

**No. P.1.15025/176/2011-PFA/FSSAI**  
**Food Safety & Standards Authority of India**  
**(Ministry of Health & Family Welfare)**  
**New Delhi.**

**Schedule and the Syllabus for the Food Analyst Examination**

**I. Schedule of the Examination:**

**1. Theory: Two Days**

Paper	Part	Subject	Weightage (%)	No. of Questions (to be attempted/total)
<b>Paper-I</b>	<b>I</b>	Food Laws and Standards in India, International Food Control Systems including CODEX.	<b>40</b>	<b>8/11</b>
		Planning Organization and set up of Food Analyst Laboratory, NABL/ ISO/IEC-17025:2005	<b>10</b>	<b>2/3</b>
	<b>II</b>	Principles of food preservation, Processing and Packaging, labeling/claims and principles of nutrition.	<b>25</b>	<b>5/7</b>
		Food Hygiene, Sanitation, HACCP.	<b>25</b>	<b>5/7</b>
	<b>Total Marks</b>			<b>100</b>
<b>Paper-II</b>	<b>I</b>	Food Chemistry	<b>30</b>	<b>7/10</b>
		Food Additives & Contaminants	<b>20</b>	<b>3/5</b>
	<b>II</b>	Instrumental methods of analysis	<b>20</b>	<b>4/6</b>
		Food Microbiology	<b>30</b>	<b>6/8</b>
	<b>Total Marks</b>			<b>100</b>
<ul style="list-style-type: none"> <li>• Each question will carry 5 marks.</li> <li>• Total duration for each paper will be of 3HRS.</li> <li>• Passing marks for theory examination will be 50%.</li> </ul>				

**2. Schedule of Practical examination:**

Duration of Practical including viva- voce		Two days	
Pattern of examination	Particular	Weightage (%)	Passing Marks (out of 200)
	Method of Analysis	30	60
	Practical	60	120
	viva- voce	10	20
	<b>Total Marks</b>	<b>100</b>	<b>200*</b>
* Passing marks for practical examination will be 50%.			

**3. Three attempts will be admissible for passing each paper (Theory and Practical separately).**

**4. Fees of the Examination:**

A Demand Draft for Rs. 1000/- towards application fees, drawn on a Nationalized Bank in favor of Senior Accounts Officer, Food Safety & Standards Authority of India (FSSAI), New Delhi, payable at New Delhi shall be submitted alongwith the application form.

**5. How to Apply:**

Complete application alongwith the attested copies of the Degree/Diplomas/Experience certificate etc and the demand draft of Rs. 1000/- shall be sent Director, Food Research & Standardisation Laboratory (FRSL), Ahinsa Khand II, Indirapuram, Ghaziabad-201 014 on or before 25<sup>th</sup> January, 2012.

## **II. Syllabus for the Food Analyst Examination**

### **A. Theory Syllabus:**

#### **PAPER- I**

#### **PART-I Food Laws and Standards in India, Planning Organization and set up of Food Analyst Laboratory including NABL/ISO/IEC-17025:2005.**

##### **A. Food Laws and Standards in India:**

- a. Food Safety and Standards (FSS) Act, 2006, FSS Rules and Regulations, 2011.
- b. Agricultural Produce Act, 1937 (Grading and Marketing)
- c. Sugar (Control), Order,
- d. Export (Quality Control & Inspection), Act, 1963 and Rules
- e. Bureau of Indian Standards.
- f. Legal Metrology
- g. International Food Control Systems including CODEX

##### **B. Planning Organization and set up of Food Analyst Laboratory including NABL/ ISO/IEC-17025:2005**

#### **PART-II Principles of food preservation, Processing and Packaging, labeling / claims and principles of nutrition and Food Hygiene, Sanitation, HACCP, CODEX**

##### **A. Principles of food preservation, Processing and Packaging, labeling/claims and principles of nutrition**

- a. Food preservation and processing their principles, methodology and technology.
- b. Food Packaging materials rigid and flexible such as plastic films, metal containers, glass, containers, paper and card board containers, jute containers, etc.
- c. Basic principles of nutrition and role of various nutrients in human metabolism.

