5th FOOD ANALYST EXAMINATION (FAE-2018)
AND
2nd JUNIOR ANALYST EXAMINATION (JAE-2018)

EXAMINATION PLAN

Session-I			**Session II**	
Paper-I (Max. 100 questions; 2 Hrs)			Paper-II (Max. 100 questions; 2 Hrs)	
Topics	**Question, %**		**Topics**	**Question, %**
Food Laws and Standards in India	40		Food Chemistry, Food Additives, Antioxidants, Contaminants and Adulterants	30
Planning Organization and set up of Food Analyst Laboratory including NABL/ISO/IEC-17025:2005	10		Food Microbiology	30
Principles of Food Preservation, Processing and Packaging, Labeling/Claims and Principles of Nutrition	25	**LUNCH BREAK - 1 Hr)**	Instrumentation in Food Analysis	40
Food Hygiene, Sanitation, HACCP, Quality Control Tools, GLP, GHP, GMP and FSMS.	25			

- Both theory papers *viz.*, Paper-I and Paper- II are compulsory for all candidates appearing for FAE-2018 and JAE-2018.
- All questions will be Multiple Choice Questions (MCQ) and each question will carry four marks. There will also be negative marking for incorrect answers
- ***Four marks*** will be awarded for ***each correct answer*** and ***one mark will be deducted*** for ***each incorrect answer***.
- The candidates should secure atleast 35% in each of the theory papers (*i.e.*,Paper-I and Paper-II) and a minimum aggregate of 40% from both papers.
- The candidates of FAE-2018 who qualify Theory papers (*i.e.*,Paper-I and Paper-II)only will be eligible to appear for Practical (*i.e.*, Paper-III). Dates, venue and syllabus of **Paper-III** will be intimated separately.
- Those candidates appearing for JAE-2018 will be awarded certificate as qualified Junior Analyst, only if they qualify the theory papers (i.e., Paper-I and Paper-II). After obtaining the requisite experience of 3 years to appear for FAE, the JAE qualified candidates will appear for Paper-III only. This provision will be available to JAE qualified candidates one time only.
- Syllabus for Paper I and Paper II is provided separately.

SYLLABUS[#] FOR FAE-2018 and JAE-2018

THEORY PAPERS (Paper-I and Paper-II)

PAPER-I: Food Laws and Standards in India, Planning Organization and set up of Food Analyst Laboratory Including NABL/ISO/IEC-17025:2005 Accreditation

(i) Food Laws and Standards in India

a. Food Safety and Standards (FSS) Act, 2006, FSS Rules and Regulations,
b. Agricultural Produce Act, 1937 (Grading and Marketing)
c. Export (Quality Control & Inspection), Act, 1963 and Rules
d. Bureau of Indian Standards relevant to food safety
e. Legal Metrology Act
f. International Food Control Systems/ Laws, Regulations and Standards/ Guidelines with regard to Food Safety: CODEX (SPS/TBT), OIE, IPPC

(ii) Planning Organization and set up of Food Analyst Laboratory including NABL/ ISO/IEC-17025:2005

a. Accreditation systems and their general requirements
b. Measurement of uncertainty - Handling of testing and calibration materials -Testing and calibration methods - Validation of methods
c. Reporting and interpretation of results - Data and document control in accreditation process / accredited laboratory

(iii) Principles of Food Preservation, Processing and Packaging, Labeling/Claims and Principles of Nutrition

a. Principles, methodology and technology of food preservation and processing
b. Principles of Packaging – characteristics and application of various Food Packaging materials
c. Basic principles of nutrition and role of various micro/macro nutrients in human metabolism - nutrition deficiency diseases.
d. Labelling requirements as per Food Safety Standards (Packaging and Labelling) Regulations 2011

(iv) Food Hygiene and Sanitation, HACCP, Quality Control Tools, GLP, GHP, GMP and FSMS

PAPER-II: Food Chemistry, Food Microbiology, Food Additives & Contaminants and instrumentation in food analysis

(i) Food Chemistry: Knowledge of Basic chemistry of major food components- Water, Carbohydrates, Protein and Fats; definition, composition, structure, functional properties, their behaviour under conditions of particular relevance to food processing.
Chemistry of Macronutrients and Micronutrients (Majorly Vitamins and Minerals); Food Pigments, Food flavors, Enzymes, Enzymatic and non-enzymatic browning; Water soluble and Fat soluble vitamins, Role of minerals in nutrition, Anti-nutrients
Standards of Quality and Safety of Food & Food Products laid down in the FSS Regulations, 2011 including current food safety issues like Antibiotic residues in Honey, Milk, Fish, Meat and Poultry products.
Nutraceuticals, Functional Foods, Food Supplements, Dietary Supplements, Genetically Modified Foods.

Food Additives, Antioxidants, Contaminants and Adulterants:

Analytical Chemistry: Statistical Analysis, Standard Deviation, Sampling Procedures, General Description on " Sampling of Foods", Calibration and Standardization, Sub- Sampling and its procedures, LOD, LOQ, Internal standards, Quality Assurance, Setting-up of Food Laboratory, Reference standards, Certified Reference Materials etc.

Theory of common test: pH Meter, Digital Analyzer, Auto-Analyzer etc

Food composition and proximate analysis of foods

Food additives: Chemistry, role and application of Preservatives, Emulsifying and Stabilizing agents, buffering agents, bleaching, maturing agents and starch modifiers, Food colors, flavors, anti-caking agent, Antioxidants etc.

Food contaminants: Their occurrence, composition, physiological, significance in foods, Limit of Detection and Limit of Quantification and detection;

Metals and toxic Metals e.g. Cd, Hg etc.,

Pesticide residues e.g. Dioxin, Aldrin, Malathion etc.,

Mycotoxins, Argemone, Khesari dal, Ergot, Karnal bunt, Dhatura, etc.

Allergens, Antibiotic & hormone residues, Veterinary drug residue, other new contaminants and toxins (For example: Cyclopiazonic acid in Buckwheat flour)

Naturally Occurring Toxic Substances (NOTS) and Deoxynivalenol (DON)

(ii) FOOD MICROBIOLOGY

Food Microbiology, food spoilage organism and their control, microbiology of dairy products, Fruits and Vegetables and their processed Products ,Meat and Meat products, fish and fish products, egg and egg products, spices & condiments, food borne intoxicants and infection.

Microbial Contaminants (For example: Bacteria, Yeasts and Molds) their composition, physiological, significance in foods and detection thereof.

(iii) INSTRUMENTATION IN FOOD ANALYSIS:

Instrumentation and methods of analysis of food products.

Chromatography, including GLC, TLC, Paper & Column, LC-MS-MS, GC-MS-MS, HPLC, AAS, ICP-MS

UV-Vis Spectrophotometer, IR-Spectrophotometer and Fluorescence Spectrophotometer

Atomic Absorption spectroscopy for determination of heavy metal contaminants in foods such as Lead, Cadmium, Mercury, Arsenic, Zinc, Copper, Tin, etc.

Microbiological instrumentation- Colony counters, Bacteriological incubators, Bio safety Cabinets, etc.

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(# : Syllabus is only indicative and not exhaustive)