Name of Post – **Food Analyst (Pay Level-10)**

Scheme of examination:

Exam Format – Written Test will be of 180-minute duration with 16 subjective type questions.

A. **Food Laws and Standards of India and International Food Laws:** (4 Questions x 2.5 Marks)

I. Food Safety and Standards Act of India, 2006, Provision, definitions and different sections of the Act and implementation.

II. FSS Rules and Regulations (2011) as amended from time to time –

a) Licensing and registration; Central license, State license, Registration, Responsibilities of the FBO, Role of Designated officer, Food Safety Officer and Food Analyst.

b) Standards of Quality and Safety of Food & Food Products laid down in the FSS Regulations, 2011. The different food categories in the Act. The relevance of the standards (Vertical and Horizontal) quality and safety parameters to particular foods including current food safety issues.

c) Regulations of food additive: What is an additive, various groups of additives and their technological functions, INS number: food colors, antioxidants, sweeteners, preservatives, processing aids. Food processing aids. The Indian Food Code and using the hierarchy to understand the category wise approval of food additives.

d) Packaging and labelling rules and regulations: List of ingredients, nutritional information, special label declarations, claims-Health, nutrition, nutrient led claims, use of words and phrases on label.

e) Regulations for Contaminants, Toxins and Residues and restriction of sales.

f) Food Safety and Standards (Food or Health Supplements, Nutraceuticals, Foods for Special Dietary Uses, Foods for Special Medical Purpose, Functional Foods and Novel Food) Regulations, 2016 Food Safety and Standards (Food Recall Procedure) Regulations, 2017 Food Safety and Standards (Import) Regulations, 2017.

g) Food Safety and Standards (Organic Food) Regulation, 2017. Food Safety and Standards (Fortification of Foods) Regulations, 2018 Food Safety and Standards (Alcoholic Beverages) Regulations, 2018.

h) Laboratory sampling and analysis: The role of Referral labs, FSSA notified laboratories and State Food Laboratories and function. Receiving legal samples, sample custody and sample custodian. Storage of sample. Required documentation and registration, storage of the sample Analyses as per FSS Rules and Regulations (2011).

III. Other National Laws and Standards:

a) Agricultural Produce Act, 1937 (Grading and Marketing)

b) Export (Quality Control & Inspection), Act, 1963 and Rules

c) Bureau of Indian Standards relevant to Food Safety (Water, Infant Formula etc.)

d) Legal Metrology Act

IV. International Food Control Systems/Laws, Regulations and Standards/Guidelines with regard to Food Safety:

a) CODEX Alimentarious Commission: History, Members, Standard setting and Advisory mechanisms: JECFA, JEMRA, JMPR

b) WTO agreements: SPS/TBT

c) Role of OIE, IPPC.

B.   **Planning Organization and setting up of Food Analysis Laboratory including NABL /
ISO / IEC-17025: 2017 and laboratory safety.** (4 Questions x 2.5 Marks)

  I. Understand the requirements for setting up a laboratory for the legal defensibility of analytical data. The ideal structure design, environment, layout for chemical and microbiological testing, Air handling etc.

  II. What is accreditation, Different accreditation bodies (NABL, APLAC, ILAC). Requirements for ISO/IEC 17025:2017, documentation, pre-requisites for accreditation, management requirements, technical requirements, measurement of traceability.

  III. Laboratory safety: Personnel and laboratory hygiene, emergency planning, General hazards in a food laboratory, safety equipment, storage of chemicals, acids, flammables etc., handling compressed gases, centrifuge, chemical and biological spills and waste disposal.

C.   **Physical, Chemical and Instrumental analysis** (4 Questions x 10 Marks)

  I. *Sampling and sample preparation*: Definition, types of sample, sampling plan, subsampling, designing sampling plan, concept of sample size and representative. Sample preparations – particle size, homogeneity, dissolution technology and decomposition, storage of samples. Solid Phase Extraction - Introduction, sorbents, matrix solid phase dispersion and applications.

  II. *Statistics and statistical terms*: Systematic and random errors. Mean distribution. Confidence interval. Confidence limits and confidence level, Outliers. Definition and calculation of: Average, Mean, Standard deviation, Relative standard deviation, Coefficient of variation, Confidence limits of a measurement, Statistical Tests, Linear correlation and regression curve fitting, fitting of linear equations. Choosing and using statistical tests, Analysis of Variance (ANOVA).

  III. *Basic principles of Classical Methods of food analysis:* Law of mass action, Le chateliers principle, stoichiometry, volumetric and gravimetric analysis. Preparation of standards, working standards and solutions of known concentration (percent, molar, molal, normal, ppm and ppb) and their dilution. Proximate analysis, physical methods for extraneous matter analysis.

  IV. *Classical analytical techniques: Gravimetry, Titrimetry, Refractometry and Polarimetry:* Principle, Instrumentation and applications of each technique in food analysis.

  V. *UV-Visible and Fluorescence Spectrometry:* Electromagnetic spectrum, Beer and Lambert's Law, Absorbance, Transmittance, Molar absorptivity (Molar Extinction coefficient), E 1%, λ Max. Components and functioning of an UV-vis spectrophotomer: Single beam and double beam. Components of a UV-VIS spectrum. Calibration curve and applications in food analysis.

