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Food Safety and Standards Authority of India
(A statutory Authority established under the Food Safety and Standards Act, 2006)
(QA Division)
FDA Bhawan, Kotla Road, New Delhi – 110002

Dated, the 06 May, 2022

CORRIGENDUM

The Competent Authority has extended the deadline for submission of bids in r/o **RFP for Procurement of Equipment for NFL, Raxaul (Group-I)** issued vide GeM Bid No. GEM/2022/B/2109191 dated 19.04.2022**,** through GeM, **upto 17th May, 2022.** Some changes in the Specifications of Equipment the tender documents have also been incorporated as per details given herein :-

1. UV-VISIBLE SPECTROPHOTOMETER	
Requirements	**Specification**
System	A fully automated PC Controlled spectrophotometer with double beam optics with pre-programmed applications using conventional quartz / glass cuvettes with all the required accessories.
Operation keys	• Instrument should operate immediately after switch on with no warming up time • Capable to store method with analysis:> 100 method and programs on the instrument or PC > 1000 results with data, evaluation results and used parameters
Optical Design	• Double Beam with sample and reference cuvette positions; Czerny-Turner equivalent Monochromatic /Holographic OR equivalent grating with sealed optics • Reference compartment should accommodate cells up to 10 mm path length as standard feature
Light Source	• Halogen lamp for Visible range • Deuterium Lamp for UV range, light source should be auto automatically selected as per wavelength required **or** • Xenon lamp covering the entire wavelength range
Detector	Photo diode/CCD/CID/SCD/PMT Type
Scan Ordinate Modes	Absorbance, % Transmittance, % Reflectance
Resolution	0.1 nm or better.
Wavelength Range	190 –1100 nm
Wavelength Accuracy	± 0.3 nm or better for entire range
Wavelength Repeatability	± 0.1nm or better
Scanning Speed	Selectable Variable wavelength scan rate 10nm/min to 2500 nm/min or better
Spectral Bandwidth	Variable (0.5/1/2/4 or 5) nm

Photometric Range	Absorbance = -3.0 to 3.0 Abs or better.
Photometric Accuracy	With Neutral Glass filter @ 546nm: ± 0.005 A
Stray Light	Max. 0.05% (220 nm NaI) or better, Max. 0.05% (340,370 nm $NaNO_2$) or better Max. 1% (198 nm KCl) or better
Noise	0.00005 Abs RMS (500nm) or better
Base line stability	< 0.0005 A/hr (500 nm, 1-hour warm-up)
Baseline flatness	± 0.0005 Abs or better
Software requirements	• Data should be archived into a secure database • Multilevel user permissions, administrator, method developer, analyst, and reviewer • Password protected access control with password aging and expiry • Fully configurable e-signature to help maintenance of records paperless without Compromising security
Application Software	Compatible Software should be user friendly & simple for data handling with feature like easy-to-use report publisher, online help and answer wizard, GLP & audit trail and fully compatible with Windows. System built in features such as real time display of concentration, time scan, photometric mode, single/multi- wavelength, capability for event recording (e.g., addition of reagents) Software should have built in a. Methods: • Absorbance with one or more wavelengths, • Scans, Nucleic acids, Proteins, Turbidity (OD 600), • Evaluation: via factor, standard and calibration curve • Dual wavelength with subtraction and division evaluation b. Method dependent evaluation: • Absorbance, concentration via factor and standard • Concentration via standard series using Linear regression, Nonlinear regression with 2nd and 3rd degree polynomials • Spline analysis, • Linear interpolation (point to point evaluation) • Absorbance allocation via subtraction and division • Ratio 260/280, 260/230, Molar concentration and total yield for nucleic acids. • The software should be 21CFR part 11 compliant.
Accessories and spares	1. One pair each of 0.5, 1 and 3-ml quartz cuvettes with 10 mm path length 2. One pair each of 0.5, 1, and 3 ml glass cuvettes with 10 mm path length 3. Cuvette holder 4. Deuterium Lamp-one 5. Halogen lamp-one 6. Suitable Certified Standards for Validation including Holmium oxide glass filters for wavelength calibration & NIST traceable 7. NIST traceable Potassium dichromate
Computer and printer	Branded PC system Full HD Monitor, Processor: Intel core i5 or better, Operating system: Windows 10 Professional or better, Screen Size: 22- 23'', RAM: 8 GB, Hard disk Drive size: 1 TB or more, Keyboard and Mouse

	Printer –Reputed brand -B/W – duplex- laser- legal, A4 - 1200dpi-up to 21 ppm – capacity
UPS	Suitable UPS (5 KVA) with 60 mins backup power
Environmental factors	The unit shall be capable of operating continuously in ambient temperatures prevalent in India (10-45°C) and relative humidity in the range of 10-90%.
Power supply	Electrical requirements: 220-240V, 50 Hz
Operating manuals, service manuals, other manuals	Should provide:- User, technical and maintenance manuals in English language List of procedures required for local calibration and routine maintenance service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Supplier/ Manufacturer	• Should be FDA/CE/BIS approved product. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent IS/ International Standard)
	All suppliers must submit a copy of catalogue showing technical specifications.
Warranty	Minimum three years comprehensive onsite warranty including lamps also with one Preventive Maintenance and equipment calibration from the date of installation and commissioning every year. Warranty to be provided by OEM/Manufacturer.

2. NITROGEN GENERATORS	
Requirements	**Specification**
General	The system should be, PLC Controlled Bench Top of modular design, compact in size, **LCD/LED /Touch Screen user interface** automatic operation, minimum noise level, low operational cost. Nitrogen should be generated from the atmospheric air. Whole system should be compact and properly assembled without any leakage with operating voltage 230v50 Hz **It should have a Hydrocarbon removal unit.** The equipment should be capable of running for 24 hrs. round the year
Installation	Indoor or benchtop Should work in temperature range of 15 to 30°C in humidity range of 60-90%
Flow rate	0.5 L/min or higher
Purity	Better than 99.999%
Residual hydrocarbon	< 0.05 ppm Total Hydrocarbons
Air Supply	Through suitable stackable silent compressor
Method of Purification	Pressure Swing Adsorption Technology to generate pure nitrogen at a pressure already suitable for laboratory application eliminating the need for additional equipment.
Sound level	Nitrogen generator should have silent operations with max 25 dB and compressors sound level should be less than ≤80 dB. so that is can be kept inside the laboratory
Fittings	1/4'' Swagelok for outlet N2 and Inlet Air (if compressor is not installed
Delivery pressure	Upto 5.5 bar
Power consumptions	≤ 500 W
Safety-	It should have safety system with safe alarms Automatic on off modes depending on pressure side the compressor
AIR COMPRESSOR	
• Should be compatible and be able to process ambient air to have enough compressed air for inlet air for nitrogen and zero air. • Min pressure should be 145 psi /10 bar. • Compressor design should dampen vibrations & noise. • Should be stackable design compatible with Nitrogen and Zero Air Generators to save on lab space. • Should provide pressure gauge and service indicators. • Should have auto cut off option and be silence type. • 3 Years warranty atleast. Warranty to be provided by OEM/Manufacturer.	
Other requirement	The OEM should have at least 100 installations
Electrical supply	220-240V 50Hz
Operating manuals, service manuals, other manuals	Should provide for all components:- User, technical and maintenance manuals in English language List of procedures required for local calibration and routine maintenance service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Supplier/ Manufacturer	• Should be FDA/CE/BIS approved product. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent IS/ International Standard).
	All suppliers must submit a copy of catalogue showing technical specifications.
Warranty	Comprehensive warranty for minimum three years with one preventive maintenance per year includes PM kits all filters, necessary accessories, spare parts with unlimited breakdown visits on request to be provided. Warranty to be provided by OEM/Manufacturer.

