

Technical Specification for Ion Chromatography		
Sl. No	Component	Specification
1	Vendor eligibility criteria	<ol style="list-style-type: none"> 1. A list of at least 3 Institutions/R&D units/Industries where similar instruments have been supplied in India, including contact details (name of the person-in-charge, email, and phone number), should be provided. 2. The quoted model's three performance certificates in reputed institutions in India should be enclosed duly signed and stamped by the concerned scientist.
2	General Features	System should be designed and manufactured under ISO-9001. The multi-functional data system should be based on Microsoft Windows operating system for instrument control, data acquisition and data analysis.
3	Core Specifications	<ol style="list-style-type: none"> 1. Ion Chromatography system: Gradient - compatibility with mobile phases (like KOH, NaOH for anions and MSA for Cations) with Conductivity Detector, Self-Regenerating Suppressors for both for anions and cations, columns for analyzing anions (like - fluoride, chlorite, chloride, chlorate, bromide, bromate, nitrite, nitrate, phosphate, sulfate etc.) cations (Alkali-alkali earth metals, amines, ammonium etc.), organic acids, oxy anions etc., with fully system control software. 2. Ion Chromatography system can quantitatively analyze carbohydrates like monosaccharides and disaccharides.
4	Pump	<ol style="list-style-type: none"> 1. Quaternary Gradient Solvent Delivery Pump: - Non-metallic PEEK base compatible for 0-14 pH & RP compatibility for 4 solvents gradient as per the following specification. Quaternary gradient pumps must support an unlimited number of linear, convex, concave eluent gradient profiles with gradient proportionating accuracy $\pm 0.5\%$. 2. Flow rate range: 0.001 – 10.0 mL/min or better. 3. Maximum operating pressure: 5000 psi or better. 4. Pressure ripple: < 0.1% or better. 5. Flow precision and accuracy: < 0.1% or better
5	Ion - Exchange column and detector specification	The column set must be comprised of a non-metallic body and an inert packing material capable withstanding at least 3000 psi and have a pH stability of 0-14 pH and RP solvent. High capacity polymer base columns with capacity more than 250 μeq for Anion and organic acid analysis, Cation polymer

		base column should have capacity more than 8000 µeq
6	Suppressors unit	Online Self Regenerating membrane base Suppressor for both Anions and Cations application to eliminate counter ions from solvent & sample. Suppressors should utilize electrolytic suppression. Suppressors should automatically produce regenerant required for the application & provide continuous regeneration, so as to reduce background conductivity and enhance detection limit with day to day consistency with low noise and drift. Suppressor device must be able to suppress carbonate, hydroxide, or methane sulfonic acid eluents as required for EPA, ASTM, ISO, or other standardized methods. The suppressor must be operated electrolytically or chemically continuously without the need of switching motors and based on a single membrane based ion exchanger.
7	Conductivity detector	<p>Detector Enclosure with Dual Independent Temperature Zones, One Injection Valves, Standard Bore to mount various accessories like another sample injection valves, multiple columns with temperature of 10-70 deg. C , it should have capability of two detector electronics with temperature control from 10-40 deg. C.</p> <ol style="list-style-type: none"> 1. Cell volume: < 0.8 µL or better 2. Range - Digital Analogue: 0.01 - 15000 µs or more 3. Resolution: 0.0024 ns or better 4. Cell Drive: 8 kHz square wave or better 5. Noise: < 0.1 nS at 1 µS/cm background 6. Cell temperature stability: < 0.0010C or better
8	Items to be quoted optionally	<ol style="list-style-type: none"> 1. Analytical columns with guard Columns for cyanide, sulphide etc., and mono and disaccharides application should be quoted along with necessary detector and electrode. 2. Autosampler: Automated sample for loading of samples having a capacity of 50 Poly vials of 5ml or 0.5 ml vial size and quantity of 500 with Vial cap removal tool and necessary accessories.
9	Software	<ol style="list-style-type: none"> 1. Chromatography software to control complete IC system, data acquisition, processing & reporting, etc. The software must be able to provide full automatic control of the process of analyzing samples. This must include acquiring data,

		<p>quantitation, producing a report, and the options to upgrade to an incorporated excel like spreadsheet for report flexibility.</p> <ol style="list-style-type: none">2. The software must be able to automate integration updates without time consuming batch reprocessing of changes to an integration in a data set. The software must have an option to predict column separations without additional experiments.3. Included PC should meet the minimum requirements such as desktop with the i-5 processor, 8 GB RAM, 1 TB, Windows 7 home basic or better, and 28 inches or more LED monitor.4. PTFE disposable electrodes should also be quoted for carbohydrates applications for high sensitivity.5. Installation and commissioning of instrument should be carried out at site.6. Minimum 3 years warranty with 2 years free service.7. A service center must be available in Chennai for service engineers to attend to the instrument for maintenance or troubleshooting.8. On-site training for the operation of the hardware and software systems should be included.
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