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No. F-8()RMSC/EPM/M-6/2023-24/NIB-796/ 519

Dated: 18/9/23

CLARIFICATION/CORRIGENDUM/ADDENDUM

Subject: Revised Technical Specification, schedule of item "FOOD LAB-High-performance liquid chromatography (HPLC), Gas Chromatograph " under No. RMSC/EPM/M-6/2023-24/NIB-796/354 Date 11.08.2023.

Revised Technical Specification of Item "FOOD LAB-High-performance liquid chromatography (HPLC), Gas Chromatograph"

Technical Specification of High-performance liquid chromatography (HPLC) WITH PHOTODIODE ARRAY (PDA), FLUORESCENCE (FLD AND REFRACTIVE INDEX DETECTOR (RID)

Application: High-performance liquid chromatography (HPLC) is used to separate, identify, 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& C8RP Columns and 5) Detectors (PDA, FLD and RI) The complete : system should be controlled by single software. The Completesystem should be controlled by single software. The system should have the Complete capability to operate the column range from 10 um to sub 2.5 um 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.

Sr. No.	Description	Technical Specification of High-performance liquid chromatography (HPLC)
Quaternary Gradient System with Online Degasser.		
1	Pressure operating range	9000 psi or better
2	Flow Rate Range:	Programmable 0.01 to 2 ml/ min in 0.01 ml/min increments.
3	Flow Precision	±0.1 % RSD or below.
4	Flow Rate Accuracy	±1%
5	Dealy Volume	<1100 µl
6	Eluent Degassing	Online membrane Degasser for all channels
7	Gradient Mixer	1. Quaternary mixing & gradient capability using suitable proportionate valve) 2. Plunger Seal Wash Integral/ 3. Gradient Profiles which include gradient curves: linear, step, concave, and convex 4. Composition Precision 0.20% RSD or +/- 0.04 min SD, whichever is greater, based on retention time
8	Solvent Setting Range	4 solvents setting range:0-100% with 0.1% step
9	Diagnostic Features	Error detection and display, Leak detection & safe leak handling
PDA Detector		
1	Wavelength range	190-750 nm with inbuilt Holmium oxide filter
2	Spectral resolution	1.2 nm or better per photodiode with a Total of 1024 photodiodes, digital and optical (3D modes
3	Linearity range	<5% at 2 AU, 257 nm

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4	Baseline noise	8.0×10^{-5} AU at 254 nm or better
5	Drift	$<1.0 \times 10^{-3}$ AU/h at 254 nm
Suitable peak purity software, Auto threshold for peak purity		
RI DETECTOR		
1	Refractive Index Range	1.00 to 1.75 RIU
2	Noise Level	$\pm 2.5 \times 10^{-9}$ RIU
3	Drift	2×10^{-7} RIU/hr.
4	Cell Volume	Approximately 10 μ L
5	Temperature Control	Temp. controlled Flow cell unit
6	Temperature Operating Range	5°C above 25 °C to 50°C.
Fluorescence Detector		
1	Light Source	Continuous Xenon lamp
2	Excitation Wavelength	Range 200-850 nm
3	Emission Wavelength	Range 220-900 nm
4	Spectral bandwidth	15-20 nm both in the excitation and emission sides
5	Wavelength accuracy	Should be ± 3 nm
6	Repeatability	should be ± 0.2 nm
7	Sensitivity	Should be $S/N > 500$ (Raman Spectrum of H ₂ O) as per ASTM Method
8	Data Acquisition range	Should be up to 80 HZ cell Volume Should be < 2 microliter
9	Pressure	limit up to 500 psi
Column Oven With Preheating Capability		
1.	Temperature range	10° C to 85° C
2.	For column length	Must accommodate upto 300 mm columns
3.	No ofColumns accommodated	Minimum 1
4	Temperature Stability	± 0.1 °C of set temperature
5.	Cooling system	Peltier based or equivalent technology
Autosampler		
1.	Injection Mode	Total vol. Inj / Variable Inj method
2.	Injection Volume Range	0.1-100 ul (Standard)
3.	Sample Capacity	$> 80 \times 2$ ml vials or more
4.	Injection Volume Accuracy	$\pm 1\%$
5.	Injection Precision	$< 0.5\%$ RSD or better
6.	Carry over	0.005% from previous injection
7.	TrayTemperatureOperating Range	4° C - 40 ° C or more with ± 2 °C accuracy or better
Accessories		
1.	HPLC Columns	One each of C8 = 250 x 4.6 x 5 μ m.