3. HYDROGEN GENERATOR	
Requirements	**Specification**
General	Hydrogen gas Generation System to generate 99.999% ultra-pure hydrogen from deionized water. Silent & automatic in operation.
Production Capacity / Flow Rate	Flow rate: maximum flow ≥100 ml/min
Purity	99.999% or better
Pressure: maximum	Pressure should upto 6.9 bar / 100 psig
Technology	Proton Exchange Membrane to create the Hydrogen gas from deionized water, and a desiccant filtration stage to dry the gas.
Internal water tank (liters)	1.5 liter or higher Should have Automatic Water loading pump for minimum intervention of end user
Safety	Automatic shutdown – internal/external hydrogen leak, over pressure and low water, to protect the cell in case the water quantity is not sufficient. No acid and no alkaline solutions (KOH & NaOH) are used in the hydrogen generation cycle.
Safety indicators	LED lights to detect if error is there. For hydrogen safety, it should have leak detection which auto shut down the generator in case of hydrogen leak is there.
Interface	**LCD/LED** /Touch screen display with operating parameters in real time, the output pressure, self-diagnostic functions with hydrogen leak detection, water level and gas quality alarms
Accessories	It should include online purification, and additional flow meter required should also be provided. High quality non-corrodible (SS316) tubing should be provided for the connection of generator to equipment etc., price may be quoted as per unit length.
Other requirement	The OEM should have at least 100 installations
Electrical supply	220-240V 50Hz
Operating manuals, service manuals, other manuals	Should provide for all components:- User, technical and maintenance manuals in English language List of procedures required for local calibration and routine maintenance service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Supplier/ Manufacturer	• Should be FDA/CE/BIS approved product. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent IS/ International Standard).
	All suppliers must submit a copy of catalogue showing technical specifications
Warranty	Comprehensive warranty for minimum three years with one preventive maintenance per year includes PM kits all filters, necessary accessories, spare parts with unlimited breakdown visits on request to be provided. Warranty to be provided by OEM/Manufacturer. Warranty to be provided by OEM/Manufacturer.

4. ZERO AIR GENERATORS	
Requirements	**Specification**
General	Should be able to turn in-house compressed air into ultra-pure (<0.05 ppm total hydrocarbon maximum) Minimum lifetime maintenance requirements and no expensive catalyst chamber replacements to save the occurring cost for maintenance Generator should be supplied compatible and stackable with Air Compressor
Flow Rate	1.5 L/min or higher
Max. output pressure	Should be able to produce Zero air with sufficient pressure for simultaneous use of 2 GC (5 bar or more)
Residual hydrocarbons concentration HC (ppm)	<0.05 ppm or better
Air Supply	Through suitable stackable silent compressor
Operation	Should operate at min to max of 90-145 psi / 6.2-10 bar
Indicators	Status indicative lighting feature
Max Output Pressure	Upto 5.5 bar
Power Supply	230 V AC50/60Hz
Interface /display	**LCD/LED**/Touch screen should display flow rate and output pressure.
Accessories	High quality non-corrodible (SS316) tubing should be provided for the connection of generator to equipment etc., price may be quoted as per unit length.
Electrical supply	220-240V 50Hz
Other requirement	The OEM should have at least 100 installations
Operating manuals, service manuals, other manuals	Should provide for all components:- User, technical and maintenance manuals in English language List of procedures required for local calibration and routine maintenance service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Supplier/ Manufacturer	• Should be FDA/CE/BIS approved product. • Electrical safety conforms to the standards for electrical safety IEC 60601-General requirements (or equivalent IS/ International Standard). All suppliers must submit a copy of catalogue showing technical specifications.
Warranty	Comprehensive warranty for minimum three years with one preventive maintenance per year includes PM kits all filters, necessary accessories, spare parts with unlimited breakdown visits on request to be provided. Warranty to be provided by OEM/Manufacturer.

5. GAS CHROMATOGRAPH With FLAME IONISATION DETECTOR (FID) and ELECTRON CAPTURE DETECTOR (ECD)

Application: Gas chromatography (GC) is a key analytical technique in the food and beverage analysis. It enables complex organic substances to be separated in a gaseous phase and identified quickly. Used for pesticide, fatty acid composition, trans fat analysis of foods.

Requirements	Specifications
System	Gas chromatograph with capability of operating concurrently with two injectors and two detectors or better. The system should be quoted with all accessories required to make it fully operational and any other item required for stated applications be quoted as optional.
Oven	• Up to 450 °C, with 50 °C/min ramps 8 or more • Cool-down time from 450 °C to 50°C within 5 minutes or better • Should be able to accommodate two or more injectors and two or more detectors • Automatic leak test of system
Pneumatic Controls	0-100 psi or better, All Electronic Pneumatic Controls with 0.1 psi precision
Injector (2 or more)	• Should be capable of large volume injection Temperature ramped split less/ Split modes or pressure based technology ≥400 °C max. and ≥2 ramps or better. • Multimode/PTV/ PSSI with 150 µL or better Injection Volume capability with complete solvent vaporizer system or Equivalent. • Injector must be able to operate with capillary & wide bore columns • System should have back-flushing capability.
Autosampler (Liquid)	• Robust Liquid auto sampler capable of injecting ≥100 samples or better with syringe • Must allow installation and automation of suitable syringe featuring volumes from 0.1 to 50 µL or more. • Must be able to achieve combined multiple solvent rinsing with up to 4 different solvents. • Fully automated Liquid Auto Sampler in both injectors without manual intervention
Head space auto sampler	• With a capacity ≥ 50 vials or better that support 10/20/22/ml or better vial capacity with Pneumatic control • Incubation Oven Temperature Range 50 to 200 °C in 1 °C steps • Syringe/needle or Valve & Loop Temperature 50 °C to 150 °C in 1°C steps • Incubation Oven Capacity of 6 -12 vials or better. • Headspace sampler should have an RSD < 2%.
Detectors	• The GC must have complete integrated control of all parameters for respective detectors: FID/ ECD. • Detector must be independently controlled and operational for maximum sensitivity

Flame Ionization Detector (FID)	• Linear range: better than 10^7 • Minimum detectable amount with/without makeup gases: <3 pg C/sec or better with Octane. • Operating temperature limits: 450°C • Acquisition rate 50 Hz or more
Electron Capture Detector (ECD)	• Linear dynamic range: better than 10^4 • Complete with ^{63}Ni source and low voltage heaters. • Minimum detectable amount: Less than 10 fg of lindane or < 0.05 pg perchloroethylene. • Operating temperature limits: 400°C
Gas Supplies	Required High purity Gas cylinders (2 No. Each) with regulators Nitrogen, Helium. Hydrogen & Zero Air
Software and Hardware (Single Point Control Of Software & Hardware)	
Software	Complete system and software configuration must be 21 CFR Part 11 compliant. Software: Windows Based software with multitasking and capability.
	Software update upto five years
Communication Hardware:	Branded PC system Full HD Monitor, Processor: Intel core i5 or better, Operating system: Windows 10 Professional or better, Screen Size: 22- 23'', RAM: 8 GB, Hard disk Drive size: 1 TB or more, Keyboard and Mouse Printer –Reputed brand -B/W – duplex- laser- legal, A4 - 1200dpi-up to 21 ppm – capacity
Application Support	The Application support for stated applications required during method development and validations.
Pre-Installation Requirements	Provide all PIR of the system.
Other requisites for GC with ECD/FID	Automatic Change Over Manifold for all gas lines including carrier gas Complete Gas Purification Panel with fittings & installation of all gases Renewable in Line Gas Purification System Renewable gas purifier cartridge, Spare Set Gas clean filters/Traps (6 No.)
Septa for injectors	Nonstick, Low bleed, high puncture tolerance and Max. Temp 400 °C (*for each injector*). (400 No.)
Liners	Provide all Suitable injector liners required for the system quoted (20 No.)
Ferrules and Nuts	50 No. (for each column end and other interfaces as applicable), 50 No. for GC with ECD, NPD, FID
Columns for GC Applications	Pesticide column (30 m x 0.250mm x 0.25µm (5MS (95% dimethyl-, 5% diphenyl-polysiloxane / 1MS (100% dimethyl polysiloxane or equivalent) (02 no.) Suitable column (100/60m ×0.25 mm i.d. ×0.25 µm for GC-FID analysis of a 37 component FAMEs standard mixture with emphasis on separation of cis-trans isomers (02 No.) Column separation of cholesterol/plant sterols (02 No.) Stationary phase: 95% dimethyl-, 5% diphenyl-polysiloxane (30 m x 0.25mm x 0.25µm),

