Open Competitive Bidding

TENDER DOCUMENT

FOR

PROCUREMENT OF

SCIENTIFIC EQUIPMENT

FOR

CENTRE OF EXCELLENCE IN CHEMICAL SCIENCE AND TECHNOLOGY
K S K V KACHCHH UNIVERSITY

The Registrar
Centre of Excellence
in
Chemical Science & Technology
Department of Chemistry
K S K V KACHCHH UNIVERSITY
BHUJ – 370 001

Ref. No. KU/Chem/CE/Tender-E-2/2012-13/2810

Notice Inviting Tender Details

S.No	Description	
1.	Department Name	Center of Excellence in Chemical Science & Technology, Krantiguru Shyamji Krishna Verma Kachchh University,Bhuj-370 001 (Gujarat)
2.	Procuring For	Department of Chemistry, Krantiguru Shyamji Krishna Verma Kachchh University
3.	Circle/Division	NA
4.	Tender Number	KU/Chem/CE/Tender-E-2/2012-13/2810
5.	Tender Subject	Supply, Installation, & Commissioning of Scientific Equipment
6.	Period of Contract	THREE YEARS
7.	Form of Contract	Schedule Wise
8.	Tender Type	Open
9.	Tender Category	Products (both Hardware and Software)
10.	EMD / Bid Security (INR)	5% of the Order value or maximum of ₹ 1,00,000/- (Enclose in separate cover)
11.	EMD/Bid Security Payable To	In the form of Demand Draft in favor of "The Registrar, K S K V Kachchh University, Bhuj"
12.	Non-refundable Tender Fee	₹ 2,000 /- (to be enclosed in separate cover) for each equipment
13.	Tender Fee	The DD should be drawn in the favor of "The Registrar, K S K V Kachchh University, Bhuj" The Applications can be downloaded from the websites kskvku.digitaluniversity.ac & www.nprocure.com This DD can be submitted along with the Tender bids. **Note:** Please do not enclose the DD inside the bid. It should be in a separate envelope. Application Fee is Non Transferable.
14.	Downloading of Tender Documents	02/02/2013
15.	Bid Submission Closing Date (Online)	16/02/2013
16.	Submission of EMD, Tender Fee and all other Documents according to Annexure-3 in hard copy.	18/02/2013 (06:00 PM) In person / Post. However, for postal delay, University cannot be held responsible.
17.	Pre-Qualification/Technical Bid Opening Date (Qualification and Eligibility Stage)	NA
18.	Technical Specifications Bid Opening Date	19-02-2013 (12:.00 noon)
19.	Price Bid Opening Date	28-02-2013 (12:00 noon)

20.	Place Of Tender Opening	In the office of Registrar, Krantiguru Shyamji Krishna Verma Kachchh University,Bhuj, Gujarat
21.	Officer Inviting Bids/Contact Person	Registrar, Krantiguru Shyamji Krishna Verma Kachchh University,Bhuj, Gujarat
22.	Address/E-mail ID	pragneshdave@rediffmail.com
23.	Contact Details/Telephone, Fax	Ph: +91-02832-235002, Fax : + 91-02832-235012
24.	Eligibility Criterion	As per the tender document Annexure-02
25.	Procedure For Bid Submission	Tenders shall be submitted exclusively in person /Post. The tenderer can download the tender document from the website **www.nprocure.com & kskvku.digitaluniversity.ac** The tenderers who are desirous of participating shall submit their technical bids, price bids as per the standard formats Annexure-11 and Annexure-12 available in the Tender document. The tenderer should submit the following documents to the Registrar, Krantiguru Shyamji Krishna Verma Kachchh University, Bhuj-370 001 (Gujarat). A DD/Pay order drawn in favor of "Registrar, K S K V Kachchh University,Bhuj" for the amount ₹ 1,000/- towards Tender fee (Application fee), for each equipment. A DD/Pay order/drawn in favor of "Registrar, K S K V Kachchh University,Bhuj" for the amount 5% of the Order value or maximum of ₹ 1,00,000/- (EMD fee) (to be Enclosed in s separate cover) Technical Bid (Annexure-11) along with supporting documents Commercial Bid (Annexure-12) All the supporting documents as mentioned in the eligibility criteria (All the points). Documents in support of Technical Specifications along with make and models of all the items as per the list mentioned in Annexure–05 duly mentioning the make. Supporting documents of standard certifications Annexure–02 of tender document duly signed with office seal as a token of acceptance of our sstandard terms and conditions. Latest Income tax clearance certificate. List of customers, to whom the bidder had supplied identical materials in the past along with P.O details and performance report. Annexure-08 of bidding document. The K S K V Kachchh University,Bhuj, will not hold any risk and Responsibility for non-visibility of the scanned document or the loss in transit.
26.	General Terms and Conditions	As per tender docements.

Contents of the Tender Document

Annexure - 01

Schedule of Quantity

Supply, Installation and Commissioning of Scientific Equipment at Center of Excellence in Chemical Science & Technology , Krantiguru Shyamji Krishna Verma Kachchh University,Bhuj-370001 (Gujarat)

Sl.No.	Description of Work	Quantity
(Nos)	**Supply, Installation and Commissioning of**	
1.	Nuclear magnetic resonance spectrometer (NMR)	1
2.	Preparative High performance liquid chromatography (Prep. HPLC)	1
3.	High performance thin layer chromatography (HPTLC)	1
4.	Thermal Analysis Equipment (TGA, DTA, DSC)	1
5.	Flash Chromatography Instrument	1
6.	Nano Particle size analyzer with zeta potential	1
7.	Autotitrator with software	1
8.	Accelerator Solvent Extractor (ASE)	1
9.	Oil extractor	1
10.	Microwave Synthesizer	1
11.	Atomic absorption spectrometer (AAS)	1
12.	Flash point tester	1
13.	Tandem quadruple mass spectrometer	1
14	Laboratory Furniture & Accessories	

Annexure – 02

ELIGIBILITY CRITERIA AND SPECIAL TERMS AND CONDITIONS

A. ELIGIBILITY CRITERIA FOR TENDERS:

The Company / the tenderer should be in existence for the last 5 Years
The Company / the tenderer should have earlier supplied at least FIVE TIMES the quantities of the items being in the current tender in any of the last two financial years to the Universities or Research organizations.
The Company or tenderer should have at least one Service Center in Gujarat.
The tenderer should be a Manufacturer or the authorized representative of equipment or other respective products/items.
The tenderer/tenderer's group should have a turnover a minimum of more than 10 times the Bid value of the tenderer in each of the last three financial years.

B. SPECIAL TERMS AND CONDITIONS:

1. Delivery Period: The delivery should be made within 45 days from the date of receipt of Purchase Order by the tenderer.

2. Warranty: All items supplied by the tenderer shall be guaranteed against any defects and the tenderer should provide time-to-time operational maintenance support for a period of 3 years (On Site comprehensive Warranty) with 5 years Annual Maintenance Contract. The said warranty should coverall Hardware products & Software. The warranty and service shall be provided directly from the manufacturer. The supplied products shall reflect with product codes/part number for three year warranty on their website/or on the call centers. Necessary guarantee certificates shall accompany the supplies. The tenderer shall be liable to rectify any defects that may be found in the equipment supplied free of cost.

3. Installation: The installation should be done at the Department of Chemistry Building as mentioned in the Annexure – 04 enclosed at no extra cost.

4. Response Time: The response time of the tenderer to attend to any complaint upon receipt of the complaint/information from the user should not be more than 24 hours.

TENDERER

SEAL

Annexure – 03

Documents to be enclosed

The following documents should be submitted along with the bidding form otherwise the bidders are liable to be disqualified.

1. All the Supporting documents in respect of Eligibility Criteria. i.e
   - Registration/Incorporation Certificate in support of the existence of the company for required number of years as per the tender schedule eligibility criteria.
   - Copies of Purchase Orders in support of the supply of required quantities of items in any of the last three financial years as per the tender schedule eligibility criteria.
   - List mentioning the addresses and contact persons with phone numbers of the Service Centers present through out Gujarat.
   - Supporting Documents indicating that the tenderer is the Manufacturer or the OEM Authorized representative of the corresponding items/products.
   - Audited financial statements that are Balance Sheet, Income & Expenditure and Profit & Loss accounts in support of having required turnover in each of the last two financial years.
   - IT returns for the last three years.
2. Annexure – 02 duly signed & office Seal affixed as a token of acceptance of Special Terms and Conditions.
3. Documents in support of Technical Specifications for the scientific equipment as mentioned in Annexure –05 clearly mentioning the make and model.
   Supporting Documents if any for equipment.
4. The latest Income Tax Clearance Certificate.
5. The list of customers, to whom the bidder had supplied identical materials in the past along with P.O. details and performance report, if any.
6. Annexure – 08

Note:

1. The Registrar, K S K V Kachchh University, Bhuj will not hold any risk and responsibility for non visibility of the scanned document or non receipt of hardcopies or loss in transit.
2. The Documents that are received in time will only be considered for Technical Bid Evaluation.
3. The tenderer will be disqualified at any stage of the tender process, if found to have misled or furnished false information in the forms/Statements/Certificates submitted in proof of 1 to 5 above.
4. The Registrar, K S K V Kachchh University,Bhuj does not bind himself to accept the lowest or any tender and he reserves the right to reject any offer without assigning any reason.

Annexure – 04

Address where the equipment to be installed

Department of Chemistry,
Krantiguru Shyamji Krishna Verma Kachchh
University
Bhuj-370 001 (Gujarat)

Annexure – 05

TECHNICAL SPECIFICATIONS

Schedule: **Scientific Equipment**

1. NMR SPECTROMETER

Detailed Specifications:	Complied/ Not Complied
1.superconducting magnet with ultrashield/active shielding 2.liquid helium hold time of one year, 3.liquid helium transfer line 4.receiver with quadrature detection including elimination of quadspikes and other artifacts 5.oversampling and digital filter 6.fast digitizer 7.Deuterium lock channel with variable lock frequency 8.2 broadband channels, with 1H, 2H and BB preamplifiers 9.transmitters with at least 40W for 1H and 130 W for broadband work 10.PC Host computer working on Windows XP/Linux operating system 11.broadband 5mm probe including 1H and 19F facility, with auto tuning and matching 12.gradient electronics preferably with gradient shimming 13.NMR software for 1D and 2D acquisition and processing 14.consumeables including 50 sample tubes, caps etc 15.1 year warranty 16.Variable temperature operation below and above ambient (-80 to +100 deg C	

A list of nmr instruments sold in india. Quote for items supplied from local sources (in rs) such as ups,4 nos of 50 lt each liquid nitrogen dewars, one manual transfer device for 50 ltr dewars, oil free aircompressor and drier, liq helium for installation. Quote for yearly supply of liquid helium and charges for annual maintenance contract after expiry of warranty The data can be converted to other formats. Spread Sheet software and word-processing software can be readily employed to provide data in tables or graphs through industry standard protocols. Complete IQ/OQ/PQ Should be included and supplied for the System.	