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		<p>C18= 250 x 4.6 x 5µm. Cyano = 250 x 4.6 x 5µm. Amino = 250 x 4.6 x 5µm. Phenyl = 250 x 4.6 x 5µm. Silica = 250 x 4.6 x 5µm. All columns must be supplied with respective guard column and holder.</p>
2.	Accessories to be Supplied	<ul style="list-style-type: none"> • 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 HPLC Calibration for PDA, RI and Fluorescence detector • Spare lamps for each detector • Consumables required for each detector must be provided • Accessories required for the process/application shall be provided by manufacturer/supplier.
<p>Software and Hardware Complete System and software configuration must be 21CFR 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.</p>		
1	PC with Printer	<p>Latest Factory set, branded system with 22-23" Full HD Monitor with licensed OSs, MS office standard version and Antivirus for 3 year with Printer – B/W - duplex - laser - Legal, A4- 1200 dpi x 1200 dpi - up to 21 ppm - capacity with Network Card and Bluetooth facility.</p>
2	Service Contract Clauses, Including Prices	<p>List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached;</p>
3	Supplier/ Manufacturer	<p>Must be ISO certified for quality</p>
4	Operating manuals., service manuals, other manuals	<p>Should provide 2 sets (hard copy and soft-copy) of:</p> <ul style="list-style-type: none"> • User, technical and maintenance manuals to be supplied in English language along with machine diagrams: • List of equipment and procedures required for local calibration and routine maintenance: • Service and operation manuals (original and copy) to be provided; • Advanced maintenance tasks documentation, if any. • Certificate of calibration and inspection.
5	Recommendations or Warnings	<p>Any warning signs would be adequately displayed</p>

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6	Warranty	Warranty for 3 Years, extendable up to 3 years, after satisfactory installation and working excluding consumable parts and accessories.
7	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
8	List of Spares and Accessories	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached
9	UPS	Suitable true on - line UPS (10 KVA) to support the instrument back up for 60 min
10	Quality Requirement	Should be compliant with the requirements of FDA/CE/ BIS. <ul style="list-style-type: none">• Quality Certification: ISO certified.• Should provide calibration certificates from NABL acereditd agency every year during warranty & CMC period. Calibration cost will have to be borne by the supplier.
11	IQ/PQ/OQ	On site IQ, OQ of instrument along with document to be provided & supplier to assist till satisfactory PQ of instrument
12	After sales service/Post warranty	Contact details of manufacturer, supplier and local service agent to be provided, including toll free/ Landline Number: Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
13	Compliance statement	The quote should also include a compliance statement vis-à- vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submited will result in disqualification.
14	Outage conditions	After two years of warranty period, 3 years of CAMC shall be undertaken by the supplier. This would also include: <ul style="list-style-type: none">a. Preventive maintenance service: The seller will provide a minimum of two Preventive Maintenance Service visits during a year to the operating base to carry out functional checkups and minor adjustments/tuning as may be required.b. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a call from the buyer. the seller is to provide maintenance service to make the Equipment/system serviceable.c. Response time: The response time of the seller should not exceed 48 hours from the time the breakdown intimation is provided by the Buyer.d. Serviceability of 90% per year is to be ensured. This amounts to total maximum downtime of 37 days per year. Also unserviceability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable for the

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		delayed period. e. Maximum repair turnaround time for equipment system would be 3 days. However, the spares should be maintained in a serviceable condition to avoid complete breakdown of the equipment/system
15	Payment	Payment only after installation, validation and performance demonstration