Vials, caps and tool for autosampler *(Only Compatible sizes should be supplied)*	• 2000 No. each Vial sets (1, 2 mL, Crimp type, Amber and Clear glass) • 200 No. Vials (10,20ml Crimp type with cap & septa) • 1000 No. 300/500 µL Recovery vials • 6000 No. Septa PTFE/Silicone (for 1, 2 mL Vials) • 6000 No. Septa PTFE/Silicone (for 10, 20 mL Headspace Vials) • Ergonomic Crimping Tools for different vial types • Ergonomic Decapping Tools for different vial types • 10 No. each Storage Racks for (for 1, 2 mL Vials) • Head Space vials 10,20 ml capacity (500no. each)
Autosampler Syringe	Suitable syringes for quoted autosampler (4 Nos) Suitable Headspace syringe /valve/loop (4 Nos)
Sample Preparation *(Water & Food)*	• QuEChERS Kits for Pesticides and Herbicides in following Matrices: • Matrices with high fat (1000 No.) • Matrices with high Water content and (1000 No.) • Matrices with high pigmented (1000 No.) • SPE cartridges for water (1000 No.)- Carbon or polymer
Tools and Kits	Septa Removing tool Tubing Cutter with rotating diamond blade for column Tubing Cutter for stainless steel tubing (1/16- & 1/8-inch tubing) Tubing Cutter for Plastic tubing with spare blade set
Miscellaneous	Consumables required for each detector must be provided
Reference Standards	Certified and traceable 37 component FAMEs standard mix which includes Trans fatty acids. 2× 1 ml vials Certified standards (99.9% pure) for *Cholesterol and Phytosterols* (Stigmasterol Sitosterol, *Ergosterol* , Campesterol) .
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site 10 days comprehensive operation and application training from date of installation
UPS	Suitable on - line UPS (5 KVA) to support the instrument for 60 mins.
Operating manuals, service manuals, other manuals	Should provide:- User, technical and maintenance manuals in English language List of procedures required for local calibration and routine maintenance service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Supplier/ Manufacturer	• Should be FDA/CE/BIS approved product. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent IS/ International Standard) • All suppliers must submit a copy of catalogue showing technical specifications.
Warranty	Minimum three years comprehensive onsite warranty with one Preventive Maintenance from the date of installation and commissioning every year. Warranty to be provided by OEM/Manufacturer.
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ of instrument

6. HIGH PERFORMANCE LIQUID CHROMATOGRAPH (HPLC)
With PHOTODIODE ARRAY (PDA), REFRACTIVE INDEX DETECTOR(RID)

With PHOTODIODE ARRAY (PDA), FLUORESCENCE (FLD) AND REFRACTIVE INDEX DETECTOR(RID)

Application: High-performance liquid chromatography (HPLC) used to separate, identify, and quantify each component in a mixture. In food analysis it is used for analysis of food colors, food additive, vitamins, sugars amino acids, triglycerides etc It is also used to estimate aflatoxin

A complete HPLC comprising of a 1) Quaternary solvent system 2) Autosampler, 3) Column Oven, 4) Columns C18 & C8 RP Columns and 5) Detectors (PDA, FLD and RI). The complete system should be controlled by single software. The system should have the capability to operate the column range from 10 µm to sub 2.5 µm particles and any other column chemistry

Note: All units must be from the same manufacturer. Technical bids with compatible modules from another manufacturer will not be evaluated

1. Quaternary Gradient System with Online Degasser.	
Pressure operating range	8500 psi or better
Flow Rate Range:	Programmable 0.01 to 2 ml/ min in 0.01 ml/min increments
Flow Precision	±0.1% RSD or below
Flow Rate Accuracy	±1%
Delay Volume	< 1100 µl
Eluent Degassing	Online membrane Degasser for all channels
Gradient Mixer	• Quaternary mixing & gradient capability using suitable proportionate valve) • Plunger Seal Wash Integral/Gradient Profiles which include gradient curves • Composition Precision/ Flow rate precision- 0.20% RSD or +/- 0.04 min SD, whichever is greater, based on retention time
Solvent Setting Range	4 solvents setting range:0-100% with 0.1% step
Diagnostic Features	Error detection and display, Leak detection & safe leak handling
PDA Detector	
Wavelength range	190-750 nm
Spectral resolution	1.2 nm or better per photodiode with a Total of 1024 photodiodes, digital and optical (3D modes)
Bandwidth	<5 nm or better
Linearity range	<5% at 2 AU, 257 nm
Baseline noise	8.0 X 10^{-5} AU at 254 nm or better
Drift	<1.0x 10^{-3} AU/h at 254 nm
Suitable peak purity software, Auto threshold for peak purity	
RI DETECTOR	
Refractive Index Range	1.00 to 1.75 RIU
Noise Level	± 2.5 x 10^{-9} RIU
Drift	2 x 10^{-7} RIU/hr
Cell Volume	Approximately 10 µL
Temperature Control	Temp. controlled Flow cell unit
Temperature Operating Range	30 ºC to 50ºC
Fluorescence Detector	
Excitation Wavelength	Range 200-630 nm
Emission Wavelength	Range 220-650 nm
Spectral bandwidth	15-20 nm both in the excitation and emission sides

Wavelength accuracy	should be +/- 2 nm
Repeatability	should be ± 0.2nm
Sensitivity	should be S/N > 550 (Raman Spectrum of H_2O) as per ASTM Method
Data Acquisition range	should be up to 80 HZ Cell volume should be < 3 micro liter
Pressure	limit up to 500 psi
Column Oven with preheating capability	
Temperature range	10 to 85° C
For column length	Must accommodate up to 300 mm length columns
No of Columns accommodated	2 or more
Temperature Stability	±0.1 ºC of set temperature
Cooling system	Peltier based or equivalent technology
Auto sampler	
Injection Mode	Total vol. Inj / Variable Inj method
Injection Volume Range	0.1-100 µl (Standard)
Sample Capacity	>80 x 2 ml/1.5 ml vials
Injection Precision	<0.5% RSD or better
Carry over	0.005% from previous injection
Tray Temperature Operating Range	4 - 40 ° C
Accessories	
HPLC Columns	One each of the following 1. C8 = 250 × 4.6 × 5µm 2. C18 = 250 × 4.6 × 5µm 3. Cyanopropyl = 250 × 4.6 ×5µm 4. Amide = 250 × 4.6 × 5µm 5. Phenyl = 250 × 4.6 × 5µm 6. Silica = 250 × 4.6 × 5µm All columns must be supplied with respective guard column (2nos each) and holder
Accessories to be supplied	• Sample Vials 100 numbers with 1.5 ml or greater. • Stainless Steel Ultra Sonic bath with the capacity of 5 L or more, with Time setting (min) 1-30min or continuous operation with LED and Push button (Should be IP 33 Protection class) for sonication of spare parts as well as solvents. • Mobile phase filter assembly (2 L) for aqueous and organic solvent: Aqueous and organic solvent compatible membranes 0.22 microns 100 numbers each • Oil free vacuum pump (1 no.) with 4 bar pressures or better should be Neoprene diaphragm based. • Fittings, Frits, ferules and Tubing's • Tubing cutter (2 no.) • Solvent bottles (12 no. each 1000 ml capacity) • Solvent filters (Glass & SS both, 08 no. each) • Compatible Manual syringes -10 µl, 20 µl, 50 µl (02 no. each) • Standards for calibration: Anthracene (99.9%) and Caffeine (99.9 %): One gram each. • Spare lamps for each detector