  VI. *Raman spectroscopy:* Principle Theory Instrumentation, techniques and Applications of Raman spectroscopy in food analysis.

  VII. *Chromatographic techniques:* Fundamentals of chromatographic separations and their classification. The plate theory, Capacity factor and resolution factor, Chromatographic efficiency. Van Deemter's equation. Partition coefficient etc. Principles and applications of paper (Ascending, Descending, Radial, Two dimensional) Partition, Thin layer chromatography, HPTLC, size exclusion and ion exchange chromatography. Applications in food analysis.

  VIII. *High Performance Liquid Chromatography (HPLC):* Basics of liquid chromatography, HPLC columns and Stationary phases (solid, liquid) – Bonded phase supports, mobile phases, isocratic and gradient elution, Detectors: UV absorption, Fluorescence

detector, RI detectors, electrochemical detectors, Photo diode array, Evaporative light scattering detector, PHRED anatomy of a chromatograms. Modes of separation Normal and Reverse Phase. Sample Preparation Techniques, Applications in quantitative food analysis of aflatoxins, vitamins, sugars, sweeteners, preservatives etc.

IX. *Gas chromatography*: Basics of Gas chromatography, Mobile phase and criteria for its selection- Sample introduction techniques – Stationary phases – Supports for liquid stationary phases, Selection of columns. Detectors FID, TCD, FPB, ECD, TID. Temperature programming in GC – Derivatization and sample preparation in GC – Fatty acid profile and quantitative analysis of fatty acids in fats and oils.

X.   *Mass Spectrometry*: Basics of mass spectrometry, Components of a mass spectrometer, Ionization and ion sources: Electrospray, chemical, Fast Atom Bombardment, MALDI, Atmospheric Pressure Chemical ionization and other ionization methods. Mass analyzers: Quadrupole Analyzers, Ion Trap Analyzers, Electrostatic Trap or 'Orbitrap', Time-of- Flight Analyzers, Hybrid Instruments. Detectors: Photographic plate, Faraday cup Electron multipliers. Data acquisition, Data conversion, Data reduction and Library search. Tandem Mass Spectrometry and its applications.

XI. *Hyphenated Techniques*: Mass Spectrometry and Chromatography Coupling. GC-MS/MS, LC-MS/MS, Capillary electrophoresis-MS, Isotopic Ratio mass spectrometry. Analytical Information: Mass Spectrometry Spectral Collections, high resolution, quantitative data, fragmentation and spectrum interpretation.

XII. *Atomic absorption Spectroscopy, Atomic emission Spectroscopy, ICP-MS*: Principles-Atomization process, Atomic line widths and radiation sources for AAS, temperature gradients, cells detectors, interferences, Background correction methods and modifications in instrumentations, Atomic Emission Spectroscopy: Atomic spectra, Population distribution with temperature, Sources, spark laser microprobe for atomic emission, Spectrometers, Merits, demerits, and applications. Basic principles and instrumentation of ICP-MS; data acquisition and interpretation; application of ICP-MS for analysis of Metallic contaminants in food. Sample preparation, microwave digestion.

XIII. *Biological Techniques (DNA/protein based)*: Fundamental principles and instrumentation of the systems; measurement techniques and result interpretations of Polymerase Chain Reaction (PCR), Real-time Polymerase Chain Reaction (PCR) technique; Enzyme Linked Immunosorbent Assay (ELISA); Radioimmunoassay (RIA). Use of PCR for detection of genetically-modified organisms (GMO); meat and fish speciation and other applications in analysis of food adulteration.

XIV. *Measurements of Rheological Properties*: Instrumental measurement of Texture of Foods, Viscos Analysis, viscometer, texture analyser etc.

XV. *Quality assurance and Quality control*: Introduction to quality control in analytical chemistry. Terminology in analytical measurements: True value, Measured value, Accuracy, Precision, Uncertainty, Random errors. Sample traceability, Internal quality control, Certified reference materials. Spiked reference samples. Recovery studies. Method validation/verification (LOD, LOQ, specificity, selectivity, linearity, range, robustness, repeatability, reproducibility, External and internal standards; Control chart, Proficiency testing, Z scores.

D. Case studies for interpretation and providing opinion based on an analysis report as per FSSR 2011 (4 Questions x 10 Marks)

Name of Post –   **Technical Officer (Pay Level-07)**

Scheme of examination:

Exam Format - Computer Based Test (Stage-1) will be of 180-minute duration with 120 MCQ questions. 4 marks would be given for each correct answer and 1 mark deducted for each wrong answer.

PART A

General Aptitude and Computer Literacy- indicative syllabus.