2.GAS CHROMATOGRAPH

With FLAME IONISATION DETECTOR (FID) and ELECTRON CAPTURE (ECD) and NITROGEN PHOSPHORUS(NPD) DETECTORS

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
1	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.
2.	Oven	<ul style="list-style-type: none"> 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
3.	Pneumatic Controls	0-100 psi or better All Electronic Pneumatic Controls with 0.001 psi precision
4	Injector (2 or More)	<ul style="list-style-type: none"> Should be capable of large volume injection Temperature ramped split less, Split and Cold on-column modes ≥ 450 °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. Should be capable of large volume injection Temperature ramped split less, Split and Cold on-column modes ≥ 400 °C max. and ≥ 2 ramps or better.
5	Auto sampler (Liquid)	<ul style="list-style-type: none"> 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. Robust Liquid auto sampler capable of injecting ≥ 50 samples or better with syringe
6	Detectors	<ul style="list-style-type: none"> The GC must have complete integrated control of all parameters (no external control module) for respective detectors: FID/ ECD/ SPD. FID/ ECD/ NPD. Detector must be independently controlled and operational for maximum sensitivity

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7	Flame Ionization Detector (FID)	<ul style="list-style-type: none"> Linear range: better than 10^7 Minimum detectable amount with/without makeup gases: 1.5 pg C/sec or better with Octane. Operating temperature limits: 450°C with standard ceramic/quartz flame jet or equivalent 28 Auto flame out detection. Acquisition rate 50 Hz or more.
8	Electron Capture Detector ECD	<ul style="list-style-type: none"> 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 pgperchloroethylene.. Operating temperature limits: 400°C
9	Nitrogen Phosphorus Detector	<ul style="list-style-type: none"> Minimum detectable amount: 5.10^{-13} g N/sec and 5.10^{-14} gP/sec OR BETTER Linear dynamic range: better than 10^4 Operating temperature limits: 400 °C or better with standard jet
10	Gas Supplies	<ul style="list-style-type: none"> Required High purity Gas cylinders (2 No. Each) with regulators Nitrogen, Helium, Hydrogen & Zero Air Required High purity Gas cylinders (2 No. Each) with regulators Nitrogen, Helium optional, Hydrogen & Zero Air
Software and Hard ware (Single Point Control Of Software & Hardware)		
12	Software	Complete system and software configuration must be 21 CFR Part 11 compliant. Software: Windows Based software with multi tasking and capability. Software update up to five years
13	Communication Hardware:	Latest Factory set, branded system with 22-23" Full HD Monitor with Printer - B/W - duplex - laser - Legal, A4 - 1200 dpi x 1200 dpi - up to 21 ppm — capacity with Network Card and Bluetooth facility.
14	Application Support	The Application support for stated applications required during method development and validations.
15	Pre-Installation Requirements (PIR)	Provide all PIR of the system.
16	Other requisites for GC with ECD/FID/NPD	Automatic Change Over Manifold for each gas line 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.)
17	Septa for injectors	Non stick, Low bleed, high puncture tolerance and Max. Temp 400 °C (foreach injector), (400 No.)
18	Liners	• Provide all Suitable injector liners required for the system quoted (20 No)
19	Ferrules and Nuts	50 No. (for each column end and other interfaces as applicable), 50 No. for GC with ECD, NPD, FID.
20	Columns for GC Applications	<ul style="list-style-type: none"> Pesticide column (30m x 0.250mm x 0.25qm (HP-5MS / DB-I MS or equivalent) (02 no.) Column for Fatty Acid Profiling with main concern of Trans Fatty Acid Application (02 No.) Column for Cholesterol Application (02 No.)
21	Vials, caps and tool for autosampler (Only compatible sizes should be supplied)	<ul style="list-style-type: none"> 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)

