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. Ref: F.No. 36/Admn./NDTL/2016-17

Date .....

Date : 13/10/2016

CORRIGENDUM-2

Reference to Tender ID. **2016_NDTL_121780_1** (Ref. No. **36/Admn /NDTL/2016-17**) for procurement of Liquid Chromatography Triple Quadrupole Mass Spectrometer (LC-MS/MS) system and in continuation to the second pre-bid meeting held on 07.10.2016.

1. The Technical Committee has revised the Technical Specification of LC-MS/MS & is being published as corrigendum-2. All the bidders are requested to go through the revised Technical Specification before submitting the said tender.

2. **The last date of submission & opening has been postponed to 24.10.2016.**

3. The prospective bidders are also requested to read the header of the tender from page no. 38 to 45 as "01 (one) No. of LC-MS/MS" only instead of "02 Nos. of GC-MS/MS & 01 No. of LC-MS/MS system" and the same will apply at page 36 for CAMC & page 44 under part III(b) as this is typographical error.

Alka Beotra 13.10.16

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REVISED TECHNICAL SPECIFICATIONS OF LC-MS/MS

LIQUID CHROMATOGRAPH COUPLED TO TRIPLE QUADRUPOLE MASS SPECTROMETER (LC-MS/MS).

General requirements (this clause to be given in tender instead of technical specifications)

1. The manufacturer has to provide a good after sales service support. The shutdown problem in the machine should be rectified within 24 hours and 72 hrs if any part is required to be replaced.

S.no	DETAILS	SPECIFICATIONS
1.	PUMP	**1.** High pressure Binary gradient pump with minimum 2 channel Vacuum Degasser. **2.** Operating Flow Rate Range: 0.01 to 2.000 ml/min, in 0.001 ml increments **3**.**Maximum Operating Pressure:** 15000 psi or more **4. Flow Precision**: 0.075% RSD or better **5. Flow Accuracy**: ± 1.0% or better
2.	**AUTO SAMPLER:**	**1. Sample Capacity:** Minimum 80 of 2 ml vials. **2. Injection Volume Range**: 0.1 – 20 ul, Increment: 0.1 µl. **3. Accuracy**: ± 1%. **4**. **Sample Temperature Control**: 4 to 40^0 C, programmable in 1^0 C increments **5. Sample Carryover**: < 0.05% or better.
3.	**COLUMN OVEN:**	**Column Temperature Control**: 5^0 C above ambient to 80^0 C.
4.	**MASS RANGE (AMU)**	10-1200 amu or better
5.	**VACUUM SYSTEM**	A robust high efficiency vacuum system with minimum maintenance and utility with low noise level. Vacuum read backs and system vent/pump cycles must be digitally monitored and controlled, to provide total software control and to ensure fail-safe operation in the event of power failure.
6.	**QUADRUPOLES**	Quadruples having high standards of mass stability 0.1 Da OR better for 24 hours in varying lab temperature conditions. Pre-aligned pre-filters to ensure excellent focusing of ions into the Quadrupoles for high sensitivity and resolution. Also any device in the ion optics to minimize the ion losses will be desirable.
7.	**RESOLUTION**	0.7 amu in MRM/SRM OR better

8.	**MASS ACCURACY**	0.1 Dalton or better over the entire mass range.
9.	**SCAN SPEED**	should have the scan speed of 10000 amu /sec or above
10.	**MRM CHANNELS**	More than 10000 MRM channels should be monitored in a single acquisition method with a combination of dwell time for each transition and total scan time so that sufficient data points for each peak could be achieved.
11.	**Minimum MRM dwell time**	1 ms
12.	**INFUSION DEVICE**	An infusion device must be integral/attachable to the instrument .
13	**SENSITIVITY**	Low detection limits and highest sensitivity. A 1pg on column injection of Reserpine should give a chromatographic signal to noise greater than 5,00,000:1 for an MRM transition of m/z 609>195 in ESI positive & chloramphenicol should give chromatographic signal to noise greater than 1,50,000:1 in ESI Negative.
14.	**COLLISION CELL**	High pressure confined collision cell operation with drag correction facility to allow use of very high scan speeds without sacrificing sensitivity and eliminate cross-talk to enable multiple MRM transition studies within a single run. Must ensure no loss in resolution / sensitivity in all kinds of scans even at very high scan speeds and should allow for use of low dwell times of 1-2 ms. Cross talk should not be detectable with 1 msec dwell time and 3 msec inter-MRM pause time The instrument must be capable of high energy fragmentation without any low mass cut off in ms/ms spectra.
15	**DETECTOR**	Latest technology Pulse Counting CEM/PEM/PMT detector to ensure wide dynamic linear range. Dynamic range of at least 5 orders of magnitude.
16.	**ION SOURCE**	**a)** Electrospray Ionization **b)** APCI- Atmospheric Pressure Chemical Ionization Source. Ion Sources Should Be Capable Of Minimizing Peak Tailing And Carryover In Fast Chromatography And Flow Injection Analyses With Effortless Flexibility And Best Detection Limits Due To Improved Ionization Efficiency, Reduced Chemical Noise And Enhanced Gas Dynamics Enabling Lowest Levels Of Detection and Quantitation. Source housing with ESI Probe or APCI Probe Maximum temperature: 550ºC. All the above ion sources should be easily inter-changeable by the user himself. Ion source cleaning should be done without venting.
17.	**OPERATING MODES/ACQUISITION MODES**	Precursor ion scan. Full product ion scan. multiple reaction monitoring scan, Full scan and MRM in single acquisition.
18.	**COMPUTER**	I7 processor, 8GB RAM, 1TB HDD, OS window 7 with a 24" Flat Panel

	PLATFORM	Monitor with multitasking capabilities (i.e. Data may be processed as it is being acquired) and LC control from same computer. Also the software should have capabilities to perform the following functions. **1.** Automated calibration and quantitative optimization. **2.** Automated MS to MS/MS and switching during a single run with user selectable criteria. **3.** Perform alternating Positive/Negative scans in one run. **4.** Automated quantitation and reporting of acquired samples.
19.	**GAS GENERATOR**	A suitable extremely Low Noise, Vibration free gas generator capable of providing all the gases required for the Mass Spectrometer must be quoted. Preferably the quoted system should not have requirements for additional gas cylinders or regulators.
20.	**SPECIFICATION SHEET**	A detailed specification sheet highlighting all above specs along with detailed experimental conditions must be attached.
21.	**NO OF INSTALLATION**	List containing contact details of the user and institutions should be provided.
22.	**OTHER REQUIRMENTS**	a) Rate for CMC/extended warranty for 5 years after the warranty period should be quoted. b) Five year CMC /extended warranty (after expiration of standard warranty) with spares hardware parts, electronics accessories included from the date of installation for the entire quoted LCMS/MS configuration along with Generator & UPS system. C) PM & Calibration kit to be supplied every year during extended warranty period. A list of consumables not covered under CMC to be provided along with bid. d) The manufacturer has to provide a good after sales service support. The shutdown problem in the machine should be rectified within 24hrs & 72hrs if any part is required to be replaced. A undertaking in this regard should be given alowng with the quote. e) Assurance for the necessary consumables/spares for both HPLC and MS/MS system for five year should be quoted. f) The bidder must provide undertaking for assuring supply of necessary consumables & spares parts for 10 years after installation.
23.	**General**	**1. UPS**: It must be quoted with appropriate UPS 10 KVA online with 1 hr battery backup. **2. Printer:** It must be quoted with a high speed advanced generation dedicated printer to efficiently cater the data output during analysis.