Subject and Syllabus	No. Of Questions
General Aptitude:	
General Intelligence : would include questions of both verbal and non-verbal type for e.g. Questions on analogies, similarities and difference, space visualization, problems solving, analysis, judgement, decision making visual memory, discriminating relationship concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series.	**10**
General Awareness: Questions to test the ability of the candidates General Awareness of the environment around him/her and its application to society. Also testing knowledge of currents events and matters of every day observation as may be expected of an educated person. The test will include questions relating to India and neighboring countries specially pertaining to History, Culture, Geography, Economic scene, General Polity including Indian Constitution, sports and scientific research etc. These questions will be such that they do not require a special study of any discipline.	**10**
English language Comprehension: Would test the candidates understanding of the English language its vocabulary, grammar etc. would include questions on comprehension, on word substitution, synonyms and antonyms, spelling error, spotting errors in sentences, grammar noun, pronoun, adjectives, verbs, prepositions, conjunctions, use of 'a 'an" and 'the', idioms And phrases etc, Parts of speech.	**10**
Computer Literacy: Candidate is expected to be able to handle all regular office work on computers. Knowledge of MS office (word, excel, power point) including basic commands, Google Doc, emails, digital signature, Commonly use social media handles (Whatsapp, FB, Twitter, etc). would be tested.	**10**

PART B
Functional Knowledge - Indicative syllabus.

Subject and Syllabus	No. Of Questions
Indian and International Food Laws (An Overview)	
• Food Safety and Standards Act of India, 2006 Provision, definitions and different sections of the Act and implementation. • FSS Rules and Regulations • Overview of other relevant national bodies (e.g. APEDA, BIS EIC, MPEDA, Spice Board etc.) • International Food Control Systems/Laws, Regulations and Standards/Guidelines with regard to Food Safety– (i) Overview of CODEX Alimentarius. Commission (History, Members, Standard setting and Advisory mechanisms: JECFA, JEMRA, JMPR): WTO agreements (SPS/TBT). • Important national and international accreditation bodies	**20**
FSSAI-Role, Functions, Initiatives (A General Understanding)	

• Genesis and Evolution of FSSAI • Structure and Functions of Food Authority • Overview of systems and processes in Standards, Enforcement, Laboratory ecosystem, Imports, Third Party Audit etc. • Promoting safe and wholesome Food (Eat Right India, Food Fortification, snf, Clean Street Food Hub, RUCO and various other social and behavioural change initiatives) • Training and capacity building • Role of State Food Authorities	**20**
Principles of Food Preservation, Processing and Packaging • Food Processing Operations, Principles, Good Manufacturing Practices • Overview of food preservation methods and their under lying principles including novel and emerging methods/principles • Overview of food packaging methods and principles including novel packaging materials/techniques **Principles and Basics of Food Chemistry and their role in Human Nutrition** • Structure and functions of macro-and micronutrients • Role of macro and micronutrients in human nutrition • Over view of food additives with respect to their technological functions • Over view of anti-nutritional factors and their removal from foods • Over view of enzymes as food processing aids • Over view of nutraceuticals and functions foods • Overview of food contaminants and adulterants and their effects on human health • Food allergens and allergen city • Importance of diet in alleviating health risks, especially non-communicable diseases **Food Microbiology & General principles of Food Hygiene** • General principles of food microbiology and over view of food borne pathogens • Over view of sources of microorganisms in food chain (raw materials, water, air, equipment etc.) and microbiological quality of foods • Microbial food spoilage and Food borne diseases General principles and techniques in microbiological examination of foods • Overview of beneficial microorganisms and their role in food processing and human nutrition • General principles of food safety management systems including traceability and recall – sanitation, HACCP, Good production and processing practices (GMP,GAP,GHP, GLP, BAP, etc) **General concepts of Food Analysis and Testing** • Fundamentals of field level and laboratory sampling with reference to importance of statistical tools. • Over view of basic/classical methods of food analysis • Over view of modern analytical techniques including mass spectrometry and molecular techniques. • Principles of Quality assurance and Quality control with reference to food analysis and testing.	**40**

Name of Post –   **Central Food Safety Officer (Pay Level-07)**

Scheme of examination:

Exam Format

Computer Based Test (Stage-1) will be of 180-minute duration with 120 MCQ questions. 4 marks would be given for each correct answer and 1 mark deducted for each wrong answer.

PART A

General Aptitude and Computer Literacy- indicative syllabus.

Subject and Syllabus	No. Of Questions
General Aptitude:	
General Intelligence : would include questions of both verbal and non-verbal type for e.g. Questions on analogies, similarities and difference, space visualization, problems solving, analysis, judgement, decision making visual memory, discriminating relationship concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series.	**10**
General Awareness: Questions to test the ability of the candidates General Awareness of the environment around him/her and its application to society. Also testing knowledge of currents events and matters of every day observation as may be expected of an educated person. The test will include questions relating to India and neighboring countries specially pertaining to History, Culture, Geography, Economic scene, General Polity including Indian Constitution, sports and scientific research etc. These questions will be such that they do not require a special study of any discipline.	**10**
English language Comprehension: Would test the candidates understanding of the English language its vocabulary, grammar etc. would include questions on comprehension, on word substitution, synonyms and antonyms, spelling error, spotting errors in sentences, grammar noun, pronoun, adjectives, verbs, prepositions, conjunctions, use of 'a 'an" and 'the', idioms And phrases etc, Parts of speech.	**10**
Computer Literacy: Candidate is expected to be able to handle all regular office work on computers. Knowledge of MS office (word, excel, power point) including basic commands, Google Doc, emails, digital signature, Commonly use social media handles (Whattsapp, FB, Twitter, etc). would be tested.	**10**

PART B

Functional Knowledge - Indicative syllabus.