	• Consumables required for each detector must be provided
Software and Hardware	Complete system and software configuration must be 21 CFR Part 11 compliant. Software: Database version software with multitasking and capable of performing the following functions: Control the system, acquire, store, process and reproduce the data. It must be able to control all the devices from same software
PC with Printer	Branded PC system Full HD Monitor, Processor: Intel core i5 or better, Operating system: Windows 10 Professional or better, Screen Size: 22-23'', RAM: 8 GB, Hard disk Drive size: 1 TB or more, Keyboard and Mouse Printer –Reputed brand -B/W – duplex- laser- legal, A4 - 1200dpi-up to 21 ppm –capacity
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site 10 days comprehensive operation and application training from date of installation
UPS	Suitable true on - line UPS (5 KVA) to support the instrument back up for 60 mins.
Operating manuals, service manuals, other manuals	Should provide:- User, technical and maintenance manuals in English language List of procedures required for local calibration and routine maintenance service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Supplier/ Manufacturer	• Should be FDA/CE/BIS approved product. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent IS/ International Standard) • All suppliers must submit a copy of catalogue showing technical specifications.
Warranty	Minimum three years comprehensive onsite warranty with one Preventive Maintenance from the date of installation and commissioning every year. Warranty to be provided by OEM/Manufacturer.
IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ of instrument

7. INDUCTIVELY COUPLED PLASMA MASS SPECTROMETER With Microwave Digestion System	
Application: Inductively coupled plasma mass spectrometry(ICP-MS) is used detect metals and several non-metals in a diverse range of food matrices at higher concentration, trace and ultra-trace (ppm, ppb, & ppt) levels It can detect different isotopes of the same element, which makes it a versatile tool in Isotopic labelling	
Specification	**Requirement**
System	The system should have • Computer controlled fully automatic ICP-MS system • Simultaneous multi-elemental analysis in ppm, ppb and ppt levels with required sensitivity and stability of diverse range of food and water samples • The system should be a space saving, compact model that can fit into allocated lab space with all the sub- systems and accessories. • Corrosion-resistant exteriors should be provided • Model number of the equipment proposed to be supplied to be clearly mentioned
Sample Introduction system	The system should have a. Nebulizer: Concentric Micro mist Nebulizer or Cyclonic glass spray chamber with low sample flow rate b. Spray Chamber: Peltier cooled spray chamber with an operating temp range from -5°C to +20°C to handle wide range of organic solvents c. System should come with Ar gas dilution accessory to handle samples containing TDS of ≥25 d. Peristaltic pump: Low pulsation high precision peristaltic pump with minimum of Four separate channels which can be controlled through the software. e. The system should have at least three dedicated gas channels to use varied collision/ reactions gases like He, O2, NH3, etc for effective removal of interferences in challenging sample matrices. Each gas should be supplied through a dedicated gas line from the cylinder with 99.999% purity
Plasma	1.RF Generator**:** a. Computer controlled Radio Frequency Generator (Solid State): operating between 27/34 or 40 MHz Impedance Matching: Auto-tuning to get maximum coupling efficiency • b. RF range from 500-1600 watts (or more) variable capability for efficient and superior ionization when changed from aqueous samples to organic samples with automatic impedance matching. RF Generator: 2.Torch:

	Easy mountable single piece quartz torch with shield torch a. Torch movement should allow for complete computer-control and auto tunable in x-y-z directions with independent movements in the three directions. b. Provision for Auto-alignment of the torch after routine maintenance with a reproducibility better than 0.1 mm in x-y-z directions 3 Plasma Gas Control**:** • Should have at least 3 Mass Flow Controllers (AMFC) or equivalent PC Controller for control plasma, auxiliary makeup, carrier gases. Gases used should be controlled with mass flow controller and fully computer controlled. • Argon gas dilutor or equivalent technology must be quoted along with the main instrument.
Ion Extraction Interface	The system should have The system should have a. Standard sample and skimmer cones with suitable orifice diameters to suit all application and to prevent clogging and minimize signal drift. It should be easily mountable and dismountable. b. Scope of supply of standard (Nickel) and optional (Platinum) cones should be clearly specified. (for any alternate material, bidder would need to prove sensitivity) c. Lens/ extraction cones or equivalent should be easy to maintain
Ion Focusing System	The system should have • Ion focusing system with efficient mechanism for removing all neutrals and photons from the Ion path. • Cell offering three modes of operation: Standard Mode, Collision Cell Mode and Reaction. Should have the flexibility to run all three modes in single run. • Switching of reaction and collision gases will be through software and automated. Unit will have the flexibility of applying both (collision, and reaction) gases using single method for removal of interferences. Mass Cut off facility or equivalent technology should be there to remove unwanted polyatomic interferences formed due to free atoms. • A reaction cell should be provided for poly atomic interference removal with Helium, Oxygen, Hydrogen & NH_3 and methane with a dedicated gas line should be there. • Vendor should attach international published application notes for Arsenic analysis as per FSSR (2011), EU/USFDA where He/H2/O2 or any other suitable gas is used to remove interference for As analysis • Reaction cell assembly and quadrupole/octupole/hexapole assembly (if requires cleaning any time in lifetime) should be quoted
Quadrupole Assembly	The system should have

	a. Quadrupole Mass Analyzer: A quadrupole mass analyzer to provide effective ion transmission, superior resolution and abundance sensitivity. b. Mass range: 5-260 amu or above c. RF Frequency: Fully Digital RF generator with frequency 2-3 MHz d. Abundance sensitivity: I. Low Mass Side: ≤ 5 x 10-7 II. High Mass side: ≤ 1 x 10-7 g. Scan Speed: Greater than >3000 amu/s h. Mass stability: < ± 0.05 amu over 8 hours of continuous operation. i. Resolution: Variable from 0.5 u to 1.0 u or better for whole mass range
Ion Detector assembly	The system should have a. Solid State dual stage dynode discrete over 10 orders or more magnitude of linear dynamic range in a single continuous scan b. Should be unique log amplifier circuit, features a high-speed analog mode for transient signals and a true ten orders dynamic range. c. c) Minimum Dwell Time 100 µs and Integration Time of 100 µs (in both pulse count and analog modes) each respectively. d. Dual-stage detector assembly should come as a standard with the system.
Vacuum System	The system should have a. Efficient vacuum system with turbo molecular pump and single external rotary pump for fast pump down and simple maintenance. b. In the event of vacuum failure, the entire vacuum system is to be automatically back-filled by inert gas or appropriate technology to preserve the cleanliness of the system or an alternate system
Performance Specifications	Guaranteed sensitivity specifications will be considered (To be demonstrated during Demo): Typical sensitivity values will not be considered a. Should be able to analyze Sn, Ni, Cu, Zn, Ba, Sb, Ni, B, Ag, Mg, Ca, Na, As, Cd, Cr, Hg, Pb, Se, Fe (but not limited to these elements) at a concentration of 0.05ppb with RSD of <5% at standard conditions. b. Oxide ratio (%) CeO/Ce< 2 % (with Peltier cooler) or <3% (without Peltier cooler) c. Double charged ratio < 3 % d. Isotope-ratio Precision: 1% RSD
Water Chiller	The system should have a coolant-based suitable re-circulating chiller changer of internationally reputed company for plasma component cooling.
Auto Sampler	The system should have

	• Highly effective auto sampler compatible with operation along with ICP-MS without user intervention. • Auto sampler with minimum 200 vials holding capacity with 500 nos. of 15 ml capacity tubes (as consumable). • Programmable complete with inert PTFE coated probe with PTFE inner tubing. • All accessories, racks, bottles, tubing assembly, waste container, dust cover etc.
System Controller and Operating System	The system should have a. Software control for automatic data acquisition and processing. b. Mass spectrometer tuning and calibration auto and manual c. Data Validation (IQ/OQ/PQ for Software) d. Self-diagnostics with option to set routine maintenance check alerts to raise alarms when preventive maintenance is due. e. Multi element analysis capability f. Isotope ratio and dilution g. Cool Plasma or other facility to eliminate polyatomic interferences. h. Remote diagnostics i. Software should control plasma, MS and other accessories like auto sampler j. The system software shall support the following calibration curve fit modes for Quantitative analysis: i.Linear least squares. ii.Weighted linear least Squares iii.Linear forced-through-zero least squares. iv.Quantitative analysis including external calibration, additions calibrations, method of standard additions, isotope ratios and isotope dilution's and semi quantitative analysis. k. On-line help with quick steps to reference entire instrument user manual. l. The software should have data handling and data management, Data security and access control with 21 CFR part 11 environment supports, compliance management and customizable reporting etc.
PC with Printer	Latest configuration factory set branded PC system Full HD Monitor, Processor: Intel core i5 or better, Operating system: Windows 10 Professional or better, Screen Size: 22- 23'', RAM: 8 GB, Hard disk Drive size: 1 TB or more, Keyboard and Mouse • Printer –Reputed brand -B/W – duplex- laser- legal, A4 - 1200dpi-up to 21 ppm –capacity

