

Annexure - A

Syllabus and Pattern for written examination of Food Safety Officer

- Note: 1.** *There will be a total 120 MCQs in the written test.*
- 2.** *The syllabus and pattern for written test is described as below.*
- 3.** *The distribution of questions/marks mentioned below is indicative and for guidance purpose. It may vary slightly.*

For topics from Sr. No. 1 to 8 mentioned as below, there will be total 80 MCQs.

1. Food Chemistry and Nutrition

Concept & Application of pH, Acids, Bases, Buffers, Solutions; Surface tension, Viscosity, Absorption, Colloids, Suspension and Catalysis. Desirable and potentially undesirable food constituents and their importance: Nomenclature, Chemistry and Metabolic pathways of Carbohydrates, Lipids, proteins; Chemistry of Vitamins, Minerals and Single Cell Proteins. Clinical manifestations of Vitamin deficiency and its prevention. Digestion, Absorption, Assimilation and Transport of nutrients in humans. Diet: Balanced Diet, Recommended Dietary Allowances (RDA) & Standards for different age groups; Dietary utilization and disturbances, Functions and Energy values of foods. Basal Energy Metabolism & Calculations of: Biological Value, Net Protein Utilization, Basal Metabolic Rate. Assessment of nutritional status; Malnutrition: Causes & prevention; Diseases caused due to Food Adulteration.

2. Food Microbiology

Classification, morphology, physiology,, growth, nutrition and reproduction of major groups of microorganisms associated with food. Pure culture techniques and maintenance of cultures. Sources of microbial contamination in food, factors affecting growth and survival of microorganisms in foods. Microbiological standards of foods, food poisoning and food borne infections, microbial toxins, indicator organisms, food plant sanitation, inspection and control. Food poisoning, Beneficial microorganisms and their utilization in food fermentations.

3. Plant based Food products- Processing and Quality aspects

Processing of oil seeds, Pre-treatments of oil seeds, oil milling, solvent extraction, impurities present in oils and fats. Vegetable oils, refining, hydrogenation, inter-esterification, fractionation, Peanut butter, Margarine and spread. Different quality parameters: Peroxide value, Saponification value, Iodine value, acid value, RM value, Polenski value etc, Adulteration and its detection in oil and fats. Rancidity, autooxidation and antioxidants. Milling of paddy, quality characteristics, curing and aging of rice. Parboiled and processed rice products. Fruit and Vegetable products: Preservation, Processing and Quality aspects, Cereal and Cereal products. Storage, Processing, and Quality aspects. Spices and condiments: composition, preservation and processing, Quality. Detection of

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genetic modification.

4. Animal based Food Product : Processing and Quality aspects

Physico-chemical properties, Production and collection, cooling and transportation of milk. Clarification and filtration of milk, pasteurized and homogenized milk: Whole, Standardized, Toned, Double toned, skim and special milks, Test for milk quality and detection of dairy adulterants. Milk products: Cream, Butter, Butter oil/Ghee, Cheese, Curd and Yoghurt, Sweet meat, Ice cream, Evaporated and Condensed milk, and Milk powders. Indian Dairy Products, Manufacture of casein and Lactose. Causes and prevention of defects in dairy products. Scientific slaughtering methods of meat animals, tendering, curing, smoking and irradiation of meat. Beef, mutton and pork sausages and other meat products. Fish and poultry processing. Processing of Egg and egg products. Honey and honey based products.

5. Spoilage and Preservation of Foods

Storage condition for different foods to avoid spoilage, Preservation methods; Low and high temperature, drying and dehydration, chemical, salt, and sugar, Irradiation, Hurdle technology, carbonation etc. Plant and personal Hygiene.

6. Food Packaging

Concept of food packaging, polymeric, glass, metal packaging materials, Aseptic Packaging. Newer trends, Package printing, Packaging Laws and Regulations, Evaluation of food packaging materials and package performance.

7. Food Legislation and Quality Control

Quality Control / Quality Assurance, Legislation for food safety: National and International criteria, sampling, risk analysis and management. Relevant Foods laws: AGMARK, and BIS Standards, Food Safety and Standards Act. Testing food for its safety. The HACCP system and Food Safety Management Systems. Food standards and Specification, Laboratory Quality Management System and ISO certification requirements.

8. Agriculture

Salient features of agriculture with special reference to Punjab. Soil fertility and management of problematic soil. Production techniques for important field crops, horticultural crops, spices and medicinal crops. Important disease and pests of major crops and their management. Agricultural marketing. Agriculture statistics. Storage structure and practices. Modified and controlled atmosphere storage systems. Losses in storage.

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| 9. General Awareness (Punjab Culture & History): | 5 MCQs |
| 10. Current Affairs: | 5 MCQs |
| 11. Mental ability: | 10 MCQs |
| 12. English Language: | 10 MCQs |
| 13. Punjabi Language: | 10 MCQs |