Mandatory requirements:
1. Undertaking for providing required spares for the equipment. 2. Quote price to CIP Bhuj. Instruments clearance Certificate (DSIR) will be provided by K S K V Kachchh University,Bhuj. 3. The bidder has to mandatorily provide 3 years comprehensive warranty for the full system and total 5 years Annual Maintaince Contract (AMC) failing which the quotation will be summarily rejected at the time of technical bid opening. 4. Training: For one week should be carried out to make sure the system is properly used by the faculty/students/operator 5. Additional information / concessions

2. PREPARATIVE HPLC

Detailed Specifications:	Complied/ Not Complied
Quaternary Gradient Pump: Flow rate range: 0.50 to 150.00 ml/min , in 0.01 ml/min increments Compressibility compensation : Automatic & Continuous Gradient : Quaternary low pressure Plunger seal wash : Integral , active , programmable Gradient curve : 11 Flow accuracy : +/- 1% Operating pressure : Maximum 6000 psi Leak test : fully automatic diagnostic Degasser: Prep degasser Manual Injector: Dual injector having analytical and preparative injector & either of injector can be inline for operation having 100 ul , 5 ml loop. Column Analytical column C 18 , 250 x 4.6 mm, 5 um , Preparative column C 18 250 x 30 mm , 5 um Analytical column C 8 250 x 4.6 mm , 5um , Preparative column C 8 10 um , 250 x 50 mm Analytical Silica 250 x 4.6 , 5 um , Silica column 250 x 20 mm , 5 um preparative column, Cyano 250 x 4.6mm ,5um analytical column , Cyano column 250 x 20 mm, 5 um preparative column, System should have the capability to perform at column dilution. Photodiode Array Detector: Wavelength range : 190 to 800 nm Wavelength accuracy : +/1 nm Data acquisition rate: Up to 80 Hz Light source : Deuterium arc lamp Specially designed flow cell for maximize energy output Standard analytical flow cell Simultaneous 2D and 3D operation. Lamp optimization: Automatically maximize signal to noise ratio for sensitivity, extend the useful life for the lamp for consistent result over time. Semi Preparative flow cell	

Fraction collector: Compatible flow rate up to 300 ml/min Key board & LCD screen on the fraction collector Computer controlled as well as stand alone operation Various rack options compatible like micro titer plate , tubes , funnel etc. Software Software should control the entire system Software must be original license version from principal manufacturer Chromatography software with integrated database Oracle. Custom field, Custom calculations Report publisher facility for customized reports. Truly complies with all CGMP/GLP and 21 CFR Part 11 rule. Peak purity calculation to distinguish closely related compounds Compatible PC Printer supply along with the system Supplier has to perform installation & provide application support locally. The data can be converted to other formats. Spread Sheet software and word-processing software can be readily employed to provide data in tables or graphs through industry standard protocols. Complete IQ/OQ/PQ Should be included and supplied for the System.	

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3. HIGH PERFORMANCE THIN LAYER CHROMATOGRAPHY SYSTEM (HPTLC)

Detailed Specifications:	Complied/ Not Complied
Sample Applicator for HPTLC : It should offer Spray-on technique, Dot-or line application, Programmable via keyboard or via Computer, Sample should be applied up to the size of 200 x 200 mm on HPTLC-Plates, TLC-Plates or foils as dot or line, Filling and Dosing Syringe, 2-line LCD Display, the battery-buffered memory should hold ten different methods, Windows based integrated Software, Graphic mode, Display of the true picture of the plate, Application rate: 3-120 s/µL, Resolution : 2000 steps/µL., Applicator alongwith Scanner-cum-Densitometer should be possible for compatibility to offer complete workstation for quantitative HPTLC. Computer should monitor both Applicator and Scanner/Densitometer. Integrated Software should allow all the parameters necessary for application and subsequent quantitative evaluation to be entered in one operation. Densitometer cum Scanner : Automatic control of monochromator and all three lamps (Deuterium, Halogen and Mercury), The optical components should be flushed with nitrogen, The size of sensing light beam should be adjusted by computer, Slit widths from 0.4 to 10mm and slit heights from 20µm to 2mm, Two wavelength measurement to compensate differences in plate background and inhomogeneous background, multiple wavelength measurement for the optical resolution of fractions which are not adequately separated chromatographically, Chromatograms should be recorded automatically at up to 30 different wavelengths, 3-D presentation of this measurement should be clear and informative. Technical Specs : Electronics : dynamics $1:10^5$, 19 bit AD Converter Operation : Windows based Software, Graphics :2-D, 3-D and text input Measurement methods : Reflectance, Absorbance or fluorescence, Linear Scan and Meander Scan, Two	

wavelength measurement, multi-wavelength measurement, On-line integration, Calibration : Linear, Polynomial or Michaelis-Menten function, Spectra : Any desired range between 190 and 900 nm, Automatic filter and lamp change . Twin Trough Chambers : 100 x 100mm and 100 x 200mm, Simultaneous Separating Chamber to hold five 200 x 200n mm HPTLC/TLC plates (for quantitative trace analysis) TLC Rapid Test Set with H-Separating Chamber, Application Templates, 100 micro capillaries, a Liphophillic and hydrophilic dyestuff test solutions, 100 HPTLC ready to use plates K60 F 254, Practical Book for TLC. UV Cabinet with two UV Lamps for 254 and 366 nm, SCHOTT special filters, viewing window made of polyacrylate glass and provides adequate protection from reflected short-wavelength UV light. Photodocumentation System with Digital Camera, UV-Cabinet and interface. HPTLC System should be upgradable with Autosampler (100 vials or more) and PC controlled Automatic Reagent Sprayer with GLP and GxP compliant PC, Printer, Nitrogen Cylinder and HPTLC plates should be procured locally.	

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4. THERMAL ANALYSIS EQUIPMENT (TGA, DTA, DSC)

Detailed Specifications:	Complied/ Not Complied
We intend to purchase simultaneous High Temp DTA/TGA/DSC/DTG System with following specifications:- 1. The system should have built-in DTA/TGA/DSC mode with simultaneous scanning facility in single run 2. Temp range from 15C to 1600C with suitable cooling attachment. 3. The system should have heating and cooling rates from 0.1 to 100 C/min upto 100C per min and 25C per min upto 1600C. 4. The system shall have small mass furnace with better temperature control. 5. Minimum TGA Balance sensitivity shall be 0.2ug with 0.02% accuracy 6. DTA sensitivity shall be 0.001C 7. DTA signal should have provision to convert into DSC mode/signal for quantitative studies. 8. Thermocouple sensor shall be Pt-Pt/Rh 9. User replaceable sensor for future with vertical design for sample loading. 10. Calorimetric precision should be less than $\pm$ 2% upto 1000C and +/- 5% upto 1600C.. 11. Temp accuracy and reproducibility should be +/- 0.5C upto 1000C and 1C upto 16000C. 12. All the three curves/parameters like TGA/DTA/DTG or DSC to be displayed on single screen. 13. TGA should have ultra Microbalance with minimum 0.2 µg sensitivity with top load design. 14. Sample size shall be upto 1500mg with sample pan. The balance shall have excellent stability with no need for anti vibration table needed for installation. 15. Built-in Mass Flow controller for two difference gases viz. N2, O2 or any other. It should also select the flow of gases thru software and shall be displayed on the screen. 16. The system shall be supplied with Pt and Ceramic/Alumina pans. 17. The system should be single beam vertical design with ease of operation for sample loading. 18. The system shall be quoted with sub-ambient acc to start from 15C onwards 19. The system shall cool down from 1000C to 30C in under 10 minutes 20. The system shall have future upgrade path for FTIR and	

MS for EGA studies. Vendor shall quote FTIR for EGA studies with necessary interface from same vendor preferably. Single PC control for EGA will be preferred i.e. both for FTIR and STA. 21. Various Metal Reference Materials for DSC calibrations to be included in offer.. 22. The system should have built in Windows 7 based software with 8 modules to be controlled simultaneously. It should also include Kinetics software along with main unit. Standard software shall have the flexibility of various standard calculations like onset, peak area, compare, derivatives, subtraction, % wt loss, overlay of curves, delta Y calculations, multi step programming, gas swith over, heat/cool, etc.	

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5. FLASH CHROMATOGRAPHY

Detailed Specifications:		Complied/ Not Complied
A : Gradient Pump Flow Rate	Min- 1.0ml/min ; Max- 200ml/min Pressure in the range 120-150psi	
Solvent Lines	Independent Four solvent , quatro-binary gradient capability wherein it should be possible to use all the four solvents in binary combination in a single run and should have the ability to add third co-solvent during a binary gradient.	
Sample loading	Provisions for Liquid loading on cartridge. Bulk media loading on the cartridge.	
B : Interface	System should have space- saving, touch screen controlled graphic user interface with Chromatogram storage, processing and retrieving facilities.	
Columns	Suitable cartridge columns for sample from 100mg to 30g.Cartridge construction material should be USP Class VI compliant. Should be able to use cartridges as segmented cartridges. Should include Normal silica and C18 columns of all sizes.	
Real-time method change facility	Change solvent composition, flow rate, fraction settings during purification and running condition.	
Automated method creation	Facility to create accurate gradient methods based on entered TLC data. The software must have a gradient optimization	

	feature which converts a linear gradient method to solvent-saving step gradient method. Should have isocratic hold facility.	
Cartridge and sample load recommendation features	List of column cartridges with maximum recommended sample load under gradient elution	
Sample loss prevention	Sample loss prevention feature and alarms	
C : Fraction Collector	Broad fractions rack capacity to collect minimum 125 fractions & can be enhanced further if required. Ability to add and remove fractions racks during the run	
Detection	Variable, dual-wavelength detector (200-800nm preferably with accuracy ±1nm) with PDA scanning facility. Should have 2D & 3D spectral scan data feature which helps in purity assessment of the eluted compound saving post purification TLC time. Should have facility to connect and communicate (send and receive signals) with a third party detector (Evaporative light-scattering detector having sub-ambient temperature evaporation feature to maximize response of thermally sensitive compounds, RI etc.) and fractionate on the received signal.	
D : Other features :	1) Higher volume racks for fraction collector 2) System should	

	have the capacity to perform purification with up to 750g and above normal & reverse phase columns	

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6. NANO PSA WITH ZETA POTENTIAL MEASUREMENT (PARTICLE SEIZER)

Detailed Specifications:	Complied/ Not Complied
Nano Particle Size Analyser for measurement of Particle Size distribution, Zeta Potential, Molecular weight and second viral coefficient determination, instrument should comply with ISO 13321 and have following minimum specifications 1. Particle Size Measurement Principle: Dynamic Light Scattering with Photon Correlation Spectroscopy 2. Particle size range: 0.3 nm to 8 microns 3. Sample Cell Temperature Control Range: 1°C to 90°C 4. Sample Concentration: Typical sample concentration from ppm to 40%. Same instrument should be capable of measuring low concentration samples and also high concentration samples. 5. Optical System: Dual detector system, 90 degree detector for dilute samples and 173 degree back scatter detector for concentrated samples. Automatic selection of detector based on sample concentration measurement. Independent detector for transmission / concentration measurement. 6. Laser Source: Solid state 532 nm Green Laser, with output power 10 mW. 11 position ND filter wheel for automatic power optimization. 7. Detector Type: High Sensitive DUAL PM Tubes for measuring scattered light and Photo Diode detector for transmission / concentration measurement, Detector Focus position should be software selectable i.e. cell wall or cell centre. 8. Zeta potential Measurement principle: Laser Doppler Electrophoresis with a dedicated PMT detector. 9. Zeta potential & Electrical mobility measurement range - 200 mV to +200 mV - 15 µm.cm/V.s to + 15 µm.cm/V.s 10. Molecular weight Measurement principle: Debye Plotting with static light scattering intensity. 11. Molecular weight Measurement range: 1 x 10^3 to 2 x 10^7 g/mol 12. Software should have the Real-time display of the autocorrelation function, display of the median diameter, specific surface area, mode diameter, average diameter, standard deviation, coefficient of variation, span value, percentage diameter, Z-average, polydispersity index, viscosity, electropheretic mobility etc. 13. PC, Printer and UPS : Latest configuration PC, colour Laser Jet Print and UPS for the analyser.	