Subject and Syllabus	No. Of Questions
Indian and International Food Laws (An Overview)	
• Food Safety and Standards Act of India, 2006 Provision, definitions and different sections of the Act and implementation. • FSS Rules and Regulations • Overview of other relevant national bodies (e.g. APEDA, BIS EIC, MPEDA, Spice Board etc.) • International Food Control Systems/Laws, Regulations and Standards/Guidelines with regard to Food Safety– (i) Overview of CODEX Alimentarius. Commission (History, Members, Standard setting and Advisory mechanisms: JECFA, JEMRA, JMPR): WTO agreements (SPS/TBT). • Important national and international accreditation bodies	**20**

FSSAI-Role, Functions, Initiatives (A General Understanding)	
- Genesis and Evolution of FSSAI - Structure and Functions of Food Authority - Overview of systems and processes in Standards, Enforcement, Laboratory ecosystem, Imports, Third Party Audit etc. - Promoting safe and wholesome Food (Eat Right India, Food Fortification, snf, Clean Street Food Hub, RUCO and various other social and behavioural change initiatives) - Training and capacity building - Role of State Food Authorities	**20**
Principles of Food Preservation, Processing and Packaging - Food Processing Operations, Principles, Good Manufacturing Practices - Overview of food preservation methods and their under lying principles including novel and emerging methods/principles - Overview of food packaging methods and principles including novel packaging materials/techniques **Principles and Basics of Food Chemistry and their role in Human Nutrition** - Structure and functions of macro-and micronutrients - Role of macro and micronutrients in human nutrition - Over view of food additives with respect to their technological functions - Over view of anti-nutritional factors and their removal from foods - Over view of enzymes as food processing aids - Over view of nutraceuticals and functions foods - Overview of food contaminants and adulterants and their effects on human health - Food allergens and allergen city - Importance of diet in alleviating health risks, especially non-communicable diseases **Food Microbiology & General principles of Food Hygiene** - General principles of food microbiology and over view of food borne pathogens - Over view of sources of microorganisms in food chain (raw materials, water, air, equipment etc.) and microbiological quality of foods - Microbial food spoilage and Food borne diseases General principles and techniques in microbiological examination of foods - Overview of beneficial microorganisms and their role in food processing and human nutrition - General principles of food safety management systems including traceability and recall – sanitation, HACCP, Good production and processing practices (GMP,GAP,GHP, GLP, BAP, etc) **General concepts of Food Analysis and Testing** - Fundamentals of field level and laboratory sampling with reference to importance of statistical tools. - Over view of basic/classical methods of food analysis - Over view of modern analytical techniques including mass spectrometry and molecular techniques. - Principles of Quality assurance and Quality control with reference to food analysis and testing.	**40**

Name of Post – ASSISTANT MANAGER (IT) (PAY LEVEL 07)

Scheme of examination:

Exam Format - Computer Based Test (Stage-1) will be of 180-minute duration with 120 MCQ questions. 4 marks would be given for each correct answer and 1 mark deducted for each wrong answer.

Subject and Syllabus	No. of questions
General Intelligence: would include questions of both verbal and non-verbal type for e.g. Questions on analogies, similarities and differences, space visualization, problem solving, analysis, judgment, decision making, visual memory, discriminating observations, relationship concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series, non-verbal series etc.	**10**
General Awareness: Questions to test the ability of the candidates General Awareness of the environment around him/her and its application to society. Also testing knowledge of currents events and matters of every day observation as maybe expected of an educated person. The test will include questions relating to India and neighboring countries specially pertaining to History, Culture, Geography, Economic scene, General Polity including Indian Constitution, sports and scientific research etc. These questions will be such that they do not required a special study of any discipline	**10**
English language Comprehension: Would test the candidates understanding of the English language its vocabulary, grammar etc. Would include questions on comprehension, one word substitution, synonyms and antonyms, spelling error, spotting errors in sentences, grammar–noun, pronoun, adjectives, verbs, prepositions, conjunctions, use of 'a' 'an" and 'the', idioms and phrases etc, Parts of speech.	**5**
Indian and International Food Laws (An Over view)	
• Over view of Food Safety and Standards Act of India, 2006: Provision, definitions and different sections of the Act and implementation. • Over view of FSS Rules and Regulations • Overview of other relevant national bodies (e.g. APEDA, BIS EIC, MPEDA, Spice Board etc.) • International Food Control Systems/Laws, Regulations and Standards/Guidelines with regard to Food Safety–(i) Over view of CODEX Alimentarius Commission (History, Members, Standard setting and Advisory mechanisms: JECFA, JEMRA JMPR): WTO agreements (SPS/TBT): • Important national and international accreditation bodies	**5**
FSSAI -Role, Functions, Initiatives (A General Understanding)	
• Genesis and Evolution of FSSAI • Structure and Functions of Food Authority • Over view of systems and processes in Standards, Enforcement, Laboratory ecosystem, Imports, Third Party Audit • Promoting safe and wholesome Food (Eat Right India, Food Fortification, snf, Clean Street Food Hub, RUCO and various other social and behavioural change initiatives) • Training and capacity building • Role of State Food Authorities	**10**