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		<ul style="list-style-type: none"> • 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)
22	Autosampler Syringe	Suitable syringes for quoted auto sampler (4 Nos) Suitable Headspace syringe /valve/loop (4 Nos)
23	Sample Preparation (Water & Food)	<p>QuEChERS Kits for Pesticides and Herbicides in following Matrices:</p> <ul style="list-style-type: none"> • 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.)
24	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
25	Miscellaneous	Consumables required for each detector must be provided
26	Reference Standards	Certified values of Certified Reference Materials (CRM) provided by an accredited Reference Material Producer with stated metrological traceability to the SI for all Fatty Acids including Trans fatty acids, Cholesterol, plant sterols
27	Operating manuals, service manuals, other manuals	<p>Should provide</p> <ul style="list-style-type: none"> • User, technical and maintenance manuals in English language • List of equipment and procedures required for local calibration and routine maintenance • Service and operation manuals to be provided. Advanced maintenance tasks documentation, if any.
28	Recommendations or Warnings	Any warning signs would be adequately displayed
29	Warranty	Warranty for 2-year, extendable up to 3 years, after satisfactory installation and working excluding consumable parts and accessories.
30	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
31	List of Spares and Accessories	List of all spares and accessories (including minor) with part numbers and price, required for maintenance and repairs in future after guarantee/warranty period should be attached
32	UPS	Suitable on - line UPS (10 KVA) to support the instrument for 60 mins.
33	Quality Requirement	Should be compliant with the requirements of FDA/CE/BIS Quality Certification: ISO certified. Should provide calibration certificates from NABL accredited agency every year during warranty & CMC period. Calibration cost will have to be borne by the supplier. All calibration certificates must be from ISO 17025 2017 certified laboratory
34	IQ/PQ/OQ	On site IQ, OO of instrument along with document to be provided supplier to assist till satisfactory PQ of instrument
35	After sales service/ Post warranty	Contact details of manufacturer, supplier and local service agent to be " provided, including toll free/ Landline Number; Should have a good after sales service/technical support capable of reaching at short notice the places where instrument is installed. Visits and unlimited breakdown calls by service/application support, engineers should attend immediately without fail. Should carry out yearly PM with at least one PM kit Comprehensive AMC cost/rate for 3 years after warranty shall be quoted. Terms and conditions for the comprehensive AMC, after the warranty period has to be specified
36	Compliance statement	The quote should also include a compliance statement vis-a-vis specifications in a "tabular form" clearly stating the compliance and giving justification, if any supported by technical literature. This statement must be

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		signed, with the company seal, for its authenticity and acceptance that any incorrect or ambiguous information found submitted will result in disqualification.
37	Outage conditions	<p>After two years of warranty period, 3 years of CAMC shall be undertaken by the supplier. This would also include:</p> <p>a. Preventive maintenance service: The seller will provide a minimum of two Preventive Maintenance Service visits during a year to the operating base to carry out functional checkups and minor adjustments/tuning as may be required.</p> <p>b. Breakdown Maintenance Service: In case of any breakdown of the equipment/system, on receiving a call from the buyer, the seller is to provide maintenance service to make the equipment/system Service Cable</p> <p>c. Response time: The response time of the seller should not exceed 48 hours from the time the breakdown intimation is provided by the Buyer.</p> <p>d. Serviceability of 90% per year is to be ensured. This amounts to total maximum downtime of 37 days per year. Also unavailability should not exceed 2 working days at one time. Required spares to attain this serviceability may be stored at site by the seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime 'Liquidated Damages' would be applicable for the delayed period.</p> <p>e. maximum repair turnaround time for equipment/system would be 3 days. However, the spares should be maintained in a serviceable condition to avoid complete breakdown of the equipment/system</p>
38	Payment	Payment Only after installation, validation and performance demonstration

Please note that all clarification/amendment/corrigendum in technical specifications/bid conditions is the integral part of the bid document. This corrigendum/ addendum should be signed and annexed with bid document.

All other terms & conditions remains the same.


Executive Director (EPM)
RMSCL, Jaipur

