NATIONAL DOPE TESTING LABORATORY

WADA Accredited Lab

ISO/IEC 17025:2005 & 17043:2010 - NABL Accredited Lab

Cer.No. T-0607, T-1747 & P-0008

Ref. No. 172/Admn/NDTL/2016-17 Date 8.11.2016

CORRIGENDUM

Technical Specifications for Procurement of one LC-QTOF or Equivalent Technology System.

All prospective bidders are hereby advised to follow the revised Technical Specifications uploaded herewith all are requested to read the Section-XIII of the said tender with the amended Technical Specifications before submitting the bid.

The previous Technical Specifications at Section-XIII in the tender form previously uploaded, stands cancelled.

This issue is approval with competent authority.

8/11/16

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Section-XIII
Technical Specifications
Of
ULTRA PERFORMANCE LIQUID CHROMATOGRAPHY, HIGH RESOLUTION QUADRUPOLE TIME OF FLIGHT MASS SPECTROMETER - (LC-QTOF OR EQUVALENT TECHNOLOGY) SYSTEM

S.No.	Brief Description of items	Specification
Quadrupole Time Of Flight Mass Spectrometer - (Q-ToF) or Equivalent Technology System:		
1	**Ion Source**	**The instrument must be equipped with a dedicated Ionization source assembly for ionizing samples in both ESI & APCI sources.** Facility for switching between the two ionization types (ESI & APCI) during a single LCMS experiment should be available. Positive and negative ionization capabilities must be included as standard on the instrument. An isolation valve must be fitted to the source to allow the source elements to be removed and cleaned without breaking instrument vacuum, maximizing instrument uptime. ESI Flow Rate Range: Up to 2ml/min or more without the use of splitter.
2	**Mass Analyzer**	The instrument should be capable of operating in following modes: **Quadrupole Mass Range / Quadrupole Isolation Range:** 1200m/z or better **TOF Mass Range:** The mass range of the analyzer must be 2,000 m/z or better.
3	**Vacuum System**	Suitable Vacuum system to operate the instrument.
4	**Acquisition Rate**	Minimum 25 Spectra per second or **12 Hz/sec** or Better maintaining a resolution of ≥ 35,000 FWHM in MS mode. **(Separate scan speed should be defined for MS mode & MS/MS mode)**
5	**Resolution in MS mode**	i) For mass range above 1000 m/z must be ≥ 40,000 FWHM ii) For mass range upt 1000 m/z must be ≥ 25,000 FWHM **Note: a) Particular Masses used in both the case should be mentioned** **b) Resolution in MS/MS mode and the mass used should also be mentioned.**
6	**Mass Accuracy**	Minimum 1 ppm, in MS mode and 2 ppm in MS/MS mode on 10 consecutive repeat measurements using suitable lock mass.
7	**Sensitivity**	S/N ratio & MS-MS sensitivity of 1 pg on-column reserpine injection should be greater than **250:1** with the above claimed resolution.
8	**Direct Infusion**	Syringe pump or equivalent for direct infusion of samples.
9	**Reference Mass Introduction.**	The instrument should be capable of internal reference mass correction for MS and MS/MS operation without losing sensitivity
10	**Interface**	a) The design of the instrument should be to maximize the intake of ions that are generated during to ionization stage in to the mass analyzer, by following it up with a design to reject the excessive neutrals that are taken into the system along with the ions, like Ion Funnel Guide / Step Wave or any other technology. b) A third dimension of Ion separation particularly isobaric species, co-eluting ions using advanced technology based on Ion mobility or **equivalent technology** should be part of the module. The control of ion mobility device **equivalent technology** should be through software.
11	**Acquisition Modes**	Following acquisition modes must be available: 1. MS Scanning 2. MS/MS product Ion Scanning 3. Simultaneous MS & MS/MS scanning. The software should be capable of data acquisitions whereby high and low collision energy data is acquired simultaneously to provide fragmentation data for all detectable molecular ions. 4. Additional mode of operation of the equipment to maximize specificity with

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		MRM quantitation using high resolution fragment ions, to do Qual/Quan applications at sub ppb level in a single run.
12	**Computer**	A suitable computer with heavy duty printer to operate the system.
13	**Operating Software**	The software should be user friendly & have capabilities to perform the following functions. Integrated sample/calibrant delivery system + programmable divert valve Automated mass calibration Software tools for addressing Screening, Component Identification & Structural Elucidation workflows. The data processing software must incorporate an elemental composition calculator as standard. Included into the calculator must be algorithms for isotope pattern modeling that allow data interpretation of actual isotope patterns. A goodness of fit from actual to theoretical isotopes must be included. The ability to filter out incorrect elemental composition calculations through the use of intelligent spectral interpretation algorithms must be incorporated. Suitable software for detection and identification of metabolites (expected and unexpected), minimizing false positives and generating extensive metabolite lists using various mass defect filters should be quoted. The software should also have capability for assigning structures by taking fragment ion spectra into account and automatically calculating fragments based on algorithms.
14	**Gas Generator**	A suitable and efficient/ high quality gas generator with built-in compressor capable of providing all the gases at the required purity (99.99%), pressure and flow rate for the QTOF Mass Spectrometer must be quoted. The compressor should be noise-free.
15	**LIQUID CHROMATOGRAPHY UPLC SYSTEM:** A liquid chromatography system should provide an integrated configuration for solvent and sample management with the following specifications	
	Pump:	**Quaternary Gradient Pump /Solvent Manager** with low pressure mixing. **Operating Flow Rate Range** to be 0.010 to 2.000 mL/min, in 0.001 mL increments. **Operating Pressure** should be 15000 psi or better. **System Delay Volume** < 400ul, independent of system backpressure (with standard mixer) The chromatography system should be capable of being operated both as a HPLC & UPLC by interchanging the column chemistries.
	Auto sampler:	An auto sampler should be quoted with a Sample Carryover < 0.005% or < 2.0 nL, whichever is greater (with dual wash).
	Column Heater:	A column heater should be quoted with Column Tracking & Storage Devices.
	Photo Diode Array Detector:	**Wavelength Range** : 190 - 800nm. **Wavelength Accuracy** : ±1nm or better **Optical Resolution** : 1.2 nm or better **Flow Cell Path Length** : 10 mm **Flow Cell Volume** : **13ul/10** mm or 2.5ul/5mm or better. (Please specify the Exact flow cell volume.)
16	**Single Point of Control**	Single point control for both LC and MS system
17	**Training**	**Training for application and maintenance at application lab for 4 persons".** The company should demonstrate the same model at application lab which they have quoted in the Tender.
18	**UPS System**	15 kva ups with one hour power back-up
19	**Others**	Any other auxiliary items such as gas regulator, gas purifier etc. etc
20	**Warranty**	1 Year standard warranty from the date of installation.