Exhaust unit	Exhaust unit for the ICP-MS has to be supplied along with the System
Standards – Two sets [One set to be provided in 1st year and 2nd set in 2nd year]	• Pure Analytical NIST traceable single element standard solutions (100 ml of 1000 ppm each) for Sn, Ni, Cu, Zn, Ba, Sb, Ni, B, Ag, Mg, Ca, Na, As, Cd, Cr, Hg, Pb, Se, Fe should be supplied • Multi element Calibration NIST traceable standards for ICP-MS - one set
Power Supply	The system should have UPS (minimum 20 KVA) of suitable rating with voltage regulation, spike protection and minimum 60 minutes back up for the supplied equipment.
Startup package and Library	A startup package for 100 samples Operation kit comprising all required items pump tubing, transfer tubing, work coils etc. for startup/regular operation of instrument Give the Detection limits (DL) chart for Sn, Ni, Cu, Zn, Ba, Sb, Ni, B, Ag, Mg, Ca, Na, As, Cd, Cr, Hg, Pb, Se, Fe (but not limited to these elements. Provide for as many elements as vendor can) and give the conditions at which the DLs are measure. Methods library for all food matrixes, related software's and user manuals to be provided. All Calibration certificates for ISO 17025 accredited laboratory
Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site 10 days comprehensive operation and application training from date of installation
Spares and Accessories	The following Items, but not limited to, has to be supplied along with the equipment • Peristaltic pump tubing-sample intake – 100 No's • Peristaltic pump tubing-Drain – 100 No's • Tubing – Auto Sampler to Peristaltic Pump – 25 No's • Micro mist nebulizer – 5 No's • Plasma Torch – 5 No's • Ni Sampling Cone – 4 No's and Pt Sampling Cone – 2 No's • Ni Skimmer Cone – 4 No's and Pt Skimmer Cone – 2 No's • Hyper skimmer cones/extraction system for HF digested sample. • Vacuum Pump oils for warranty period • Argon Gas Cylinders-6 • Gas cylinder for Collision cell gases – Helium-1 • Gas cylinder for Reaction cell gases -Oxygen, Hydrogen & Ammonia (>99.99 % mixed or pure as per system requirement), whichever is applicable for individual system for elimination of interference species along with 3 stage Gas pressure regulators for each cylinder. • Gas purification panel for Argon/Oxygen/Helium & Hydrogen as per hardware requirement with appropriate plumbing. • Optional: Any other accessory as felt required for the proper functioning

	of the equipment.
UPS	The system should have UPS (minimum 20 KVA) of suitable rating with voltage regulation, spike protection and minimum 60 minutes back up for the supplied equipment.
Microwave Digestion System (MDS)	
General	The instrument should have a superior pressure venting which is not temperature dependent so as to prevent any loss of volatile metals and should have homogeneous microwave field to avoid sample burning
System	Microwave digestion system should have temperature and pressure control mechanism. The system should be software controlled. Different types of rotors available for the digestion of the different type samples should also be quoted. Necessary consumables and maintenance parts should also be quoted to run instrument trouble free
Instrument Design	The system should be a standalone work station and should have • The System should have the feature of simply choose a method and it automatically recognizes the vessel type, counts the vessels and determines all of the parameters necessary for a fast, complete digestion • Should have provision that user can set the desired parameters for digestion • Should have Automatic Microwave power application depending on the load • Auto sensing of temperature and pressure inside the vessel • Be capable of processing different amounts of samples (from 0.3 g up to 1 g per vessel/) in the same run assuring the same conditions of temperature and pressure
Display	The Instrument should have the high-resolution, colour touch screen, acid resistant, LED/LCD screen should serve as controller and display Should provide training videos for sample preparation vessel assembly, system use, and maintenance Should have Data management – Easy access to stored methods, real-time data and results of past runs Should be able to display the detailed methods, graphs of temperature and power against time and temperature of individual vessels.
Interlocks	The system should have good interlocking system for safety and cavity door.
Rotor & Vessel Assembly	High pressure and high temperature rotor with at least 16 PTFE vessels or more Vessels on the rotor should be segmented for easy use. Maximum Temperature capacity of vessel up to 300 °C

	Pressure capacity of vessel up to 40 bar or more Vessel volume: offered vessels should be able to handle volumes as minimum as 3 ml, 10 ml, 15 ml & 25ml Vessel Material- PTFE-TFM Every vessel must have a vent-and-reseal spring to safely release the pressure in case of overpressure. Burst-disk membrane or self-releasing / continuous venting devices are not suitable due to very low performance. Additional twelve numbers of vessels (of all sizes) as specified above should be supplied along with the system
Magnetron	Dual Magnetron system with rotating microwave diffuser for homogenous microwave power distribution in the cavity. Microwave frequency should be 2450 MHz and installed power should be 1900W minimum (two magnetrons minimum 950 W each) and should provide the temperature needed (300 °C) for difficult samples
Microwave Cavity	The cavity should be made of non-magnetic Rugged high-grade 316 solid steel cavity/ stainless-steel housing with PTFE plasma coating applied at 350 °C for corrosion resistance. Also, all hardware should have 5-layer protective coating for the resistance from acid, alkali and corrosive gases. The Cavity should be constructed with The vessel assembly during a run should be visible from outside
Hardware & Safety	a. Instrument should have adequate safety coatings on housing to prevent any corrosion in the cavity. Additional multiple ports on the side walls of the microwave cavity b. Protected against acids and solvents with polymer coating on both inner and outer surfaces c. Self-resealing pressure responsive and explosion resistant door to ensure d. maximum safety even in case of overpressure release ***e.*** Door completely made of 18/8 stainless steel with ***glass window.*** f. Independent door safety interlocks to prevent microwave emission g. Built-in exhaust system located above the microwave cavity and separated from the electronics to prevent corrosion h. Magnetron protection from reflected microwave power i. Continuous and PID-controlled microwave emission at all power levels
Sensors	1. Temp sensor should be integrated in the system for monitoring & controlling each vessel and cavity temp. Temperature of each vessel should be displayed 2. The software should automatically reduce the microwave power in case of over temperature avoiding sample loss

	3. Automatic Pressure control: should have a pressure sensor/ magnetic pressure control which has a total capability of up to 500psi automatically control the pressure. It should be possible to remove the pressure device at a high pressure. The Vessels should act as self-regulators of pressure
Control: User interface	Software must allow the user to edit, save and run multistep unlimited number of methods (minimum 2000) with atleast 20GB on board / built in memory for storage of data The software must control all parameter online and display temperature, time and power directly on the terminal/computer. The control terminal should have high resolution LED/LCD Acid Resistant display (minimum 18 cm (7 inch)). Touch screen Should have provision for manual programming storage apart from pre-installed program. Continuous display of temperature and power inside the reaction vessels is required
Output	1. One (1) parallel for external printer (HP Deskjet series) 2. Minimum two RS-232 serial ports for connecting PC balance and service check
Operating manuals, service manuals, other manuals for both ICPMS and MDS	Should provide:- User, technical and maintenance manuals in English language List of procedures required for local calibration and routine maintenance service and operation manuals to be provided Advanced maintenance tasks documentation, if any.
Supplier/ Manufacturer for both ICPMS and MDS	• Should be FDA/CE/BIS approved product. • Electrical safety conforms to the standards for electrical safety IEC 60601- General requirements (or equivalent IS/ International Standard) • All suppliers must submit a copy of catalogue showing technical specifications.
Warranty for both ICPMS and MDS	Minimum three years comprehensive onsite warranty with one Preventive Maintenance from the date of installation and commissioning every year. Warranty to be provided by OEM/Manufacturer.
IQ/PQ/OQ for both ICPMS and MDS	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ of instrument