Engineering Mathematics	
- Mathematical Logic: Propositional Logic; First Order Logic. - Probability: Conditional Probability; Mean, Median, Mode and Standard Deviation; Random Variables; Distribution; uniform normal, exponential Poisson, Binomial. - Set Theory & Algebra: Sets, Relations, Functions, Group, Partial Orders, Lattice, Boolean Algebra. - Combinatory: Permutations, Combinations, Counting, Summation, generating functions, recurrence relations, asymptotic. - Graph Theory: Connectivity, spanning trees, Cut vertices & edges, covering, matching independent sets, coloring Planarity, Isomorphism - Linear Algebra: Algebra of matrices, determinants, systems of linear equations, Elgen value sand Elgenvectors. - Numerical Methods: LU decomposition for systems of linear equations; numerical solutions of non-linear algebraic equations by Secant, Bisection and Newton-Raphson Methods; Numerical integration by trapezooidal and Simpson's rules. - Calculus: Limit, continuity & differentiability, Mean value Theorems, Theorems of Integral calculus, evaluation of definite & improper integrals, Partial derivatives, Total derivatives, maxima & minima.	30
Computer Science and Information Technology	
- Digital Logic: Logic functions, Minimization, Design and synthesis of combinational and sequential circuits; Number representation and computer arithmetic (fixed and floating point) - Computer Organization and Architecture: Machine instruction and addressing modes, ALU and date-path, CPU control design, Memory interface, I/O interface (interrupt and DMA mode), instruction pipelining, Cache and main memory, Secondary storage. - Programming and Data Structure: Programming in C; Functions, Recursion, Parameter passing, scope, Binding; Abstract data types, Arrays, Stacks, Queues, Linked Lists, Trees, Binary Search trees, Binary heaps. - Algorithms: Analysis, Asymptotic notation, Notions of space and time complexity, Worst and average case analysis, Design, Greedy approach, Dynamic programming, Divide and conquer, Tree and graph traversals, Connected components, spanning trees, shortest paths, Hashing, Sorting, Searching, Asymptotic analysis (Best, worst, average cases) of time and space, upper and lower bounds, Basic concepts of complexity classes-P, NP, NP-Hard, NP-complete. - Theory of computation: Regular language and finite automata, context free language and Push-down automate Recursively enumerable sets and Turing machines, Undesirability. - Compeller Design: Lexical analysis, Parsing, Syntax directed translation, Run time environments, Intermediate and target code generation, Basics of code optimization - Operating Systems: Processes, Threads, Inter-process communication, Concurrency, Synchronization, Deadlock, CPC scheduling, Memory management and virtual memory. File systems, I /O Protection and security - Databases: ER-model, Rational model (relational algebra, tuplecalculus). Database design (Integrity constraints, normal forms), Query languages (SQL), File structures (sequential file, indexing, Band B+trees), Transactions and concurrency control. - Information Systems and Software Engineering: information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, Input/output design, process life cycle, planning and managing the project, design, coding testing, implementation, maintenance. - Computer Networks: ISO/OSI stack, LAN technologies (Ethernet, Token ring), Flow and error control techniques, Routing algorithms, congestion control, TCP/UDP and sockets, IP(v4). Application layer protocols (icmp, dns, smtp, pop, ftp, http): Basic concepts of hubs, switches, gateways, and routers. Network security-basic concepts of public key and private key cryptography, digital signature, firewalls. - Web technologies: HTML, XML, basic concepts of client-server computing.	50

Name of Post –   **Assistant Manager (Pay level-07)**

Scheme of examination:

Exam Format - Computer Based Test (Stage-1) will be of 180-minute duration with 120 MCQ questions. 4 marks would be given for each correct answer and 1 mark deducted for each wrong answer.

Subject and Syllabus	No of questions
GENERAL APTITUDE	
General Intelligence: would include questions of both verbal and non-verbal type for e.g. Questions on analogies, similarities and differences, space visualization, problem solving, analysis, judgment, decision making, visual memory, discriminating observations, relationship concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series, non-verbal series etc.	**10**
General Awareness: Questions to test the ability of the candidates General Awareness of the environment around him/her and its application to society. Also testing knowledge of currents events and matters of every day observation as may be expected of an educated person. The test will include questions relating to India and neighboring countries specially pertaining to History, Culture, Geography, Economic scene, General Polity including Indian Constitution, sports and scientific research etc. These questions Will be such that they do not required a special study of any discipline	**10**
COMPUTER LITERACY	
Candidate is expected to be able to handle all regular office work on computers. Knowledge of MS office (word, excel, power point) including basic commands, Google Doc, emails, commonly use social media handles (Whatsapp, FB, Twitter etc) would be tested.	**10**
FSSAI -Role, Functions, Initiatives (A General Understanding)	
- Genesis and Evolution of FSSAI - Structure and Functions of Food Authority - Over view of systems and processes in Standards, Enforcement, Laboratory ecosystem, Imports, Third Party Audit - Promoting safe and wholesome Food (Eat Right India, Food Fortification, SNF, Clean Street Food Hub, RUCO and various other social and behavioural change initiatives) - Training and capacity building - Role of State Food Authorities	**10**
Candidates to attempt questions from either one of the Sections **Section A** - Communication theories: concept and process; Media laws, ethics and regulations; corporate communication; writing for traditional media (newspapers, magazines, radio, television etc) and new media (website, blogs, twitter, Facebook etc.); Advertising principles and concepts, Media planning, campaign planning; **Section B** - Development of Human Behavior, Sensation, Attention and Perception, Learning, Memory, Thinking and problem solving, Motivation and Emotion, Intelligence and Aptitude, Personality, Attitudes, Values and Interests, Language and Communication. **Section C** - Library classification, Information sources, services and users, Information and communication technology, Library automation and networking, Library management	**80**