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7. AUTO-TITRATOR SYSTEM

Detailed Specifications:	Complied/ Not Complied
The Titrator should have the capability and dedicated modes to perform all types of Potentiometric titrations like, Acid/ base, Non-aqueous, Argentometric, Redox, & KF titration's, as well as possibility to do pH, mV, Temperature & Concentration Measurements. Ion concentration measurements should be possible by calibration curve as well as by automatic standard addition for complicated samples. It should have a parallel titration facility to perform any two titration application simultaneously without disturbing setup. System: Should be completely USB based, the basic instrument and all the peripheral devices connected to it should be recognized automatically as soon as it is connected to the software. It should be possible to connect up to Four Titrating burettes for different types of titrations. It should be possible to upgrade the system to connect up to 12 Titrating burettes in the future. System should have the facility to connect as many Auxiliary burettes as possible, up to 508, for the addition of auxiliary solution or buffer solution needed for titrations and back titrations. System should be capable of performing parallel titrations. System should have two USB port to connect to Autosamplers, PC key board, Barcode reader, Blue tooth adaptor for printers. Dosing Device: The Burette Technology should be of the latest Type and should have a minimum resolution of 1/10000 of its burette Volume. and the flexibility to interchange Titrants without contamination. The Burette drive should be mounted on top of the Burette so that the electronics in the burette drive is not damaged due to reagent spill or leak. The Burette drive should move from top to the bottom of the burette, so that no problems due to the air bubble present in the titrant. The burette and the tubing's should be emptied out completely, with a single "Empty" command and the new titrant should be filled up to the titration tube tip, by a single click "PREP" command. Option to transfer the titrant / solutions back to the reservoir during prep/empty actions to saves reagents. Burette(Dosing Units): It should be possible to mount on top of the reagent reservoir. The latest burette technology should have FOUR ports, so that it can help in the complicated liquid handling functions. Burettes volume of 2, 5, 10, 20 and 50 ml should be available. Burettes can have maximum inaccuracy of 0.0325 % of	

their total volume. Dosing drives with chip on board technology with the capability of read write. The Chip on Board Technology on the Dosing Drive & the Dosing Units/burettes with a Data chip, which can store following information: Dosing Drive: Order number, Serial Number of Dosing Unit and Cylinder Serial Number, Burette volume. The Burette volume once sensed should not be possible to temper it. Dosing Units / Burettes: Type of reagent, Titer of reagent, Titer History, Shelf life data, Date and time of preparation, Assign Titrants to relevant Method, Prompt on the Titrator if wrong Titrant used. <u>Measuring Interface:</u> Maximum up to TWO galvanically separated measuring interfaces. Data acquisition rate 100 mS. Measuring range: mV Range: -2000 mV to + 2000 mV pH Range: -20.00 pH to +20.00 pH Polarization Potential Range: -1250 mV to +1250 mV (Freely programmable) Polarization Current Range: -125.0 µA to +125.0 µA (Freely programmable) · Resolution: Voltage: 0.1mV or better which helps especially in the Direct ISE measurements. PH Value: 0.001 pH or better. Should be possible to collect at least 1000 data points per titrations. Stirrer: Magnetic stirrer, whose stirring speed and direction can be changed through the software. It should be Possible to accommodate various beaker volumes. <u>Software:</u> Latest windows based software. The software should be 100% CFR 21 part 11 compliant. It should be possible to connect unlimited number of Titrator to the software without any added price per titrator. It should be possible to do four titrations (two parallel) simultaneously. The software should support client server environment. It should be possible to export the data to LIMS and automatic data backup. · Automatic recognition of devices and monitoring of titer validity, calibration intervals of Sensors. · Simultaneous Preparation and Empty of all connected dosing devices till the end of the anti-diffusion valve in a single click. Unlimited number of parallel	

tasks. · Possibility of multitasking like method creation during preparation of dosing devices etc. · Method test to check for the syntax errors. · Powerful run test to check all physical instruments / dosing devices connections. · Provision to save the SOP of the titration as Application note along with the method itself. · Powerful "IF commands" to perform actions based on conditions · Case / Error commands to perform actions based on logical decisions. · Other types of evaluations like Fix End point evaluation, Minimum/maximum evaluation, Break point evaluation, Gran evaluation to evaluate non S shaped curves. · Possibility to include any number of commands like Measuring, adding of solutions, titration in a single method. · Live display with different axis and possible to view measured value, calculated value, Ist derivative (ERC) etc. Live modification of method parameters, like stop volume. · Hold function *halts* the ongoing titration and dosing activities. · Result trend analysis, History about the each determination should be available. · Setting limits for results to control the process, and possibility of receiving email whenever it is violated. Quick filter, special filter functions to trace the required data quickly. Electronic signature to prevent tampering of data. · Control chart, overlay curves, recalculation facilities. Reprocessing with various options like changing the sample size, changing the End Point Recognition etc. even after the completion of titration, but still should keep the original raw data. · Export and import of data(s) in different formats like CSV(to excel), XML(to LIMS) etc. · Custom reports with the desired logo. · Possibility to connect a Balance to automatically transfer the weight data The titration system should have the above features and should be offered	

with the following: 1. Main Titration Instrument - 1 NO. 2. Dosing Devices- Drives – 2 Nos. 3. Burettes/Dosing Units of 10 ml for KF and 20 ml x 3 no (Acid/base, Non Aque, Argentometric) each – Total - 4 Nos. 4. Intelligent Combined Glass Electrode for pH measurements and titrations – 1 no. 5. Intelligent Electrode for Non Aqueous Titration. 6. Electrode for the Argentometric Titration and Redox titration with required cable. 7. Karl Fischer Titration sets consisting of vessels, lid, Double Pt electrode, O rings gaskets etc – 1 no. 8. Titration stand – 2 nos. (1 with magnetic stirrer and 1 for KF titrations with magnetic stirrer and built-in diaphragm pump) with connecting cables with main instrument 9. Suitable software to handle parallel titration and entire titrimetric application. Recommended spares and consumables should be offered separately for two years trouble free operation.	

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8. Solvent Extraction system (ASE)

High pressure extraction system	**Complied/ Not Complied**
1. Automated Solvent Extraction System either parallel mode or with multiple samples per run, capable of efficiently extracting solid or semisolid samples using a wide range of organic solvents.	
2. It should be capable of using common solvents at elevated temperature (40–200 °C) and pressure (150 bar) for faster extraction process in 15-20 minutes.	
3. The instrument must be capable of unattended extraction of 4 samples in parallel with a wide range of sample sizes.	
4. Automatic sealing of top and bottom of the extraction cells that avoids wear and tear of the seals is desirable.	
5. The instrument must accommodate extraction cells of 120ml and 40ml to be used for large and smaller samples.	
6. It should accept a variety of collection bottles and vials such as 240ml and it should be possible to mount these collection bottles to the concentration unit without sample transfer.	
7. A waste bottle (Not supplied) of 2.5 liter will be preferable as bottle change will be less frequent.	
8. Individual pressure gauge for each extraction cell will be desirable.	
9. It should be possible to detect a problematic and leaking or clogged position to be alerted by the wizard which then allows the position to be deactivated individually.	
10. Integrated solvent controller allows mixing and delivery of up to four solvents.	

11. There has to be multiple layers of safety tools available either in the integrated but optional software or using the PC software. A tightness test at the beginning of each run, a flow test and a leak test must be possible for verifying the safety of operation using the equipment.	
12. LCD Display, programmable methods, data storage and interface with PC are required features. Documenting the whole process using the PC software, changing the pressure during a run is also required.	
13. The offer must include one full set of extraction cells of both the volumes and their start up kits as required, one set of collection vials and consumables like extraction sand.	

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9. OIL EXTRACTOR INSTRUMENT

Detailed Specifications:			Complied/ Not Complied
01	6 Place Extraction System	6 samples can be simultaneously extracted by PC controlled	
02	Automatic Solvent recovery in in-Built Solvent Tank .	With Built in Tank and operator need not handle Hot Solvent and is safe to operate. This also makes it possible to recover high amount of Solvent. Illuminated glass beakers should allow easy visual inspection of extraction process.	
03	Automatic Raising & Lowering of Extraction beakers	This is really an Automatic function. In case of Power or water failure the beakers are automatically lifted above the heating Plate. In Addition one can load the sample and program the system at a predefined time. The system will automatically lower the beakers on the extraction system and the analysis starts. After the end of the Extraction the beakers are automatically lifted above the Extraction system hot plate.	
04	Programmable Automatic Sequential operation of Boiling / Extraction / Solvent Recovery for unattended Operation.	5 Stage Extraction Process . Boiling / Recovery of Solvent / Extraction / Recovery of Solvent B / and the final stage of recovery	

		of residual solvent makes it convenient to recover the complete solvent making the operator Free. This is truly completely Automatic Function.	
05	Optical Sensor On solvent recovery tank to prevent Overfilling	One of the safety feature in the Gerhardt system. In addition the system has Automatic Door which protects the operator in case of splash in the system. The heating unit also has excess / Safety Keys , DIN standards heating Element.	
06	Three safety temperature plugs	For 135 deg C, 200 deg C, 300 deg C	
07	Single Button Operation for easy use	An program can be loaded in the memory of the extraction system and with a single one Button the system operation can be started. This is highly usefull when one wants to run the same program.	
08	Thimble basket to hold different at least 4 type Of thimbles	The unique design of thimble holder make it convenient to use different size of thimble example : 33x 80 mm 33 x 94 mm 25 x 75 mm 40 x 85 mm Depending upon the type of sample to be extracted the thimble can be used.	
09	Automatic Control of Water & Air pressure	Water is highly required for condensation of	

		evaporating solvent. The Air pressure is required for Lift of Beakers, Lowering of beakers & recovery of the solvent. The status are continuously monitored by the system.	
10	Software by soxtherm manager	Yes - Programming of Various types of Extraction Programs, Control & Monitor upto 4 Extraction Systems Diagnostic Functions for an ideal Extraction process.	
11	System status Monitoring	By PC	
12	Compressor	For Air supply for lifting of the beakers, Lowering of beakers, Recovery of the solvent the air is used. JUN AIR compressor are world class noise free operation system designed for lab use.	
13	Extraction Beakers -6 No	Beaker 54 x 130mm Supplied along with the system	
14	Holders for extraction thimbles	Thimble basket the unique design for holding thimbles of different size is supplied.	
15	Tong	For holding the beakers.	
16	Thimbles 33 x 80 mm (25 Nos	Yes.	
17	Box of Boiling Stones 250gm	Yes.	
18	Insert rack for Extraction beakers	Yes.	
19	Tubing set & Data Cables	Yes – Water & Data cables CD-ROM with SX PC Quick-Start instruction Software Key SWT RS-Adapter Data cable RS 232 USB / RS 232 Adapter	
20	TECHNICAL - INSTRUMENT	Sox 416 Cooling water	

		pressure: ca.3 lts/min Nominal voltage: 230 vac Frequency: 50 – 60 hz Nominal wattage: 1200watts Weight: 43 kg Diamension: 565 x 410 x 580 Temp : maximum 300 degrees	
21	COMPRESSOR	Nominal voltage: 230 vac Frequency: 50 hz Nominal wattage: 130 watts Weight: 14 kg Diamension: 340 x 220 x 390 Pressure: max 8 bar	