2. All other terms and conditions of the RFP will remains the same.

Sd/-
(Ravinder Kumar Narula)
Assistant Director (QA)

PRE-BID CLARIFICATION **: Procurement of Equipment for NFL, Raxaul (Group-I)**

Gas Chromatograph					
			Thermo Fisher Scientific		
Page	**Module**	**Specifications**	**Our Recommendations**	**Remarks**	**FSSAI comments**
8	Injector (2 or more)	Should be capable of large volume injection Temperature ramped split less, Split and Cold on-column modes or pressure based technology ≥450 *C max. and ≥2 ramps or better.	Should be capable of large volume injection Temperature ramped split less, Split and Cold on-column modes or pressure based technology *≥400 *C max. and ≥2 ramps or better.*	Our GC system has the temperature ramp of ≥400*C for Split-less/Split mode. This amendment requested does not practically impact to any of the food application requirement.	Should be capable of large volume injection Temperature ramped split less, Split and pressure based technology *≥400 *C max. and ≥2 ramps or better.*
8	Headspace Sampler	With a capacity ≥35 vials or better that support 10/20/22/ml or better vial capacity with Pneumatic control	With a capacity *≥100 vials or better that support 10/20/22/ml or better vial capacity with Pneumatic control*	Automation reduces the scope of error & brings ease of operation in practical application of the technology. Same to that of Autosampler (Liquid), the Headspace sampler should also have a capacity high vial capacity for high sample through-put.	With a capacity *≥50 vials or better that support 10/20/22/ml or better vial capacity with Pneumatic control*
9	Electron Capture Detector (ECD)	Minimum detectable amount: Less than 10 fg of lindane or < 0.05 pg perchloroethylene.	Minimum detectable amount: *Less than 5 fg of lindane*	Latest ECD technology has *Less than 5 fg of lindane* detection & should be amended, whereas MDL with perchloroethylene is vendor-specific.	
10	Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site comprehensive *10 days operation + 10 days application training after successful installation*	This technology will be new for State Food Laboratory, thus practical application training to the analyst will be required to use the technology for testing as per actual food testing. Further, this is a common delivery which every reputed vendor can provide.	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site 10 days comprehensive operation and application training from date of installation

8	Autosampler		Fully automated Liquid Auto Sampler/s which should in both injectors without manual intervention & operates through Software.	Automation reduces the scope of error & brings ease of operation in practical application of the technology. Further, this is a common feature which every reputed vendor does have in their advance GC technology.	Fully automated Liquid Auto Sampler in both injectors without manual intervention

ICPMS							
			ThermoFisher Scientific		**Anton Par India Pvt. Ltd.**		**FSSAI Comments**
P**age**	**Module**	**Specifications**	**Our Recommendations**	**Remarks**			
14	Sample Introduction system (b)	Spray Chamber: Peltier cooled spray chamber with an operating temp range from -6°C - +80°C to handle wide range of organic solvents	Spray Chamber: Peltier cooled spray chamber with an operating temp range from **-10°C - +20°C or more** to handle wide range of organic solvents	The spray chamber temperature range for ICP-MS/MS is typically between -10 to +20 deg C that covers all the volatile and non-volatile organic solvents like DMSO, DMF, etc. Thermofisher ICP-MS/MS offers temperature range -10°C - +20°C to cover variety of organic solvents, applicable for food application.			Spray Chamber: Peltier cooled spray chamber with an operating temp range from -5°C to +20°C to handle wide range of organic solvents
				Thus, all ICP-MS supplied in State Food laboratories is complying all food testing requirements within this temperature range.			

15	Sample Introduction system (c)	System should come with Ar gas dilution accessory to handle samples containing TDS of ≥25 or upto 200 times dilution facility.	***<u>This line should be deleted.</u>***	Though, high TDS of ≥25 option is available with every vendor & have addon cost to the system configuration, but does not have any practical use in food testing application. All ICP-MS supplied in State Food laboratories are not using this feature for any food testing application so far.			System should come with Ar gas dilution accessory to handle samples containing TDS of ≥25
14	Sample Introduction system (e)	The system should have at least three dedicated gas channels to use varied collision/ reactions gases like He, O2, NH3, etc for effective removal of interferences in challenging sample matrices. Out of these gas channel one should be a dedicated gas line to use the most reactive 100% Pure NH3 gas	The system should have at least **<u>two</u>** dedicated gas channels to use varied collision/ reactions gases like He, O2, NH3, etc. for effective removal of interferences in challenging sample matrices.	Thermofisher uses mix gas for reaction gas purpose to minimize the effect of toxic gases like ammonia. The Thermofisher ICP-MS offers maximum of two gas lines for cell technology one for collision gas and second one for reaction gas of choice. Thus, amending this specification will not having practical impact to the food testing requirement in current & future scenario.			The system should have at least three dedicated gas channels to use varied collision/ reactions gases like He, O2, NH3, etc for effective removal of interferences in challenging sample matrices. Each gas should be supplied through a dedicated gas line from the cylinder with 99.999% purity
			<u>Last line should be deleted</u>.				
15	Triple Quadrupole Assembly	Triple Quadrupole Assembly	*<u>The word "Triple" should be deleted.</u>*	This seems to be typographical mistake, thus should be corrected.			Word "Triple" removed
16	Ion Detector Assembly (e)	Detector data acquisition rate of 100000 counts /sec.	*<u>This line should be deleted.</u>*	This is vendor specific specification & has no impact to the practical use			Line deleted

				of the system to any food application.			
18	Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site comprehensive training.	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site **comprehensive 10 days operational + 10 days application training** after successful installation	This technology will be new for State Food Laboratory, thus practical application training to the analyst will be required to use the technology for testing as per actual food testing. Further, this is a common delivery which every reputed vendor can provide.			The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site 10 days comprehensive operation and application training from date of installation
18	Microwave Digestion System (MDS)		This is third party supply & specifications can be confirmed by respective vendor only	This is third party supply & specifications can be confirmed by respective vendor only			
	Rotor & Vessel Assembly	High pressure and high temperature rotor with at least 20 PTFE vessels, work station & torque wrench.			High pressure and high temperature rotor with at least 20 PTFE vessels. Closure of the vessel must be possible by hand.		High pressure and high temperature rotor with at least 16 PTFE vessels or more

		Additional twelve numbers of vessels (of both sizes) as specified above should be supplied along with the system			Additional twelve numbers of vessels (of all sizes) as specified above should be supplied along with the system. If the quoted Vessels are capable of handling volumes as asked above, additional Vessels may not be required. Documented evidence in form of technical brochure or user manual clearly mentioning the operating volume range must be provided along with tender bid.	If a vessel is capable to handle all volumes as asked for in tender then additional vessels may not be necessary & hence, the requested amendment.	Additional twelve numbers of vessels (of all sizes) as specified above should be supplied along with the system

		Pressure capacity of vessel up to 100 bar (1500 psi) or more			Working Pressure capacity of vessel 45 bar or more	In case of digestion of reactive samples, sudden overdressed development can result in damage to the Vessels. Hence for highest safety it is important that Vessels can work on high pressures to eliminate any possibility of damage during digestion of reactive samples.	Pressure capacity of vessel up to 40 bar or more