Name of Post –   **ASSISTANT (PAY LEVEL 6)**

Exam Format. Single computer based test of 180-minute duration with 120 multiple choice type questions. Each correct answer will carry 4 marks whereas the wrong answer will carry (-1) mark.

Note: The level of the paper will be consistent with the educational qualifications prescribed.

Subject and Syllabus	No. of Question
General Intelligence: It would include questions of both verbal and non-verbal type. The test will include questions on Semantic Analogy, Symbolic operations, Symbolic/ Number Analogy, Trends, Figural Analogy, Space Orientation ,Semantic Classification, Venn Diagrams, Symbolic/ Number Classification, Drawing inferences, Figural Classification, Punched hole/ pattern-folding & unfolding , Semantic Series, Figural Pattern – folding and completion, Number Series, Embedded figures, Figural Series, Critical Thinking, Problem Solving, Emotional Intelligence, Word Building, Social Intelligence, Coding and de-coding, Other sub-topics, if any Numerical operations.	20
Quantitative Aptitude: Number Systems, Computation of Whole Number, Decimal and Fractions, Relationship between numbers Fundamental arithmetical operations: Percentages, Ratio and Proportion, Square roots, Averages, Interest (Simple and Compound), Profit and Loss, Discount, Partnership Business, Mixtureand Allegation, Time and distance, Time and work, mensuration (area, perimeter, volume).	20
English Language: Spot the Error, Fill in the Blanks, Synonyms/ Homonyms, Antonyms, Spellings/ Detecting mis-spelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/ Passive Voice of Verbs, Conversion into Direct/ Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage, Parts of speech.	10
General Awareness: Questions are designed to test the candidate's general awareness of the environment around him and its application to society. Questions are also designed to test knowledge of current events and of such matters of everyday observation and experience in their scientific aspect as may be expected of an educated person. The test will also include questions relating to India and its neighboring countries especially pertaining to History, Culture, Geography, Economic Scene, General policy and scientific research, important national/ international agencies/ institution/ bodies.	20
Computer Literacy: Candidate is expected to be able to handle all regular office work on computers. Knowledge of MS office (word, excel, power point) including basic commands, Google Doc, emails, digital signature, commonly use social media handles (Whatsapp, FB, Twitter etc). would be tested.	25
FSSAI - Role, Functions, Initiatives (A General Understanding) - Genesis and Evolution of FSSAI, Structure and Functions of Food Authority, Overview of systems and processes in Standards, Enforcement, Laboratory ecosystem, Imports, Third Party Audit, Promoting safe and wholesome Food (Eat Right India, Food Fortification, snf, Clean Street Food Hub, RUCO and various other social and behavioural change initiatives), Training and capacity building, Role of State Food Authorities.	25

Name of Post –   Hindi Translator (Pay level 6)

Single Computer based test

Exam Format The paper would be in two parts, Part 1 comprising of 60 Objective MCQ type questions to be attempted in 90 minutes. Part II will also comprise of 60 questions to be attempted in 90 minutes and will have questions on subject matter of translation (in objective form). 4 marks would be given for each correct answer and 1 mark deducted for each wrong answer.

Note: The level of the paper will be consistent with the educational qualifications prescribed.

Subject and Syllabus	No. of Questions
PART I **General Intelligence**: It would include questions of both verbal and non-verbal type. The test will include questions on Semantic Analogy, Symbolic operations, Symbolic/ Number Analogy, Trends, Figural Analogy, Space Orientation ,Semantic Classification, Venn Diagrams, Symbolic/ Number Classification, Drawing inferences, Figural Classification, Punched hole/ pattern-folding & unfolding , Semantic Series, Figural Pattern – folding and completion, Number Series, Embedded figures, Figural Series, Critical Thinking, Problem Solving, Emotional Intelligence, Word Building, Social Intelligence, Coding and de-coding, Other sub-topics, if any Numerical operations.	10
Quantitative Aptitude: Number Systems, Computation of Whole Number, Decimal and Fractions, Relationship between numbers Fundamental arithmetical operations: Percentages, Ratio and Proportion, Square roots, Averages, Interest (Simple and Compound), Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time and work, mensuration (area, perimeter, volume).	10
General Awareness: Questions are designed to test the candidate's general awareness of the environment around him and its application to society. Questions are also designed to test knowledge of current events and of such matters of everyday observation and experience in their scientific aspect as may be expected of an educated person. The test will also include questions relating to India and its neighboring countries especially pertaining to History, Culture, Geography, Economic Scene, General policy and scientific research.	10
Computer Literacy: Candidate is expected to be able to handle all regular office work on computers. Knowledge of MS office (word, excel, power point) including basic commands, Google Doc, emails, commonly use social media handles (Whatsapp, FB, Twitter etc). would be tested.	10
FSSAI - Role, Functions, Initiatives (A General Understanding) - Genesis and Evolution of FSSAI, Structure and Functions of Food Authority, Overview of systems and processes in Standards, Enforcement, Laboratory ecosystem, Imports, Third Party Audit, Promoting safe and wholesome Food (Eat Right India, Food Fortification, snf, Clean Street Food Hub, RUCO and various other social and behavioural change initiatives), Training and capacity building, Role of State Food Authorities	20
PART II Translation: Principles & Practices	10
Official Language Policy of Indian Union	10
Noting & Drafting or Precis Writing in Hindi	10
Translation from Hindi to English	15
Translation from English to Hindi	15