Mandatory requirements:

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3. The bidder has to mandatorily provide 3 years comprehensive warranty for the full system and total 5 years Annual Maintaince Contract (AMC) failing which the quotation will be summarily rejected at the time of technical bid opening.4. Training: For one week should be carried out to make sure the system is properly used by the faculty/students/operator

5. Additional information / concessions

10. Microwave Synthesis System

Detailed Specifications:	Complied/ Not Complied
1. Power Output : Minimum microwave power of 600 W or higher 2. Microwave Power field density : 6000Watts/litre or more 3. Maximum Pressure & Temperature: 30 bar and 300°C for all vessel types (10 mL as well as 30 mL) for scale up reactions without re-optimization of parameters. 4. Ability to effectively heat polar as well as non-polar solvents like Toluene, Dioxane etc without heating aids. 5. Temperature Measurement: IR measurement as standard facility with multi point calibration for accurate temperature measurement of reaction/s. 6. Fiber optic Ruby Thermometer with ability to measure in-situ reaction temperature simultaneously along with IR sensor and simultaneous display of both, IR and Ruby temperature on screen should be quoted as a part of the configuration. 7. Integrated Pressure Sensor to measure, display and document reaction pressure. 8. Should have inbuilt magnetic stirrer device with variable speed from 0 rpm upto 1200 rpm to ensure uniform temperature in the reaction mixture volume. 9. Self-tuning cavity for optimum heating efficiency with all vessel types. 10. Should be supplied with Glass Vials of 10 ml and 30 ml capacity with sustainable material of construction and allow for multiple reaction runs to be conducted in the same vial. 11. Should be supplied with a vessel made of special material viz. SiC of at least 10ml capacity to allow for carrying out reactions involving metallic particles, in-situ fluorination and reactions using other aggressive reactants. 12. Sealing of reaction vessels should be easy and without use of any tools. 13. Heating Performance benchmarks with glass vessels and without any heating aids : System should have ability to heat 20 mL Ethanol to 200 °C in 2 min System should have ability to heat 5 mL Toluene to 200 °C in less than 5 min 14. Large inbuilt Touchscreen display with capability for online graphical display of reaction parameters like pressure, power and temperature and review of previous reaction runs. 15. Direct printout to PDF files or export of data to excel via USB ports. 16. Camera for monitoring the reactions should also be quoted as an option.	

17. The system should be upgradable with an autosampler with minimum 24 reaction vessels handling (10 mL and 30 mL) for unattended operation. 18. Required consumables for trouble free operation of the instrument should be quoted. 19. Suitable air compressor for operation of the instrument and cooling of reaction vials after a reaction is over should also be quoted optionally.	

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11. ATOMIC ABSORPTION SPECTROPHOTOMETER

Detailed Specifications:	Complied/ Not Complied
Supply of PC controlled double beam Atomic Absorption Spectrophotometer with Windows Vista based software for full control of AAS and accessories like Hydride Generator, Graphite Furnace & Autosampler alongwith accessories and consumables for two years. SPECIFICATIONS : Optics Double beam with background correction and flame emission capability. Asymmetric modulation with 2:1 sample-to-reference ratio for noise reduction. All-reflective system with quartz overcoating on mirrors. Sealed against dust and vapour. Monochromator Ebert-Fastie design with more than 325mm focal length and 175-900 nm wavelength range. 1800 lines/mm holographic grating with dual blazed profile. Automatic wavelength selection and peaking. Continuously adjustable 20 slit widths between 0.1 and 2.0 nm in 0.1nm increments. Reduced height for furnace work with all slit widths. Automatic setting of slit width and height. Automatic wavelength scanning. Detector Selected wide range multialkali photomultiplier tube. Lamp Turret Eight-lamp turret with automatic lamp selection. Automatic optimization in two planes for maximum light throughput. Automatic multi-element operation, with the next lamp in the sequence automatically warmed up. Compatible with standard hollow cathode lamps and Super Lamps. Super Lamps Special power supply to power up four high intensity Super Lamps for improvements in detection limits. Background Correction Hyper-pulse background corrector taking minimum 200 sample readings	

per second for correction of fast background peaks and best accuracy. High intensity, long life deuterium arc lamp to provide 175-425nm correction range. Correction to 2.5 total absorbance. Programmable Flame Control Automatic setting of flame type and gas flows from stored conditions. Programmed ignition and shutdown sequences. Automatic change of flame conditions during automatic multi element operation. May be programmed to automatically extinguish the flame at the end of an analysis. Interlocks to monitor air, acetylene and nitrous oxide pressure, burner presence, burner type, liquid trap level, presence of nebulizer and pressure relief bung, oxidant flow, flame condition and mains power. Ignition is to be prevented or flame shutdown if a fault if detected. Screen display of interlock status. Flame Atomization System Pre-mix design with solid inert polymer mixing chamber. All-titanium burner construction. Separate air-acetylene and nitrous oxide-acetylene burners designed for reduced carbon build-up. Nebulizer with platinum-iridium capillary and tantalum venturi for resistance to acid attack. Adjustable sample uptake rate with locking mechanism. Inert impact bead. Interlocked nebuliser bung and pressure relief bung. Integral liquid trap with liquid level interlock. Quick-change mounting to enable easy change-over to graphite furnace. Automatic Burner Movement Automatic motorized height and horizontal adjustment of the burner. Motorized burner rotation allowing the burner angel to be set as part of a method. Rotation angle from 0 to 90 degrees, settable to +/- 0.1 degree. Electronic Sample Viewing In-line colour video camera allowing viewing of the flame or graphite furnace tube in real time. Essential for graphite furnace method development to view the sample as it is injected right upto atomization. Performance Guarantee Greater than 0.8 abs for 5 mg/L copper solution with an RSD of less than 0.5% on the same measurement. Computer System An IBM compatible computer incorporating an intel ® Pentium ® or AMD CPU technology. A minimum of 500 MByte RAM, one parallel port, four USB parts, a minimum of 50 GByte data storage capacity, USD mouse and	

101 key keyboard. Software Microsoft Windows Vista operating platform for true multi-tasking as well as controls for atomic absorption spectrophotometer, graphite furnace, furnace autosampler, method development, sample analysis, report generation and results modules. Quality Control Protocols Complete range of quality control functions including check samples, spike recovery, upper and lower QC limits, calibration correctness. Checks to be carried out at pre-determined intervals based on time or number of samples analysed. Alternately checks to be carried out randomly. All checks to have operator settable failure limits and failure actions. Flagging for all failed tests. Graphite Furnace Automated graphite furnace system comprising of graphite furnace power supply and workhead plus programmable automatic sample loader. To be controlled by the instrument computer. Temperature range ambient to 3000°C/Sec. Computer controlled maximum heating rate of 2000°C/Sec. Water recirculator and inert gas cylinder with regulator. Hydride Generator Automatic continuous flow hydride generation system for the analysis of the hydride forming elements; arsenic, selenium, bismuth, germanium, antimony, tin, tellurium as well as mercury by the cold vapour technique with detection limits of less than 1 ppb and typical precision of 1%. Hollow Cathod Lamps HCLs as per the requirement. Super Lamps Super Lamps as per the requirement. Local Items Suitable computer with printer, air compressor, fumehood with fume extraction system, water recirculator for graphite furnace and gas cylinders for acetylene, nirous oxide and argon with regulators.	

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12. FLASH POINT TESTER

Detailed Specifications:	Complied/ Not Complied
The apparatus is a benchtop model which houses the mechanical components and a miniature PC with touch screen. A software running under Windows Xp permits to select the test method and the test parameters, run the test automatically, store, retrieve and print data, diagnose and calibrate the instrument offering in the meanwhile all the features of Windows systems such as LAN connectivity. The instrument is equipped with a sensor for barometric pressure for the correction of the results towards atmospheric pressure. 1. Enamel finished benchtop steel and aluminium case. 2. Cast iron air stove identical to the one reported on the ASTM method. 3. Brass oil cup and lid with insulating handle. Jacket for glass-coated platinum in the cover (n°1 platinum with cable and quick connector supplied with the instrument). 4. Electric stirrer that stops during flame dipping. Stirrer speed: 105 rpm for ASTM D93 method A and 250 rpm for method B. Other speeds can be selected for custom methods. 5. Automatic flame dipping: provision for gas or electric ignitor. 6.Electric heating. 7. Electric cooling fan to cool down the stove at the end of the test. 8. Ignition system: a slide supporting both ignitor and pilot flame permits a quicker and safer removal of the cover at the end of the test, avoiding to disconnect electric ignitor cables and/or gas ignitor tubes that remain always connected. It is possible to use both gas or electric ignitor: when a gas ignitor is used, the electric one can be used as pilot flame. 9. PC based controller with 6” color touch-screen interface. IP 65 front protection. 10. Software characteristics: selection of the ASTM/IP test method or setup of up to 40 custom methods, introduction of the test parameters through the touch screen,possibility to change the	

setpoint during the test, selectable rapid preheating (in case of sample with high flash point is possible to pre-heat the sample at a higher rate to speed-up the test), “search” option (for sample with unknown flash point), selectable cooling time, storage of up to 800 test results and possibility to retrieve and print test reports, calibration and diagnostic routines. 11. LAN connectivity: the apparatus can be connected directly to a hub to become part of the user network: a software supplied withthe apparatus permits to retrieve data also from another PC. 12. Flash point detection through ionization sensor: the apparatus also provides an alert if a flash has occurred at the first flame application, warning that the test result is not reliable. The flash point temperature remains shown on the display until the operator’s acknowledgement: buzzer to alert the user. 13. Safety device is provided to stop the analyzer if a flash has not been detected at a temperature 30°C over the present value. This safety device could be excluded to perform "search" tests. 14. English written user manual. Microsoft Windows Xp original license. 15.Necessary apparatus, accessories and consumables like oil cup, Lid, probe, Electric ignitor , Gas ignitor	

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13. TANDEM QUADRUPOLE MASS SPECTROMETER

This instrument specification is for a bench-top tandem quadrupole mass spectrometer configured for integrated LC-MS/MS analysis.

This instrument specification is for a bench-top tandem quadrupole mass spectrometer configured for integrated LC-MS/MS analysis.