		Automatic Pressure control: should have a pressure sensor which has a total capability of up to 500psi automatically control the pressure. It should be possible to remove the pressure device at a high pressure. The Vessels should act as self-regulators of pressure.			Automatic Pressure control: Precise pressure control must be available for every vessel with the help of electronic sensor or mechanical pressure control with the vessels capable of working pressure upto 45 bar. It should be possible to remove the excessive pressure at a high pressure. The Vessels should act as self-regulators of pressure.	For highest safety during a digestion run, it is important to control pressure for all vessels to avoid any damage to the vessels in case of any exothermic reaction..	Automatic Pressure control: should have a pressure sensor/ magnetic pressure control which has a total capability of up to 500psi automatically control the pressure. It should be possible to remove the pressure device at a high pressure. The Vessels should act as self-regulators of pressure

HPLC						
			ThermoFisher Scientific		Spincotech	
Page	**Module**	**Specifications**	**Our Recommendations**	**Remarks**	**Remarks**	**FSSAI Comments**
11	Quaternary Gradient System with Online Degasser	Pressure operating range: 8500 psi or better	*Pressure operating range: **9,500 psi or** better*	Higher back pressure capability of the system provide high-through-put & better resolving power to future proof the technology investment. This will cover the increasing scope of complex food application, especially with use sub 2/3 micron columns which require almost 1000bar back pressure system capability.	Pressure operating range-7200 psi or better	No change
11	Quaternary Gradient System with Online Degasser	Gradient Mixer: Composition Precision 0.20% RSD or +/- 0.04 min SD, whichever is greater, based on retention time	*Composition Precision: **0.15% SD***	Lower the composition % will more reproduce the RT precession	Composition Precision/ Flow rate precision-0.20% RSD or +/- 0.04 min SD, whichever is greater, based on retention time	No change
11	Quaternary Gradient System with Online Degasser	Solvent Setting Range: 0-100% with 0.1% step	*This line should be deleted.*	Not mentioned in our specification document.		No change
11	PDA Detector	Bandwidth: <5 nm or better	*This line should be deleted.*	Not mentioned in our specification document.		No change

11	PDA Detector	Baseline noise: 8.0 X 10-5 AU at 254 nm or better	Baseline noise: **80** X 10-5 AU at 254 nm or better	This seems to be typographical mistake, thus should be corrected.		No change
11	PDA Detector	Wavelength Range: 190-750nm with inbuilt Holmium oxide filter	Wavelength Range: 190-750nm	Inbuilt Holmium oxide filter is vendor specific feature. Thus, this line should be deleted as minor amendment.	Kindly Remove with inbuilt Holmium oxide filter, as better Technologies comes with different vendors for the same	Holium oxide filter removed
11	PDA Detector	Spectral resolution -1.2 nm or better per photodiode with a Total of 1024 photodiodes, digital and optical (3D modes)			Spectral resolution -1.4 nm or better per photodiode with a Total of 1024 photodiodes, digital and optical (3D modes)	No change
11	RI Detector	Temperature Operating Range: 5º below 25 ºC to 50ºC.	Temperature Operating Range: **30 ºC to 50ºC.**	This seems to be typographical mistake, thus should be corrected.	Temperature Operating Range 5º below 35 ºC to 60ºC.(30-60 ºC)	30 ºC to 50ºC
11	RI Detector	Drift: 1 x 10 -7 RIU/hr	Drift: **2** x 10 -7 RIU/hr	This is minor change in specs to comply with our system offering and will not have impact on any food application.		2 x 10^{-7} RIU/hr
11	RI Detector	Cell Volume: Approximately 10 µL	Approximately 8 µL-10 µL	This will include our system specification & most of the reputed vendors have the range of cell volume 8 µL-10 µL		No change

11	Fluorescence Detector	Excitation Wavelength: Range 200-850 nm	Excitation & Emission Wavelength:	All food applications will be analyzed within the recommended range	Excitation Wavelength Range 200-650nm Emission Wavelength Range 220-650 nm	Excitation Wavelength: Range 200-630 nm
		Emission Wavelength: Range 220-900 nm	Range **<u>220-630 nm</u>**			Emission Wavelength: Range 220-650nm
12	Fluorescence Detector	Sensitivity: should be S/N > 1000 (Raman Spectrum of H2O) as per ASTM Method	Sensitivity: should be **<u>S/N > 550</u>** (Raman Spectrum of H2O) as per ASTM Method	Most of the analysis will cover sensitivity S/N > 550. This change is required to comply with our system offering		should be S/N > 550 (Raman Spectrum of H_2O) as per ASTM Method
		Data Acquisition range should be up to 80 HZ Cell volume should be < 2 micro liter			Kindly Remove Data Acquisition range as not Mentioned in our CatLog , Cell volume should be	should be up to 80 HZ Cell volume should be < 3 micro liter
		Pressure limit up to 500 psi			Pressure limit up to 250 psi	N0 change
	Autosampler	Auto sampler- Sample Capacity >80 x 2 ml vials or more			Auto sampler- Sample Capacity >80 x 1.5 ml vials or more	>80 x 2 ml/1.5 ml vials
		Tray Temperature Operating Range 4 - 40 º C or more with ±0.5 ºC accuracy			Tray Temperature Operating Range 4 - 40 º C or more with ±3 ºC accuracy	Tray Temperature Operating Range 4 - 40 º C

12	Column Oven with preheating capability	Temperature range: 10 to 90° C	Temperature range: **10 to 85° C**	This is minor change in specs to comply with our system offering and will not have impact on any food application.		Temperature range: **10 to 85° C**
13	UPS	Suitable true on - line UPS (10 KVA) to support the instrument back up for 60 mins.	Suitable true on - line UPS **(5 KVA**) to support the instrument back up for 60 mins.	5kVa is sufficient for the above mentioned HPLC configuration & will save cost for the tendering body.		Suitable true on - line UPS (5 KVA) to support the instrument back up for 60 mins
13	Training	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site comprehensive training for a minimum of two scientific personnel operating the system till customer satisfaction	The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site **comprehensive 10 days operation + 10 days application training** after successful installation	This technology will be new for State Food Laboratory, thus practical application training to the analyst will be required to use the technology for testing as per actual food testing. Further, this is a common delivery which every reputed vendor can provide.		The supplier will have to carry out successful Installation at the laboratory premises (where ever the system has to be installed) and provide on-site 10 days comprehensive operation and application training from date of installation
	Accessories to be supplied	Fittings, Frits, ferules and Tubing's · Tubing cutter (2 no.)			Kindly Remove, Shimadzu System does not require these Accessories	No Change

		Solvent filters (Glass & SS both, 08 no. each)			Kindly Put Solvent Filter Assembly instead of Solvent Filters	No Change
		Compatible Manual syringes -10 µl, 20 µl, 50 µl (02 no. each)			Kindly Remove as Auto sampler is Already Mentioned in Specifications	No Change
	MII Purchase Preference				No. As most of the HPLC Supplier are Non Local Supplier and Due to High level Accuracy required for Manufacturing these Analytical Equipment, Most of the Vendors Equipment are not make in India.	
	Splitting				Our Principle M/S Shimadzu Asia Pte Ltd has only two Equipment for the whole scope, so please Amend Bid Splitting so that we and other vendor can Quote Individual items separately	

Requirement	Specifications asked in Tender	Specifications requested for amendments as discussed in Prebid Meeting	Comments- Reason for change	FSSAI Comments
2 NITROGEN GENERATORS				
General	The system should be, PLC Controlled Bench Top of modular design, compact in size, LCD Touch Screen user interface automatic operation, minimum noise level, low operational cost. Nitrogen should be generated from the atmospheric air. Whole system should be compact and properly assembled without any leakage with operating voltage 230v50 Hz	Please amend it LCD/LED to indicate the generator status.	Most of the gas generator comes with LED so both options should be suitable for all venders	The system should be, PLC Controlled Bench Top of modular design, compact in size, **LCD/LED /Touch Screen user interface** automatic operation, minimum noise level, low operational cost. Nitrogen should be generated from the atmospheric air. Whole system should be compact and properly assembled without any leakage with operating voltage 230v50 Hz
Flow rate	0.2-3LPM	As discussed in the meeting, The flow rate should be 600ml/min	The GC requirement is low flow rate with high purity	0.5 L/min or higher
Purity	Better than 99.999%:	The required purity should be 99.9995% as suggested by reputed GC OEMs.	GC site preparation documents has been attached for reference purpose	No change