Name of Post –   **PERSONAL ASSISTANT (PAY LEVEL 6)**

Exam Format Single computer based test of 180-minute duration with 120 multiple choice type questions. Each correct answer will carry 4 marks whereas the wrong answer will carry (-1) mark.

Eligibility - Proficiency test in stenography (English/Hindi).

Note: The level of the paper will be consistent with the educational qualifications prescribed.

Subject and Syllabus	No. of Question
General Intelligence: It would include questions of both verbal and non-verbal type. The test will include questions on Semantic Analogy, Symbolic operations, Symbolic/ Number Analogy, Trends, Figural Analogy, Space Orientation ,Semantic Classification, Venn Diagrams, Symbolic/ Number Classification, Drawing inferences, Figural Classification, Punched hole/ pattern-folding & unfolding , Semantic Series, Figural Pattern – folding and completion, Number Series, Embedded figures, Figural Series, Critical Thinking, Problem Solving, Emotional Intelligence, Word Building, Social Intelligence, Coding and de-coding, Other sub-topics, if any Numerical operations.	**20**
Quantitative Aptitude: Number Systems, Computation of Whole Number, Decimal and Fractions, Relationship between numbers Fundamental arithmetical operations: Percentages, Ratio and Proportion, Square roots, Averages, Interest (Simple and Compound), Profit and Loss, Discount, Partnership Business, Mixture and Allegation, Time and distance, Time and work, mensuration (area, perimeter, volume).	**20**
English Language: Spot the Error, Fill in the Blanks, Synonyms/ Homonyms, Antonyms, Spellings/ Detecting mis-spelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/ Passive Voice of Verbs, Conversion into Direct/ Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage, Parts of speech.	**10**
General Awareness: Questions are designed to test the candidate's general awareness of the environment around him and its application to society. Questions are also designed to test knowledge of current events and of such matters of everyday observation and experience in their scientific aspect as may be expected of an educated person. The test will also include questions relating to India and its neighboring countries especially pertaining to History, Culture, Geography, Economic Scene, General policy and scientific research, important national/ international agencies/ institution/ bodies.	**20**
Computer Literacy: Candidate is expected to be able to handle all regular office work on computers. Knowledge of MS office (word, excel, power point) including basic commands, Google Doc, emails, digital signature, commonly use social media handles (Whatsapp, FB, Twitter etc.) would be tested.	**25**
FSSAI - Role, Functions, Initiatives (A General Understanding) - Genesis and Evolution of FSSAI, Structure and Functions of Food Authority, Overview of systems and processes in Standards, Enforcement, Laboratory ecosystem, Imports, Third Party Audit, Promoting safe and wholesome Food (Eat Right India, Food Fortification, snf, Clean Street Food Hub, RUCO and various other social and behavioural change initiatives), Training and capacity building, Role of State Food Authorities.	**25**

Name of Post – IT ASSISTANT (PAY LEVEL- 06)

Exam Format - Single computer based test of 180-minute duration with 120 multiple choice type questions. Each correct answer will carry 4 marks whereas the wrong answer will carry (-1) mark.

Subject and Syllabus	No. of questions
General Intelligence: would include questions of both verbal and non-verbal type for e.g. Questions on analogies, similarities and differences, space visualization, problem solving, analysis, judgment, decision making, visual memory, discriminating observations, relationship concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series, non-verbal series etc.	**10**
General Awareness: Questions to test the ability of the candidates General Awareness of the environment around him/her and its application to society. Also testing knowledge of currents events and matters of every day observation as maybe expected of an educated person. The test will include questions relating to India and neighboring countries specially pertaining to History, Culture, Geography, Economic scene, General Polity including Indian Constitution, sports and scientific research etc. These questions will be such that they do not required a special study of any discipline	**10**
English language Comprehension: Would test the candidates understanding of the English language its vocabulary, grammar etc. Would include questions on comprehension, one word substitution, synonyms and antonyms, spelling error, spotting errors in sentences, grammar–noun, pronoun, adjectives, verbs, prepositions, conjunctions, use of 'a' 'an" and 'the', idioms and phrases etc, Parts of speech.	**5**
Indian and International Food Laws (An Over view)	
• Over view of Food Safety and Standards Act of India, 2006: Provision, definitions and different sections of the Act and implementation. • Over view of FSS Rules and Regulations • Overview of other relevant national bodies (e.g. APEDA, BIS EIC, MPEDA, Spice Board etc.) • International Food Control Systems/Laws, Regulations and Standards/Guidelines with regard to Food Safety–(i) Over view of CODEX Alimentarius Commission (History, Members, Standard setting and Advisory mechanisms: JECFA, JEMRA JMPR): WTO agreements (SPS/TBT): • Important national and international accreditation bodies	**5**
FSSAI -Role, Functions, Initiatives (A General Understanding)	
• Genesis and Evolution of FSSAI • Structure and Functions of Food Authority • Over view of systems and processes in Standards, Enforcement, Laboratory ecosystem, Imports, Third Party Audit • Promoting safe and wholesome Food (Eat Right India, Food Fortification, snf, Clean Street Food Hub, RUCO and various other social and behavioural change initiatives) • Training and capacity building • Role of State Food Authorities	**10**

