectives - Correct usage of Articles – Prepositions - Direct and Indirect Speech - Active and Passive Voice - Correction in Sentences – Etc.

Vocabulary – Gender - Singular and Plural – Synonyms – Antonyms - One word Substitutes - Problem concerning words - Idioms and their meanings – Etc.

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.