	Detailed Specifications:	Complied/ Not Complied
1	ION SOURCE (General)	
1.1	The instrument must be equipped with an atmospheric pressure ionisation (API) LC interface that includes the source and spraying units. Samples may be introduced by direct infusion in solution, or the system may be interfaced directly to an HPLC or UPLC system.	
1.2	The ion source must be of a dual orthogonal design. The nebulized spray must be positioned with the sprayer orientated orthogonally to the sampling aperture and positioned off axis for maximum source longevity and analyser protection against “dirty” samples.	
1.3	The LC inlet probe must be positioned vertically to minimise system footprint, reduce length of connecting tubing and the potential for chromatographic peak broadening.	
1.4	A source isolation valve must be fitted to allow the source elements to be removed for cleaning without breaking instrument vacuum, maximising instrument up time. The isolation valve must be operable without the need for tools.	
1.5	The sampling cone must be removable by hand, without the need for specified tools.	
1.6	The outer ion source enclosure must be removable without the requirement for tools, to allow easy access to the spraying elements for cleaning without the need to remove the ion source enclosure.	
1.7	A toughened glass window must be incorporated into the ion source housing to allow easy viewing of the source. The source chamber must be internally illuminated for clear viewing.	

1.8	The ion source must operate up to a maximum temperature of 650 degrees Celsius.	
1.9	The outer source enclosure must be thermally protected for safety reasons, to no greater than 80 degrees Celsius on the outer surface.	
1.10	All gas flows must be fully integrated into the source so that no tubing connections are externally exposed.	
1.11	The source must include the facility to de-cluster ions formed at atmospheric pressure.	
1.12	The desolvation and cone gas must be supplied via digitally controlled mass flow meters and be controlled via the data system.	
1.13	The ion source must be able to use Zero Grade Nitrogen (standard lab grade) for the desolvation and cone gas	
1.14	The ion source must be able to accept involatile HPLC buffers.	
1.15	Positive and negative ionisation capabilities must be included as standard on the instrument.	
1.16	All source voltages must be under data system control and must incorporate active readbacks.	
1.17	A high efficiency stacked ring device must serve as an ion guide between the source and the analyser.	
2	IONISATION SOURCES	Complied/ Not Complied
2.1	Electrospray (ESI) must be provided as standard with the instrument. The ESI incorporates a heated gas flow, separate from the probe nebulizer, for efficient desolvation. No supplement heater or probe is required to work over the 5-2000□L/min flow range. The probe must incorporate the facility to adjust the	

	sprayer tip length in-situ to allow easy optimisation of ionisation.	
2.2	A combined ESI/APCI source must be provided as standard with the instrument. ESI and APCI ionisation is achieved using a single probe. Voltage supplies are alternated between the probe (ESI) and the corona pin (APCI). The facility of combined ESI/APCI provides the facility of switching between the two ionisation types during a single LCMS experiment.	
2.3	An atmospheric pressure chemical ionisation probe (APCI) must be available as an option for use in the standard source enclosure.	
2.4	An atmospheric pressure solids analysis probe must be available as an option for use in the standard source enclosure.	
2.5	A combined atmospheric pressure photo ionisation (APPI) / APCI source must be available as an option.	
2.6	A nano-flow electrospray ionisation source must be available as an option.	
2.7	A nano-scale separations device (etched ceramic tile) must be available as an option for nano-flow UPLC. The device should incorporate an electrospray emitter and integrate with the ion source without the need for tools.	
2.8	An atmospheric pressure ionisation source for GCMS (APGC source) must be available as an option.	
3	QUADRUPOLE ANALYSER	Complied/ Not Complied
3.1	The instrument must incorporate a high performance tandem quadrupole mass analyser with inter-element beam focusing, having a quadrupole-travelling wave-quadrupole geometry.	
3.2	The instrument must incorporate two quadrupole mass analysers (MS1 and MS2) each having a mass (m/z) range of 2-2048 amu.	
3.3	The resolving quadrupoles must be fitted with quadrupole pre-filters to maximise resolution and transmission and also to protect	

	the resolving quadrupoles from contamination.	
3.4	All lenses and analyser voltages must be digitally controlled.	
3.5	The analysers must be supplied with RF using solid-state RF generators.	
4	COLLISION CELL	Complied/ Not Complied
4.1	A high efficiency, travelling wave device with beam focusing at ion entry and exit must serve as the collision cell.	
4.2	Collision energy must be digitally controlled.	
4.3	Collision cell gas pressure must be directly monitored in the range 1x 10^{-4} to 1m bar.	
4.4	Collision gas must be controlled using digital mass flow meters. Collision gas introduction, pump out and regulation must be under full data system control. Collision gas pressures and flows used during data acquisition must be automatically appended to the relevant data file.	
4.5	The collision cell must use a travelling wave voltage for rapid, axial transport of ions through the device	
4.6	It must be possible to rapidly switch between MS (full scan MS and/or SIR) and MS/MS (MRM, product ion scanning, and parent ion scanning, neutral loss) acquisition modes in no more than 5ms, and without changing the pressure of collision gas (argon) within the collision cell. This must be possible without significantly compromising either MS or MS/MS data quality.	
5	DETECTOR	Complied/ Not Complied
5.1	The instrument must incorporate an off-axis dynolite photomultiplier detector, positioned after the second mass analyser.	
5.2	A high voltage conversion dynode and a high voltage phosphor must be positioned at 90° to the analyser for the elimination of	

	neutral noise.	
5.3	The photomultiplier must be enclosed in its own vacuum envelope for long life.	
5.4	The detector must operate in both positive and negative ion modes and must be capable of switching polarity rapidly (in 0.02 seconds) under digital control.	
5.5	The detector must have a digital dynamic range of 4 e^6.	
6	VACUUM SYSTEM	Complied/ Not Complied
6.1	The instrument must incorporate a clean differentially pumped, automated vacuum system.	
6.2	A single, air cooled turbomolecular pump must be used for evacuating the source & analyser. An external, chilled water supply must not be required for the vacuum system.	
6.3	There must be a single rotary pump for backing of the turbo pumps and rough pumping of the first source vacuum stage.	
6.4	An oil-free backing pump must be available as an option to replace the rotary pump.	
6.5	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. A turbo pump must be fitted with an electromagnetic vent valve.	
7	ADDITIONAL HARDWARE FEATURES	Complied/ Not Complied
7.1	An electronically controllable selection valve must be incorporated into the instrument and be accessible from the front panel.	
7.2	The electronically-controllable valve must be programmable from the software to allow it to be used as a divert valve for LCMS experiments.	

7.3	A waste solvent drainage system must be integrated into the main chassis of the instrument to allow safe drainage of LC solvent from the source in the event of a nitrogen supply failure to the instrument. A connection must be available at the rear of the instrument for draining solvent to a suitable reservoir.	
7.4	An infusion device must be integral to the instrument and must be controllable from the instrument software. At least 2 user-changeable sample vials should be built into the system to allow tuning and calibration solutions to be infused into the probe via a selection valve.	
8	LC AND ANCILLARY DEVICES	Complied/ Not Complied
8.1	The MS should be able to utilize the existing Waters UPLC System as front end without compromising the technical specifications.	
8.2	The MS acquisition software must allow full system control over UPLC type systems.	
8.3	Control and data acquisition must be provided within the MS acquisition software for a number of different types of single channel, multi-channel, and diode array UV detectors.	
8.4	The MS acquisition software must incorporate a HPLC inlet configuration wizard that allows the user to easily configure their specified LC pumps.	
8.5	A capability to monitor analogue channels must be available for interfacing up to 4 ancillary LC detectors (UV, ELSD etc)	
8.6	External contact start/stop/events must be provided to the rear of the instrument via a user I/O board.	
9	SOFTWARE	Complied/ Not Complied
9.1	The PC must be configured with a Microsoft Windows operating system, featuring a graphical user interface with multiple windows, pull down menus and toolbars	

9.2	The MS control software must be a Windows based platform and have the ability to control both the MS and specified LC devices and be compatible with Windows XP and Windows Vista	
9.3	The MS control software must incorporate an easy install/uninstall wizard.	
10	INSTRUMENT CONTROL AND DATA PROCESSING UTILITIES	Complied/ Not Complied
10.1	An embedded personal computer acquisition system (EPCAS) must be incorporated to the chassis of the instrument to allow data acquisition and dynamic instrument control.	
10.2	A fully synchronised real time data display within a window on the monitor must be provided for ion beam and instrument display.	
10.3	It must be possible to acquire spectral data in a multi channel analysis (MCA, profile) data mode.	
10.4	It must be possible to acquire spectral data in a continuum (profile) data mode	
10.5	It must be possible to acquire spectral data in a centroid (stick) data mode.	
10.6		

	It must be possible to acquire spectral data by MS scanning using quadrupole analyser MS2.	
10.7	It must be possible to acquire spectral data by MS selected ion recording (SIR).	
10.8	It must be possible to acquire spectral data by MS/MS precursor ion scanning (parent).	
10.9	It must be possible to acquire spectral data by MS/MS product ion scanning (daughter).	
10.10	It must be possible to acquire spectral data by MS/MS neutral loss and neutral gain scanning.	
10.11	It must be possible to acquire spectral data by MS/MS multiple reaction monitoring (MRM).	
10.12	The instrument must be able to acquire simultaneous positive and negative ion data during a single LC-MS experiment.	
10.13	The instrument must be able to switch cone voltage and collision energy on a per function basis during a single LC-MS experiment.	

10.14	When acquiring in MRM mode, it must be possible to trigger the acquisition of a product ion scan.	
10.15	It must be possible employ a dual-acquisition mode, to simultaneously acquire multiple MRM channels for quantitation of targeted analytes, in parallel with MS full scan, parent ion scan, and neutral loss (in both positive and negative ion modes) to enable the continuous monitoring of all ions across a defined mass range.	

11	INSTRUMENT MANAGEMENT AND ANALYTICAL APPLICATIONS SOFTWARE	Complied/ Not Complied
	Instrument set-up	
11.1	The system must include an automated tuning facility for hardware set-up	
11.2	The system must include an automated calibration facility for hardware set-up	
11.3	The system must include an automated method development tool in the software to allow creation of multiple reaction monitoring methods for compounds introduced from the instrument sample vials.	

11.4	The MS acquisition method editor must have a facility to enable automatic setting of MRM dwell time, inter-channel delay and inter-scan delay times, based on the expected average chromatographic peak width to ensure optimal data acquisition rates are maintained for the highest quality of analyte qualification.	
11.5	The instrument control software must include a facility to automatically report on LC/MS/MS system performance by employing user-defined pass/fail criteria for compound retention time, peak area/height/width and signal-to-noise over a specified number of injections.	
11.6	The instrument control software must include automated monitoring of instrument vacuum, gas flows and voltages to warn the user of out-of-tolerance parameters.	
11.7	The instrument software must include a facility to send serviceability information to the instrument vendor to monitor for proactive maintenance.	
	Method set-up :	
11.8	The software must incorporate a database for storing MS method information associated with each compound, including MRM transitions, ion mode, tuning parameters, CAS number and compound classification.	
11.9	It must be possible to automatically generate a new MS method from stored compound information, including the automated optimization of dwell and delay times.	