Engineering Mathematics	
• Mathematical Logic: Propositional Logic; First Order Logic. • Probability: Conditional Probability; Mean, Median, Mode and Standard Deviation; Random Variables; Distribution; uniform normal, exponential Poisson, Binomial. • Set Theory & Algebra: Sets, Relations, Functions, Group, Partial Orders, Lattice, Boolean Algebra. • Combinatory: Permutations, Combinations, Counting, Summation, generating functions, recurrence relations, asymptotic. • Graph Theory: Connectivity, spanning trees, Cut vertices & edges, covering, matching independent sets, coloring Planarity, Isomorphism • Linear Algebra: Algebra of matrices, determinants, systems of linear equations, Elgen value sand Elgen vectors. • Numerical Methods: LU decomposition for systems of linear equations; numerical solutions of non-linear algebraic equations by Secant, Bisection and Newton-Raphson Methods; Numerical integration by trapezooidal and Simpson's rules. • Calculus: Limit, continuity & differentiability, Mean value Theorems, Theorems of Integral calculus, evaluation of definite & improper integrals, Partial derivatives, Total derivatives, maxima & minima.	30
Computer Science and Information Technology	
• Digital Logic: Logic functions, Minimization, Design and synthesis of combinational and sequential circuits; Number representation and computer arithmetic (fixed and floating point) • Computer Organization and Architecture: Machine instruction and addressing modes, ALU and date-path, CPU control design, Memory interface, I/O interface (interrupt and DMA mode), instruction pipelining, Cache and main memory, Secondary storage. • Programming and Data Structure: Programming in C; Functions, Recursion, Parameter passing, scope, Binding; Abstract data types, Arrays, Stacks, Queues, Linked Lists, Trees, Binary Search trees, Binary heaps. • Algorithms: Analysis, Asymptotic notation, Notions of space and time complexity, Worst and average case analysis, Design, Greedy approach, Dynamic programming, Divide and conquer, Tree and graph traversals, Connected components, spanning trees, shortest paths, Hashing, Sorting, Searching, Asymptotic analysis (Best, worst, average cases) of time and space, upper and lower bounds, Basic concepts of complexity classes-P, NP, NP-Hard, NP-complete. • Theory of computation: Regular language and finite automata, context free language and Push-down automate Recursively enumerable sets and Turing machines, Undesirability. • Compeller Design: Lexical analysis, Parsing, Syntax directed translation, Run time environments, Intermediate and target code generation, Basics of code optimization • Operating Systems: Processes, Threads, Inter-process communication, Concurrency, Synchronization, Deadlock, CPC scheduling, Memory management and virtual memory. File systems, I /O Protection and security • Databases: ER-model, Rational model (relational algebra, tuplecalculus). Database design (Integrity constraints, normal forms), Query languages (SQL), File structures (sequential file, indexing, Band B+trees), Transactions and concurrency control. • Information Systems and Software Engineering: information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, Input/output design, process life cycle, planning and managing the project, design, coding testing, implementation, maintenance. • Computer Networks: ISO/OSI stack, LAN technologies (Ethernet, Token ring), Flow and error control techniques, Routing algorithms, congestion control, TCP/UDP and sockets, IP(v4). Application layer protocols (icmp, dns, smtp, pop, ftp, http): Basic concepts of hubs, switches, gateways, and routers. Network security-basic concepts of public key and private key cryptography, digital signature, firewalls. • Web technologies: HTML, XML, basic concepts of client-server computing.	50

Indicative Syllabus for CBT/CBT (Stage I)/Written Examination
(Advertisement No DR-04/2021 dated 30 Sep 2021)

Name of Post –   **JUNIOR ASSISTANT GRADE – 1 (PAY LEVEL 4)**

Exam Format Single computer based test of 180-minute duration with 120 multiple choice type questions. Each correct answer will carry 4 marks whereas the wrong answer will carry (-1) mark.

Note: The level of the paper will be consistent with the educational qualifications prescribed.

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English Language: Spot the Error, Fill in the Blanks, Synonyms/ Homonyms, Antonyms, Spellings/ Detecting mis-spelt words, Idioms & Phrases, One word substitution, Improvement of Sentences, Active/ Passive Voice of Verbs, Conversion into Direct/ Indirect narration, Shuffling of Sentence parts, Shuffling of Sentences in a passage, Cloze Passage, Comprehension Passage, Parts of speech.	**10**
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