##### **B. Food Hygiene, Sanitation, HACCP, CODEX**

## **Paper II Food Chemistry, Food Microbiology Food Additives & Contaminants and instrumentation in food analysis**

### **PART-I Food Chemistry and Food Additives & Contaminants:**

A. **Food Chemistry:** Knowledge of Chemistry, definition, composition, and a 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 etc.

#### **B. Food Additives & Contaminants:**

a. Analytical Chemistry

b. Food additives, chemistry, role and application Preservatives, emulsifying and stabilizing agents, buffering agents, bleaching, maturing agents and starch modifiers, Food colours, flavours, anti-caking agent etc.

c. Food contaminants their occurrence, LOD and LOQ.

i. Metals

ii. Pesticide residues

iii. Mycotoxins, Argemone, khesari dal, Ergot, karnal bunt, Dhatura, etc

### **PART-II Food Microbiology and instrumentation in food analysis:**

#### **A. Instrumentation in food analysis**

I. Instrumentation and methods of analysis of food products.

a. Chromatography, including GLC, TLC, Paper & Column, LC-MS-MS, ICP-MS

b. Spectrophotometry UV & I.R.

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

#### **B. Food Microbiology**

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

b. Contaminants their composition, physiological significance in foods and detection.

### **III. Practical Syllabus:**

1. Physical, Chemical, Microbiological (including microscopic examination as required) examination of the food and food products as described under FSS Regulation, 2011.
2. Proximate analysis of food.
3. Detection and estimation of various contaminants in foods.
4. Any other type of food analysis as required under FSS Act, 2006 and FSS Regulation, 2011.

#### ➤ **Indicative list of Analysis**

- i. Analysis of Artificial sweeteners e.g. Aspartame in diet drinks and light foodstuffs.
- ii. Aflatoxins and Mycotoxins contamination in Food
- iii. Melamine in milk and milk products
- iv. Principles and detailed method of Pesticides Analysis (Organochlorine and Nitrogen, Sulphur containing) compounds Sub ppb level in Food stuffs including Fruits and Vegetables.
- v. Samples received (Referral/Appellate samples) from Designated Officer under Section 40 (C) of FSS Act, 2006.
- vi. Quantifications of Melamine Analysis, Herbicides, pesticides and Synthetic Color.
- vii. Antibiotic, Antibacterial drug residues in Food.
- viii. Specialized Veterinary Samples received from Ante-mortem and Post-mortem inspection

#### ➤ **Indicative list of instruments required**

1. HPLC High Performance with UV-Vis Detector
2. HPLC with UV-vis and Fluorescence Detector- – Amino Acid for system and for Protein Analysis.
3. HPLC with Evaporating Light Scattering Detector (ELSD) Detector- For Sugar Analysis
4. LC-QQQ MS/MS ( Triple Quadrupole Detector) (1 for Pesticide, 1 for Aflatoxins and 1 for Antibiotics)
5. LC-Qtof- Quadrupole Time of Flight) 1 No. for Non –Target Pesticide Analysis.

6. Ion Chromatograph
7. RTPCR – Real Time Polymerase Reaction system –for GM food and Pathogen Detection
8. GCMS –QQQ ( MS/MS) Gas Chromatograph Triple Quad system- Pesticide Analyzer
9. GCMS – QQQ (MS/MS ) Gas Triple Quad System – for Dioxins, PAH and PCB' analysis
10. GC- Qtof system for Non Target Compounds Analysis
11. GCMS Single Quad with ECD and FPD Detector
12. GC with FID, ECD, NPD Detector
13. DNA Sequencer
14. Bioanalyzer- DNA/RNA/Protein Analysis
15. Colony Counter
16. Fourier Transform Infrared spectroscopy (FTIR)
17. Graphite Furnace Atomic Absorption (GFAA)
18. LC-ICP-MS (liquid chromatography-Inductively Coupled Plasma -Mass Spectrometry)
19. UV-Vis Spectrophotometer
20. UV-Vis Spectrophotometer with Peltier system
21. Kjeldahl Digester system
22. Gel Electrophoresis system
23. Flow Cytometer
24. Imaging System- Microscope
25. Nuclear Magnetic Resonance (NMR)system
26. Micro Wave Digesters
27. Rotary Evaporator
28. Balances
29. pH meter
30. Hot Plate
31. Centrifuges
32. Oven
33. Refrigerator
34. Deep Freezer
35. Water Bath