External Air Compressor	Suitable air compressor for inlet of feed air with necessary drier & filters & 5 m pipeline between air compressor & generator should be included. Air quality of the external air compressor - ISO8573 - 1:2010 Class, 1.4.1(clean dry air to enhance the life of the nitrogen generator. Automatic on off modes depending on pressure side the compressor	Please remove this point because the Stackable compressor has already mentioned and specs are shared	stackable air compressor has already mentioned which save the lab space and avoid the extra piping and civil work.	Deleted
Delivery pressure	up to 8 Bar	Please amend the pressure as - 80 psi/5.5 Bar which is standard operating pressure for the application	The GC application's standard operating pressure is 80 Psi/5.5 Bar	Upto 5.5 bar
Supplier/ Manufacturer	Electrical safety conforms to the standardsfor electrical safety IEC 60601-General requirements (or equivalent IS/ International Standard).	Please remove this point as CE certificate has already mentioned	CE certificate has already mentioned in the same point	equivalent IS/ International Standard is mentioned
Warranty	Comprehensive warranty for minimum three years with two preventive maintenance per year includes PM kits all filters, necessary accessories, spare parts with unlimited breakdown visits on request to be provided. Warranty to be provided by OEM/Manufacturer.	The required preventive maintenance should be once in a year because gas generator are designed to work with yearly PM only.	The gas generators are designed to work with yearly PM only.	Comprehensive warranty for minimum three years with one preventive maintenance per year includes PM kits all filters, necessary accessories, spare parts with unlimited breakdown visits on request to be provided. Warranty to be provided by OEM/Manufacturer

New point to add to ensure the service availability	The company should have at least 100 to 150 installation in east India to ensure the service availability and should have local stationed service engineer as these are ancillary products which required the annual services	.	This will ensure the continuity of service availability in future	The OEM should have at least 100 installations
New point to add for compatibility and suitability	The gas generator should be tested and approved by the reputed GC OEMs, a letter has to be attached for suitability and compatibility.	The gas generator should be tested and approved by the reputed GC OEMs, a letter has to be attached for suitability and compatibility.	This is for the compatibility and suitability of the application as nonapproved gas generators can create a problem	
3. HYDROGEN GENERATOR				
General	Hydrogen gas Generation System to generate 99.999% ultra-pure hydrogen from deionized water. Silent & automatic in operation.	The required purity should be 99.9995% as suggested by the reputed GC OEMs.	GC site preparation documents has been attached for reference purpose which shows the purity of 99.9995%	No change
Purity	99.999% or better	The required purity should be 99.9995% as suggested by the reputed GC OEMs.	GC site preparation documents has been attached for reference purpose which shows the purity of 99.9995%	No change
Pressure: maximum	Pressure should be less than 6.9 bar/ 100 psig	The standard pressure is 6.9 bar/ 100 psi	instead of less than it should be up to 6.9 Bar/100Psi	Pressure should upto 6.9 bar / 100 psig

Outlet pressure in Bars	10 Bars, Output pressure should be electronically adjustable using the display up to IO bar. .	Please remove this point as the pressure has already mentioned in above point and Hydrogen generator does not generate 10 Bar pressure	this point is repeated	Deleted
Internal, water tank (liter)	4 liter or higher	Please amend the tank capacity up to 1.2 Litre	As the generator has inbuilt auto loading water pump to load the water from external waters bottle so the bottle can be 5 or 10 Litres capacity or more.	1.5 liter or higher
safety	Automatic shutdown- internal/external hydrogen leak, over pressure and low water, built -in conductivity sensor, to protect the cell in case the water quantity is not sufficient.	Please remove the "built-in conductivity sensor" as Hydrogen gas generator doesn't have inbuilt conductivity sensor	As it is Hydrogen gas generator not a Water machine so the external conductivity meter can be arrange separately if required.	the "built-in conductivity sensor" is deleted
Interface	Touch screen display with operating parameters in real time, the output pressure, self-diagnostic functions with hydrogen leak detection, water level and gas quality alarms, plus Ethernet and RS 485 connections.	please remove “Ethernet and RS 485 connections” because, the generator already has the touch screen to show the required parameters.	the generator already has the touch screen to show the required parameters so a separate Ethernet cable and computer not required	**“Ethernet and RS 485 connections” is deleted**
Supplier/ Manufacturer	Electrical safety conforms to the standards for electrical safety IEC 60601-General requirements (or equivalent IS/ International Standard).	Please remove this point as CE certificate has already mentioned	CE certificate has already mentioned in the same point	Equivalent IS/International standard

Warranty	Comprehensive warranty for minimum three years with two preventive maintenance per year includes PM kits all filters, necessary accessories, spare parts with unlimited breakdown visits on request to be provided.	The required preventive maintenance should be once in years because gas generator are designed to work with yearly PM only.	The gas generator are designed to work with yearly PM only.	Comprehensive warranty for minimum three years with one preventive maintenance per year includes PM kits all filters, necessary accessories, spare parts with unlimited breakdown visits on request to be provided.
New point to add to ensure the service availability	The company should have at least 100 to 150 installation in east India to ensure the service availability and should have local stationed service engineer as these are ancillary products.	The company should have at least 100 to 150 installation in east India to ensure the service availability and should have local stationed service engineer as these are ancillary products.	This will ensure the continuity of service availability in future	The OEM should have at least 100 installations
New point to add for compatibility and suitability	The gas generator should be tested and approved by the reputed GC OEMs, a letter has to be attached for suitability and compatibility.	The gas generator should be tested and approved by the reputed GC OEMs, a letter has to be attached for suitability and compatibility.	This is for the compatibility and suitability of the application as nonapproved gas generators can create a problem	
4. ZERO AIR GAS GENERATOR				
Residual CO (ppm)	<0.1	Please remove this point as already mentioned in above point that the required hydrocarbon as methene should be 0.05ppm	Hydrocarbon content has already mentioned as 0.05ppm so it is not required	Deleted

Residual CO2 (ppm)	<0.5	Please remove this point as already mentioned in above point that the required hydrocarbon as methene should be 0.05ppm	Hydrocarbon content has already mentioned as 0.05ppm so it is not required	Deleted
Max Output Pressure	Upto 9 bar	Please remove this point as the pressure has already mentioned as 5 bar or more	this point is repeated	Upto 5.5 bar
Interface /display	Touch screen should display flow rate and output pressure.	Please remove this point as LED light to indicate the status of generator has already mentioned	LED light to show the generator status has already mentioned	**LCD/LED**/Touch screen should display flow rate and output pressure.
Supplier/ Manufacturer	Electrical safety conforms to the standards for electrical safety IEC 60601-General requirements (or equivalent IS/ International Standard).	Please remove this point as CE certificate has already mentioned	CE certificate has already mentioned in the same point	Equivalent or International standard already mentioned The OEM should have at least 100 installations
New point to add to ensure the service availability	The company should have at least 100 to 150 installation in east India to ensure the service availability and should have local stationed service engineer as these are ancillary products.	The company should have at least 100 to 150 installation in east India to ensure the service availability and should have local stationed service engineer as these are ancillary products.	This will ensure the continuity of service availability in future	Comprehensive warranty for minimum three years with one preventive maintenance per year includes PM kits all filters, necessary accessories, spare parts with unlimited breakdown visits on request to be provided.

Warranty	Comprehensive warranty for minimum three years with two preventive maintenance per year includes PM kits all filters, necessary accessories, spare parts with unlimited breakdown visits on request to be provided.	The required preventive maintenance should be once in years because gas generator are designed to work with yearly PM only.	The gas generator are designed to work with yearly PM only.	Equivalent or International standard already mentioned
New point to add for compatibility and suitability	The gas generator should be tested and approved by the reputed GC OEMs, a letter has to be attached for suitability and compatibility.	The gas generator should be tested and approved by the reputed GC OEMs, a letter has to be attached for suitability and compatibility.	This is for the compatibility and suitability of the application as nonapproved gas generators can create a problem	