

Item-1

Benchtop LC MS/MS System:

We require a Benchtop Mass Spectrometer coupled with Ultra High Liquid Chromatography (UHPLC- MS/MS or MSn) for high sensitivity mass screening, identification and quantification workflows.

Applications/Workflows:

- ° Should be capable to do Small Molecules Identification and Characterization
- ° Should be capable to do Peptide Identification and Quantification.
- ° Should be capable/ upgradable to do Post Translational Modification analysis of Proteins and Peptides.
- ° Should be capable to do Secondary metabolites (Targeted and Non-Targeted workflows).

Technical Specifications:

1	Mass Range	15-4000 m/z or better
2	Mass Analyzer	Advanced mass analyzer should be capable of MS/MS or MSn for fast, high-sensitivity scanning. System must scan both in positive and negative ion detection modes.
3	Integrated Divert Valve	The divert valve must be under fully automated data system control. The divert valve must enable the user to switch the solvent front, gradient end point and any other portion of the UHPLC run to waste
4	Integrated Syringe Pump	It should have an integrated syringe to allow for automated infusion under data system control.
5	Max Scan Speed:	52000 Da or better.
6	Mass accuracy	System should have mass accuracy of ± 0.15 amu within the calibrated standard mass range at fastest Scan resolution in full scan mode with proper calibration or better
7	Resolution	Unit mass >0.1 U
8	MS/MS or MSn Information	MS ³ or ⁴ information for structure elucidation (or) more.
9	Sensitivity :	Femtogram level of sensitivity: 1 μ l of 500 femtogram reserpine with the S/N of 100:1 or better
10	Vacuum System	A fully protected air cooled vacuum system using turbo molecular pumps and rotary pumps. Vacuum read backs and automated vent system.
11	Linear Dynamic range	At least 5 orders of linear dynamic range for quantitative acquisition.

12	Operating mode	<ul style="list-style-type: none">• Full-scan mass spectra for sensitive analyses and rapid screening of unknown compounds• Scan function that can be useful for identification and quantification• Selected Ion Monitoring (SIM) for selected ions for target compound analysis• Reaction Monitoring (RM) for a traditional LC-MS quantitative analytical experiment• MS/MS and more• Precursor ion scanning
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13	Low mass cut off	The instrument should have operating modes to avoid low mass cut off for lower mass ID.
14	Ion Source Electro Ionization spray (ESI) specification	<p>ESI Ionization Source : Flow rate of 1 µl- 1 ml/min or better</p> <p>Zero Delay polarity switching between positive and negative modes and should be under software control.</p> <p>The quoted system should have an option for a future upgradable to ETD Fragmentation module.</p>
15	Computer Platform	A standard make PC with all necessary hardware and operating software required to operate all the specified equipment's. All hardware and software including drivers, heavy duty duplex laser printer, 24 inch TFT color, The computer must control the mass spectrometer; LC system & auto sampler in an integrated manner. Licensed copies of all software for the complete system including the computer should be provided.
16	Operating Software	<p>The software should have capabilities identification and quantification to perform the following functions.</p> <p>System parameter checking and alerts</p> <ul style="list-style-type: none"> • Method editor with comprehensive application-specific template library and drag-and-drop user interface to facilitate method development • Automated quantitative data processing and reporting capabilities. • Direct control of LC systems and autosampler configurations through software
17	Application Software	The software should have capabilities such as automated mass calibration, resolution, and sensitivity check, elemental formula with mass and isotopic fit value. The data processing software must incorporate an elemental composition calculator and charge deconvolution module. Software should include Quantification package and Library Search module for search of MS, MS/MS and fragmentation spectra with advance mass algorithm. Software tools should have screening, component identification & structural elucidation workflows. Should provide curated spectral library for toxic substance/analytes, pesticides, and dedicated software for forensic toxicology and Drugs of abuse analysis.
18	Gas generator	A suitable Nitrogen gas generator with built in noise-free compressor at the required gas purity, pressure and flow rate for the Mass Spectrometer must be quoted. All the required accessories such as other essential gas cylinders with regulator for operation of the instrument should be supplied along with the instrument.
19	UPS	Branded 10KVA UPS with one ½ battery backup and with isolation transformer
20	Single Vendor solution	For both LC and MS system

Specifications for High Performance Liquid Chromatography (HPLC) System

Binary pump:

- Flow rate range 0.001–2 mL/min or better
- Flowrate accuracy $\pm 1\%$ or better
- Flow precision $< 1\%$ RSD or better
- Pressure range 14000 psi or more
- Proportioning accuracy $\pm 0.1\%$ (of full scale)
- Proportioning precision $< 1\%$ SD
- No. of eluent lines 2 or better

Analytical Autosampler:

- Sample capacity 96 Nos. of 1.5 mL/2.0 mL vials,
- Injection volume range 0.1–50 μL
- Injection volume accuracy From $\pm 0.3\%$ to $\pm 1\%$ at 50 μL
- Carry over $< 0.001\%$ or better
- Sample thermostating 4–40 $^{\circ}\text{C}$ or better

Column Oven:

- Column temperature controls 5 $^{\circ}\text{C}$ above ambient to 90 $^{\circ}\text{C}$ or better
- Shall have provision to accommodate more than one column to allow easy switching between the two.
- One C-18 and one C-8 Column with guard column should be offered.

21	Warranty:	3 years (Standard)
22	System Performance	A minimum of Five installation of the same quoted model and detail should be provided.
23	Additional Warranty	Extended Warranty 2 yr Should be Quoted separately
24	AMC	AMC Charge should be quoted after the expiry of standard warranty
25	Spares	Small equipments required for making the equipment functional need to be supplied (Vortex, ultrasonic water bath, digital balance, SPE setup, pipette set, vibration free table and AC etc need to be supplied by the vendor)
26	Manpower support	A full time application scientist for two years must be provided by the vendor at Gujarat University for analysis and interpretation.
27	Optional:	a) Spares and consumable list for trouble free operation for three years need to be quoted separately, also indicate the price for each items separately.