11.10	It must be possible to store complete LC/MS quantitative tests that incorporate the LC method, compound retention time, MS method and quantitative processing parameters.	
11.11	It must be possible to include greater than 16000 MRM transitions per method	
	Quantification Software :	
11.12	An application manager for the quantification of LC/MS and LC/MS/MS data must be available. It must have the ability of working with full scan, SIR/SIM or MRM data.	
11.13	Data Acquisition, Peak Integration, Calibration, Quantification and QC calculations must be fully automated and can be performed in a multiple batch analysis mode.	
11.14	This software must incorporate at least two different automated peak detection algorithms.	
11.15	Quantification parameters must be stored for each compound and individually selected and loaded into new methods.	
11.16		

	This software must have the ability to simultaneously process quantification data and acquire samples using the same software interface.	
11.17	This application manager must be designed to work within the FDA's guidelines for security, providing tools to enable compliance on electronic records and electronic signatures (21 CFR part 11)	
11.18	This application manager must have the facility to generate a report for viewing or exporting to a third party system. The report must be stored and reprocessed independently of the original raw data, which does not need to be carried out on the data acquisition PC.	
11.19	This application manager must be capable of automatically optimising MS/MS conditions and generating an MRM acquisition method that is stored for later use.	
11.20	This application manager must be capable of automatically acquiring data based on the automatically generated MRM method.	
11.21	This application manager must be capable of automatically generating a quantification method that is stored to file for later use.	
11.22	This application manager must be capable of automatically processing data using an automatically generated a quantification method.	

	Targeted, quality control quantification software:	
11.23	An application manager for quantitative applications having the additional requirement of Quality Control (QC) checks to satisfy statutory or regulatory requirements must be available.	
11.24	This application manager must compatible with LC/MS and LC/MS/MS data. Data can be full scan, SIR/SIM or MRM.	
11.25	Data Acquisition, Peak Integration, Calibration, Quantification and QC calculations must be fully automated.	
11.26	Quantification and QC parameters must be stored for each compound and individually selected and loaded into new methods.	
11.27	The quantification method editor must be viewable in page view or as a spreadsheet.	
11.28	This application manager must allow the monitoring of the molecular ion plus up to 4 confirmatory ions.	
11.29	This application manager must update ion ratios and retention times automatically from any sample specified in the sample sequence.	

11.30	This application manager must calculate a 'totals' concentration for a group of compounds in the same RT window.	
11.31	This application manager must calculate concentration using up to 4 Toxic Equivalence factors.	
11.32	This application manager must flag samples in the a browser report when: (a) the ion ratios fall out-with the user-defined values (b) the maximum blank acceptance level (user input) has been exceeded (c) the maximum concentration limit (user input) has been exceeded (d) the concentration is below the reporting concentration limit (user input) (e) the concentration falls below the minimum recovery % level (user input) (f) the concentration falls above the maximum recovery % level (user input) (g) the coefficient of determination for a calibration curve falls below a user-set level (h) QC samples fall outside a user-defined number of standard deviations from the mean (i) the peak of the compound of interest falls below a user defined S/N ratio	
11.33	The quantitative report must include the facility to associate an acquired confirmatory product ion spectrum for the targeted analyte, for matching with a reference spectrum in the compound database.	
11.34	During the acquisition of a sample set, the software must be able to report in real time on the defined criteria for QC samples, blanks and internal standards. Automated decisions on these results must allow the software to re-inject the sample or terminate the sample set to prevent sample loss in the event of performance being out of tolerance.	

11.35	A trending tool must be incorporated for plotting results from quantitative data sets. This must allow inter and intra batch comparisons to be plotted for any calculated result in the sample set.	
12	PERFORMANCE SPECIFICATIONS	Complied/ Not Complied
12.1	SCAN SPEED The instrument must have a maximum scan speed of 10,000amu/sec.	
12.2	MASS RANGE The quadrupole analysers (MS1 and MS2) must have an m/z range of 2 to 2048.	
12.3	CONE VOLTAGE AND COLLSION ENERGY The cone voltage must be programmable to 350V and the collision energy is programmable to 120V.	
12.4	MASS STABILITY The instrument must exhibit a mass drift of less than 0.1Da in 24hrs.	

12.5	LINEARITY OF RESPONSE The linearity of response relative to sample concentration, for a specified compound, must be 5 orders of magnitude from the limit of detection.	
12.6	POLARITY SWITCHING The instrument must be capable of acquiring data alternating between positive and negative ion modes. The time taken to switch between polarities (inter-scan delay) prior to acquiring data in that ionization mode must be no more than 20 ms.	
12.7	MRM / SIR ACQUISITION TIMES The instrument must be capable of acquiring acquire data in MRM or SIR mode using a minimum dwell time of 3ms per channel with inter-channel delay and the inter-scan delay set at 3ms without significant degradation in chromatographic peak height.	
12.8	MRM INTER-CHANNEL CROSS TALK The inter-channel cross talk between two MRM transitions, sharing a common daughter ion and acquired using an MRM dwell time of 10ms and an inter-channel delay time of 10ms must be less than 0.02%.	
13	COMMISSIONING SPECIFICATIONS	Complied/ Not Complied
13.1	MRM SIGNAL-TO-NOISE DEFINITION For the purposes of the following specifications, signal is defined as the height of the chromatographic peak of interest and noise is defined as the RMS (root mean square) of the signals for a continuous (background)	

	section of the mass chromatogram.	
13.2	ELECTROSPRAY SENSITIVITY, POSITIVE ION A 1pg on column injection of reserpine, with a mobile phase flow of 0.8mL/min, will give a chromatographic signal to noise for the transition 609>195m/z greater than 10,000:1	
13.3	APCI SENSITIVITY, POSITIVE ION (Optional) A 100pg on column injection of 17-α-hydroxyprogesterone, with a mobile phase flow of 0.8mL/min, will give a chromatographic signal to noise for the transition 331>109m/z greater than 200:1	
13.4	MS RESOLUTION The valley between the 2034.63 Da and 2035.63 Da peaks is < 12% of the average height of the two peaks.	
13.5	MASS MEASUREMENT ACCURACY Measured from the mean of five repeat analyses of the $[M+NH_4]^+$ peak at m/z 1004.622 from PEG 1000 (1ug/uL) in 50/50 acetonitrile/water containing 2mMolar ammonium acetate. The mean measured mass must be 1004.622$\pm$0.05Da. The Standard Deviation of the Mean must be $\leq$ 0.05Da.	

14	Regulatory Compliance	Complied/ Not Complied
14.1	Optional qualification work books must be available that can be used by a suitably qualified engineer to record in detail the installation, operation and periodic servicing of the mass spectrometer. These must be used as part of an optional qualification service provided by the vendor.	
14.2	Optional qualification work books must be available that can be used by a suitably qualified engineer to record in detail the installation, operation and periodic servicing of a full LCMS system. These must be used as part of an optional qualification service provided by the vendor.	
15	Service Diagnostics	Complied/ Not Complied
15.1	Intelligent service delivery tools must be built into the software and electronics provided with the instrument (to be activated/deactivated by a user) to enable remote secure web based LC/MS system monitoring, instant alert notification, and to provide a direct link to vendor technical experts to maximise system uptime and increase laboratory productivity. This must also be fully compatible with wireless networking devices.	
15.2	Software tools must be provided that enable a suitably qualified service engineer to monitor and record voltage outputs from the MS electronics (e.g., gas flow, temperatures, and voltage readbacks) without the need to access the electronics directly using a traditional hand-held voltmeter.	

	This facility must also enable instrument faults to be diagnosed remotely by the vendor via a web-based connection. It must also be possible to plot these values over extended time periods to show trends and to allow intermittent faults to be captured and diagnosed.	
16	Supplier shall supply following items along with the instruments	Complied/ Not Complied
16.1	Atmospheric Solid Analysis probe used for direct analysis of chemical mixer in powder form Compatible PC , Printer and UPS. N2 Generator, Argon gas cylinder	
16.2	The column which can maintain Chemical and Mechanical strength of the particle. The column should be able to work in wider pH Range [1-12]. C18 , 2.1 X 100mm, 1.7 um C18 , 3.0 X 100mm, 2.5 um C18 , 4.6 X 100mm, 2.5 um	
17	Optional items	Complied/ Not Complied
17.1	Compatible ELSD detector to connect and control by existing Waters	

	UPLC system: Nebulizer : Front mounted snap in design Temperature control nebulizer chamber: Heater 0 to 100% thermally control , cooler on off Gas : Nitrogen gas supply arrange by supplier Temperature range drift: 0.1 C increment , feedback accuracy to 0.1 C Eluent flow rate : 100% water at 2 ml/min Optics: Heated optics (50C) Light source: Tungsten Detector : PMT Digital data: 24 bit digital data , 80 Hz	
17.2	Compatible Fluorescence detector to connect and control by existing waters UPLC system: Excitation wavelength range: 200 to 890 nm Emission wavelength range: 210 to 900 nm Bandwidth : 20 nm Data acquisition: Up to 80 Hz Light source: Hg/Xe arc lamp Flow cell design: Special axial designed for maximum Cell volume : < 2 ul	
17.3	The data can be converted to other formats. Spread Sheet software and word-processing software can be readily employed to provide data in tables or graphs through industry standard protocols. Complete IQ/OQ/PQ Should be included and supplied for the LCMS System.	

Mandatory requirements:
1. Undertaking for providing required spares for the equipment. 2. Quote price to CIP Bhuj. Instruments clearance Certificate (DSIR) will be provided by K S K V Kachchh University,Bhuj. 3. The bidder has to mandatorily provide 3 years comprehensive warranty for the full system and total 5 years Annual Maintaince Contract (AMC) failing which the quotation will be summarily rejected at the time of technical bid opening. 4. Training: For one week should be carried out to make sure the system is properly used by the faculty/students/operator 5. Additional information / concessions

14. TECHNICAL SPECIFICATIONS FOR LABORATORY FURNITURE, & ACCESSORIES

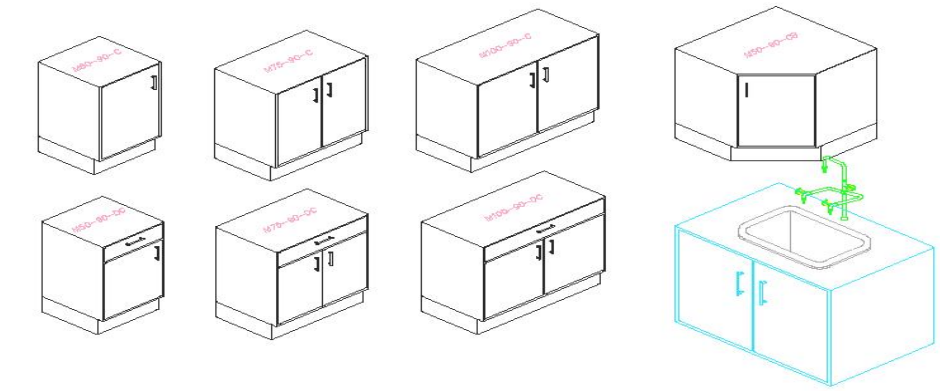
TECHNICAL SPECIFICATION FOR LABORATORY BENCH COMPONENTS

Plinth mounted system:

General Description:

These are Laboratory Work Stations available in 2 heights of 900mm and 750mm in metallic Construction designed to have completely flexible modular system. Each module will have independent base frame. Necessary leg space will be provided between two modules wherever required. Rear portion of the leg space will be covered with the enclosure panel. Work table shall consist of;

a) Under-bench cabinet: In GI construction, duly finished with epoxy powder coating, front panel of the cabinet door and drawer shall be in double skin construction. Door hinges will be in SS construction of Hattich Make. Shutter will have 110° opening. Cabinet will be provided with one shelf. Drawer rails will have the rollers in nylon construction with sealed ball bearing. All fasteners shall be in nickel plated steel / SS construction. Handles shall be in SS 304 construction in C type design. All Modules shall be available in different options such as, module with shutter, module with one shutter/one drawer or all drawers.



