INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
Materials Management Division
For IIT GOA

Liquid Chromatography-Single Quadrupole Mass Spectrometer System (LC-MS) for:
Quantification and confirmation of small molecules, synthetic organic chemistry applications, medicinal chemistry applications, other target compounds in known /unknown matrices.

1. Core Specifications

Item	Specifications	Description
1	One Vendor Solution	Both the Liquid Chromatograph and Quadrupole mass spectrometer must be manufactured, supplied and installed by a single vendor to provide a seamless integration between the LC and MS
2	Service and Support	Both the Liquid Chromatograph and Mass Spectrometer must be fully supported by the supplier to provide a seamless instrument diagnostics between the LC and MS. At least 10 years spares support need to be provided.

2. Specification for Single Quadrupole MS System

Item	Specifications
1	**Ion Source**
	Must have ESI probe and should have easy upgradability and changeability to APCI, APPI or multimode sources. APCI source should be offered too.
2	**Mass Range**
	2-2,000 amu or better
3	**Analyzer Type**
	Quadrupole Analyzer
4	**Mass Accuracy**

	Should be better than ± 0.005Da along with spectral accuracy of 99% to predict right chemical/ empirical formula.
5	**Scan Speed**
	10,000 Da/Sec or better
6	**ESI Sensitivity (SIM Mode)**
	The instrument should give pg level sensitivity and 10 pg on column injection of Reserpine should produce S/N ratio at least better than 700:1
7	**Spectral Accuracy**
	Should be better than 98%
8	**Linear Dynamic Range**
	Must have 6 orders of linear dynamic range
10	**SIM Dwell Time**
	Should be 5 msec or better
11	**Vacuum System**
	Highly efficient vacuum systems consist of Turbo molecular pumps followed by rotary mechanical pumps must be provided
12.	**Resolution:** Unit Resolution
13.	**Mass Stability:** 0.1 Da across 12 hrs

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3. Liquid Chromatograph Specifications

Item	Specification	Description
1	**Pump**	Must be Quaternary gradient pump capable of high pressure mixing and delivering solvents at a min 8,000psi pressure or better. Suitable degasser to be supplied along with the system.
2	**Flow Rate**	Must be 0.001-5ml/min in 0.001ml increment or better
3	**Flow Precision**	Must be less than 0.07% RSD
4	**Flow Accuracy**	Must be better than 1%
5	**Composition Accuracy**	0.4% or better
6	**Composition Range**	Settable range should be 0-100%
7	**Auto Sampler**	Must be capable of holding at least 100 samples or better. Carryover should be less than 0.05% as measured for Caffeine calibrant. Needle should be stainless steel; Quote for min 2 needles.
8	**Column Compartment**	Column oven should go till 80 Deg C Temperature stability ±0.1 Deg C Preferably should have capacity to hold multiple columns
9.	**Detector**	DAD/PDA Detector 190-900 nM with accuracy of 1 nM No. of Diodes should be >1000 elements The light source should include Deuterium as well as Tungsten lamps
10.	**Columns**	C18 column
11.		The tool kit and starter kit should be quoted for routine running and maintenance of HPLC system

4. Data Management System

Item	Specifications with Description
1	High Power latest processor computer and required software to control the system to be supplied along with instrument 24 inches LED monitor for the computer

2	**Integrated software to control MS and LC together** The software should be capable of doing qualitative and quantitative work on LC-MS platform.
3	The Software shall be capable of auto calibration and all quantitative work flow

Notes:
1. Warranty: Instruments should be covered with comprehensive warranty (spares and servicing) for at least 3 years from the date of installation
2. UPS: 10 KVA online UPS of 30 mins or more backup should be quoted.
3. **Printer:** A laser printer which will be connected with the LC-MS system should be quoted.