Detailed Specifications and thickness of GI items in each module:

- Cabinet end panels; min. 1.0 thick GI Sheet
- Cabinet rear panel and top panel; min. 1.0 mm thick GI sheet
- Cabinet base skid; 1.0 thick GI Sheet
- Cabinet drawers; 1.0 thick GI Sheet
- Cabinet shutters & drawer front panels; double skin const, min 0.8 mm thick GI sheet
- Cabinet main frame structure and drawer slide rails, 1.6 mm thick GI Sheet

Laboratory Furniture:

Plinth Mounted System.

ISLAND BENCH TYPICAL UNIT

1) Worktops: 18(±1mm) mm. thick high quality granite in jet black colors with edges having round chamfer of 5 mm radius on top side. The overhang of granite is 25 mm at front side of understructure.

2) Reagent rack: Worktop mounted reagent rack in single or double tier design. Vertical member and main bracket of the reagent rack shall be in of 0.9 mm thick GI construction, duly epoxy coated for excellent corrosion resistance. Rack platform shall be in GI construction. 3 mm thick Neoprene rubber sheets should be provided on shelves for better corrosion resistance and safety for glass bottles. Shelf height shall be adjustable as per requirement.

3) Service valves: Worktop mounted service valves in forged brass construction in one way or two way design for NG, CA & V. Valve knobs shall be in plastic construction, generally with color code as per DIN standard. Make – Premier / Equivalent.

Water taps on sink, wherever specified shall be with swivel type swan neck spout. In case of three way water tap, middle tap shall be with swivel type swan neck spout and other two taps shall be with fix type serrated nozzle. All valves and taps shall be provided with atleast one meter long flexible tube in appropriate construction as mentioned below with suitable end fitting. Make – Premier / Equivalent.

Valve Service	Flexible Tube Construction
Air, N_2 and other similar gases.	4 x 6, PU tube, with standard PU fitting in Al construction.
Low or high vacuum	SS braided Teflon tube with ⅜" BSP, F fitting
Potable water	Nylon braided, 8.0 ID PVC hose with ⅜" BSP, F fitting
Chilled water	As above, but with suitable flexible insulation
Burner gas	ISI Make rubber tube suitable for burner gas
Any other service	Suitable fitting with prior approval

4) Electrical fittings: Such as sockets and switches complete without internal wiring. Fittings shall be mounted on Rectangular Electrical Duct. Electrical Duct shall be 1mm thick GI construction with epoxy powder coating.

Each electrical module should consist of North-west make or Equivalent
1) 6/16 Amp 5 Pin socket
2) 16 Amp Tiny Trip MCB Single Phase 230 V

5) Sink: In one piece, molded Sink in Solid Epoxy, Polypropylene (PP) construction. Sink outlet shall be provided with a large bottle trap in PP construction.
Make – Premier / Equivalent.

Floor Mounted Cabinets for Glass ware Storage

Cabinet shall be fabricated out of Galvanized Iron (Zinc coated) Sheets and duly coated with epoxy powder for good aesthetics. Cabinet shall have recessed skid and adjustable shelves. Cabinet doors shall be in double skin construction for proper strength and aesthetics. Necessary frame structure and hat section stiffeners should be provided for strengthening larger panels. Doors shall have proper locking arrangement. Dimension and Constructional details of the cabinet are furnished below.

General specifications

Overall Dimensions: - W – 900mm x Depth – 570 mm x Height – 2100 mm

No. of Shelves: - 5 shelves form 6 compartments. Shelves shall be adjustable in height.

Construction Detail:-
- End Panel, Rear panel, Top Panel & Bottom Panel: - 1.2 mm thick G.I. Sheet.
- Front door: - 1.0 mm thick double skin Galvanized Iron (zinc coated) Sheet const.
- Door Fixing Frame: - 1.6 mm thick double skin Galvanized Iron (zinc coated) Sheet const
- Skid: - 1.2 mm thick Galvanized Iron (zinc coated) Sheet.
- Shelf: - 1.2 mm thick Galvanized Iron (zinc coated) Sheet.
- Hat channels: - 1.2 mm thick Galvanized Iron (zinc coated) Sheet.
- Door Hinges: - In non ferrous const., zinc - Al alloy const. suitable for 270º Door opening. (Hattich or Equivalent Make)
- Door Handles: - SS 316 L const.

Wall Mounted Storage Cabinets

The cabinets should be suitable for mounting on wall. The cabinets shall be fabricated out of Galvanized Iron (zinc coated) sheets. Cabinet should be provided with 1 adjustable shelf. Proper design, stiffening / structural members should be provided for strength and rigidity. Front door of the cabinet shall be in twin door design having glass panel with metallic frame in galvanized iron / anodized aluminum construction. Dimension and constructional detail of the cabinet is furnished below.

General Specifications:

Overall Dimensions: - W – 450 mm x Depth – 340 mm x Height – 643 mm
W – 600 mm x Depth – 340 mm x Height – 643 mm
W – 750 mm x Depth – 340 mm x Height – 643 mm
W – 900 mm x Depth – 340 mm x Height – 643 mm

No. of Shelves: - 1 shelf; forming 2 compartments. Shelf should be adjustable in height.

Construction Detail:-
- End Panel, Top Panel & Bottom Panel: - 1.0 mm thick Galvanized Iron Sheet.
- Rear panel: - 1.0 mm Galvanized Iron Sheets.

- Front door: - 5 mm thick glass with metallic frame / metallic doors with locks in G.I. const.
- Shelf: - 1.2 mm thick G.I. Sheet.
- Door supporting frames: - 1.6 mm thick G.I. sheet.
- Door Hinges: - In non ferrous const., zinc - Al alloy const. suitable for 270º Door opening.
  Make – Hattich/Equivalent
- Door Handles: - SS 316 L const.

Spot Extractor

Description: Fumex, Sweden make spot extractor with 350 dia. dome.

Flexible spot extractor to have mainly following components:-

a) Ceiling bracket: - In 80 dia. CRC pipe construction with necessary provision to connect Exhaust duct. Height of the ceiling bracket should be suitable to provide required level to spot extractor. Bracket should be duly coated with epoxy primer followed by poly urethane base paint at both inner & outer surface.

b) Extractor Arm: - In 80 dia. anodized aluminum pipe construction with damper valve. Arm should have flexible joints to allow necessary adjustment. Arm should cover at least 1.5 Dia area (Arm length at least 750 mm). One end of extractor arm should be fitted with ceiling bracket and the other with extractor dome.

c) Extractor Dome: - Semi sphere dome, dia. 350 mm in acrylic construction. Dome should have necessary fixing arrangement to attach it to extractor arm.

Safety shower for Eye wash cum body wash

Description:

Work top mounted Hand held design Safety shower for Eye wash cum body wash with a single/double, angular faucet and soft plastic cone. Make – Premier / Equivalent

Mandatory requirements:
1. Undertaking for providing required spares for the equipment. 2. Quote price to CIP Bhuj. Instruments clearance Certificate (DSIR) will be provided by K S K V Kachchh University,Bhuj. 3. The bidder has to mandatorily provide 3 years comprehensive warranty for the full system and total 5 years Annual Maintaince Contract (AMC) failing which the quotation will be summarily rejected at the time of technical bid opening. 4. Training: For one week should be carried out to make sure the system is properly used by the faculty/students/operator 5. Additional information / concessions

Annexure – 06

'Instructions to Bidders'

Downloading of Tender Documents	**: 02-02-2013 (06:. 00 PM)**
Bid Submission Closing Date (Online)	**: 16/02/2013 (06:00 PM)**
Submission of EMD, Tender Fee; Other Documents etc	**: 18/02/2013 (06:00 PM)**
Due date of opening of Technical Bids	**:19-02-2013(12:00 noon)**
Due date of opening of Price Bids	**:28-02-2013 12:00 noon)**

The instructions given below must be read very carefully, as failure in compliance with any of these may render the offer liable for rejection. If a bidder has any doubt about the meaning of any stipulation herein, General Purchase Condition, specification of materials or any other enclosed document, he should immediately obtain the clarification/ information in writing.

1. **Earnest Money Deposit (EMD)**

1.1. Offers must accompany EMD by way of DD/Pay Order, drawn in favor of "Registrar S K V Kachchh University ,Bhuj", and payable at any of the scheduled bank branches situated in Bhuj. Submission of EMD in any other form shall not be considered and treated as disqualification. The DD [EMD] should be kept separately in a sealed cover duly super scribing 'EMD'.

1.2. The EMD shall be forfeited, if

i) Bidder withdraws the bid before expiry of its validity.
ii) Successful bidder does not accept the order or fails to enter into a contract within validity period of offer.
iii) Successful bidder fails to furnish Security Deposit within one month from the date of issue of P.O

1.3. The EMD of unsuccessful bidders shall be returned as soon as the tenders are finalized.

2. **Acceptance of University Payment Terms**
The standard payment terms shall be

100% of all inclusive price of the materials will be paid on receipt and acceptance of the material in good condition, installation and commissioning of the equipment supplied at site and after furnishing of Bank Guarantee for 10% of the contract covering the guarantee period subject to penal provisions applicable in case of delay in supply and commissioning as per the condition 2.4 of annexure-07.

3 **Price Basis**
The prices quoted shall be on FOR destination basis as per annexure-04, and also shall include:

(a) Transit Insurance:
(b) All Taxes, Duties and Levies.

4. Cost Compensation for Deviation:

Deviations specifically declared by the bidders in respective Deviation Schedules of Bid Proposal Sheets only will be taken into account for the purpose of evaluation. The bidders are required to declare the prices for the withdrawal of the deviations declared by them in the Deviation Schedules.

Offers should strictly be in conformity with specifications/ drawings/ samples as stipulated in the enquiry. In case no deviations are indicated, it shall be taken for granted that item (s) has/ have been offered strictly as per the requirements given in the enquiry.

5.0 **Delivery**

5.1 Delivery Schedule

The Supply, Installation, and Commissioning of the material: The bidder shall offer his best, realistic and firm delivery, which shall be specific and guaranteed. Delivery period shall be reckoned from the date of P.O. which is the first intimation of acceptance of bidder's offer. Final date of delivery shall be evidenced by date of dispatch of materials as per transporter's Lorry Receipt/ Goods Receipt/ RR/ PWB/ AWB. For delivery beyond contractual delivery period, provisions of 'General Purchase Conditions' shall apply.

5.2. Early Delivery :

It shall be noted that if an order is placed on higher bidder, in preference to lowest acceptable offer, in consideration of an earlier delivery, the bidder shall be liable to the University, the difference between the ordered rate (s) and the rate (s) quoted by the lowest acceptable bid in case the tenderer fails to complete the supply in terms of such order within the date (s) of delivery specified in the tender and incorporated in the order. This is without prejudice to other rights of the University under terms of order.

6. It is not binding on University to accept the lowest or any bid. The University reserves the right to place orders for individual items with different bidders and to revise the quantities at the time of placing the order and in such event also, the quoted rates, terms and conditions shall apply. The order for the materials may also be split up between different bidders to facilitate quick delivery of critically required materials. University further reserves the right to accept or reject any/ all bids without assigning any reason thereof. Final decision on bids also depends on the components/accessories/additional features offered

7. The University at its sole discretion unilaterally may change the quantities to the extent of ±30% as indicated in tender enquiry. The successful bidder shall be bound to supply these quantities at the same rate and on the same terms and conditions.

8. Tenderers shall fill in the enclosed proforma with regard to deviations / variations (Annexure-08) and submit the same along with their offer.

9. Orders placed against this tender enquiry shall be subject to 'General Purchase Conditions'of University, a copy of which is enclosed. Bidders are requested to confirm acceptance of these conditions in to in their offer.

10. Make/Brand of items offered shall be specified failing which offers are liable to be rejected. It shall be appreciated if one copy of detailed descriptive literature/pamphlets is enclosed along with the offer which may help technical evaluation. In case material offered is ISI marked/tested at any Govt. recognized test house; copies of relevant certificates shall be furnished along with the offer.

Annexure – 07

GENERAL PURCHASE CONDITIONS

SECTION- I
GENERAL

1.1 The following terms and expressions used herein shall have the meaning as indicated therein: Supplier / Vendors: shall mean the individual firm or company whether incorporated or otherwise in whose name the purchase order is addressed and shall include its permitted assignees and successors. Purchaser: shall mean Coordinator, Center of Excellence in Chemical Science & Technology, Department of Chemistry, Krantiguru Shyamji Krishna Verma Kachchh University, Bhuj.

1.2. Reference:
The purchase order number must appear on all the correspondence, packing slips, invoices, drawings or any other document or paper connected with the purchase order.

1.3. Waiver:
Any waiver by the purchaser of the terms and conditions of the purchase order shall not constitute any right for subsequent waiver of any other terms or conditions.

1.4 Sub-letting and Assignment:
The supplier shall not, save with prior consent in writing of the University, sublet, transfer or assign this order or any part thereof or interest therein or benefit or advantage thereof in any manner, whatsoever provided nevertheless that any such consent shall not relieve the supplier from any obligation, duty or responsibilities under the contract.

1.5. Information Provided by the University :
All drawings, data and documentation that are given to the supplier by the University for the execution of the order are the property of the University and shall be returned when demanded. Except for the purpose of executing the order of the University, the supplier shall ensure that the above documents are not used for any other purpose. The supplier shall further ensure that the information given by the University is not disclosed to any person, firm, body, corporate and/or authority and make every effort to keep the above information strictly confidential. All such information shall remain the absolute property of the University.

1.6. Supplier's Liability :
Supplier hereby accepts full responsibility and indemnifies the University and shall hold the University harmless from all acts of omission and commission on the part of the supplier, his agents, his subcontractors and employees in execution of the purchase order. The supplier also agrees to defend and hereby undertakes to indemnify the University and also hold it harmless from any and all claims for injury to or death of any and all persons including but not limited to his/her employees and for damage to the property arising out of or in connection with the performance of the work under the purchase order.

1.7. Access to supplier's Premises:
The University and / or its authorized representative shall be provided access to the supplier's and / or his sub-contractor's premises, at any time during the pendency of the purchase order, for expediting the supplies, inspection, checking etc.

1.8. Modifications
The purchase order constitutes an entire agreement between the parties hereto. Any modification to this order shall become binding only upon the same being confirmed in writing duly signed by both the parties.

1.9 Inspection/checking/testing
All materials/ equipment to be supplied against this purchase order shall be subject to inspection/ checking/ testing by the University or its authorized representative at all stages and places, before, during and after the manufacture. All these tests shall be carried out in the presence of authorized representative of the University. Supplier shall notify the University for inspection of materials/ equipment when they are ready, giving at least 10 days notice. If upon receipt at our Stores, the material/equip ment does not meet the

specifications, they shall be rejected and returned to the supplier for repair/modification etc. or for replacement. In such cases all expenses including to- and- fro freight, re-packing charges, transit insurance etc shall be to the account of supplier.

Inspection by the authorized representative of the University or failure of the University to inspect the material/equipment shall not relieve the supplier of any responsibility or liability under this purchase order in respect of such material/ equipment and it shall not be interpreted in anyway to imply acceptance thereof by the University. Whenever specifically asked for by the University, the supplier shall arrange for inspection/testing by Institutional Agencies such as Lloyds Register of Industrial Services, Boiler Inspectorate, RITES. In such cases supplier shall adhere to the inspection/ testing procedures laid down by such agencies. All expenses in this regard including inspection fees shall be to the suppliers account unless agreed to the contrary and specified in the purchase order.

1.10 Packing and Marking:

All materials/equipment shall be securely packed to the requirements of transportation by Air/Rail/ Road/ Sea. All exposed services/ connections/, protrusions shall be properly protected. All unexposed part shall be packed with due care and the packages should bear the words' handle with care'. The packing requirements of Air/Rail/ Road transport shall be complied with so as to obtain clear Airway/Railway Receipt/ Lorry Receipt i.e. without any qualifying remarks.

All packages and unpacked materials shall be marked with the name of Consignor, Consignee, Purchase order No., gross and Net weight, sign of handling, if any, with indelible paint in English atleast at two places. In case of bundles, metallic plates marked with the above details shall be tagged to such bundles.

1.11 Dispatch of Materials:

The supplier is responsible for the safe delivery of the goods in good condition at destination stores. The supplier should acquaint himself of the conditions relating to handling and transport of the goods to destination and shall include and provide for security and protective packing of the goods so as to avoid damage in transit.

1.12 Validity of offers:

The offers shall be valid for a **period of 60/120 days (Depending on the type of equipment) from the date of opening of bids**. The period of validity cannot be counted from any other date other than the date of opening the bids. During this period the tenderer shall not be permitted to withdraw or vary his offer made and if the tenderer does so, **the EMD shall be forfeited.**

1.13 Jurisdiction:

All and any disputes or difference arising out of or touching this order shall be decided only by the Courts or Tribunals situated in Bhuj.

1.14 The Registrar, K S K V Kachchh University,Bhuj does not bind himself to accept the lowest or any tender and he reserves the right to reject any offer without assigning any reason.

SECTION – II
FINANCIAL

2.1. **Prices:**
Prices quoted shall be inclusive of all taxes and firm till completion of the programme.

2.2. **Terms of Payment:**

2.2.1. Payments by the purchaser shall be made through Account Payee cheques only. **Bank charges if any shall be borne by the supplier.**

2.2.2. If the supplier has received any overpayments by mistake or if any amounts are due to the University from the supplier due to any other reasons and when it is not possible to recover such amount under the present purchase order, the University reserves the right to collect the same from any other amounts and/ or Bank Guarantee given by the supplier due to or with the University.

2.3 **Liquidated Damages/ Failure and Termination:**

2.3.1 In the event of any delay in the supply of material beyond the stipulated date of completion including any extension permitted in writing, the University reserves the right to recover from the supplier a sum equivalent to 0.5% of the value of delayed materials/equip ment for each week of delay and part thereof subject to a maximum of 5% of the total value of the order.

2.3.2 Alternatively, the University reserves the right to give the contract elsewhere at the sole risk and cost of the supplier and recover all such extra cost incurred by the University in procuring the materials from the other source.

2.3.3 Alternatively University may cancel the Purchase Order completely or partly without prejudice to its right under the alternatives mentioned above.

2.3.4 In case of recourse to alternative 2.4.2 and 2.4.3. above, the University shall have the right to repurchase the materials which is readily available in the market to meet the urgency requirements caused by supplier's failure to comply with the scheduled delivery period irrespective of the fact whether the material/ equipment is similar or not.

2.4 **Delivery Schedule:**
Time is essence of this order and no delay shall be allowed in the delivery time/ delivery schedule mentioned in the purchase order.

2.5 **Performance Bank Guarantee:**
The supplier shall ensure that all materials/equipment under this purchase order shall conform to University's requirements and specifications. An additional security in the form of Performance Bank Guarantee is essential for satisfactory performance of the equipment over a period of time. In view of this, the supplier shall be required to furnish a Bank Guarantee (10% of order value) as follows against any manufacturing defects/ poor workmans hip/poor performance. In case any deficiencies are found during this period, the same shall be repaired/rectified/replaced free of cost. BG shall be from any Scheduled Bank or any other bank as approved by University from time to time in the prescribed Performa.

a. Bank Guarantee for 10% of the order value with validity up to warranty period from the date of installation of equipment.

The University shall at its discretion have recourse to the said bank guarantee for recovery of any or all amount due from, the supplier in connection with the purchase order including of guarantee obligations. Checking/ap proval of supplier's drawings, inspection and acceptance of materials/equip ment furnishing to effect shipment and/or work done by erection, installation and commissioning of the equipment by University or any other agency on behalf of the University shall

not in way relieve the supplier from the responsibility for proper performance during the guarantee period.

2.6 **Insurance:**

Supplier shall arrange suitable insurance cover at his risk and cost.

2.7 **Removal of rejected goods and Replacement:**

a) If upon delivery, the material/equipment is found not in conformity with the specifications stipulated in the purchase order, whether inspected and approved earlier or otherwise, such material / equipment will be rejected by the University or his authorized representative. A notice to this effect shall be issued to the supplier, normally within 30 days from the date of receipt of materials at our Stores.

b) Supplier shall arrange suitable replacement supplies and remove the rejected goods within 30 days from the date of notice failing which, the goods shall be dispatched to vendor by road transport on 'Freight to pay basis' at supplier's risk and cost.

c) External damages or shortages that are prima-facie as a result of rough handling in transit or due to defective packing shall be intimated to the supplier within a period of one month of the receipt of the materials, spares etc. In case of internal defects, damages or shortages of any internal parts, which cannot ordinarily be detected on a superficial visual examination, due to bad handling in transit or defective packing, or any other reason, it should be intimated to the supplier within 3 months from the date of receipt of the material. In either case the damaged or defective materials should be replaced by the supplier free of cost.

d) If no steps are taken within 15 days of receipt of intimation of defects or such other reasonable time as the University may deem proper to afford, the University may without prejudice to its other rights and remedies arrange for repairs/rectification of the defective materials or replace them entirely and recover the expenditure incurred on account of these actions from the deposits such as EMD, SD and performance guarantees or other monies available with the University or by resorting to legal action.

2.8 Force Majeure:

2.8.1 The supplier shall not be liable for delay or failing to supply the material for reasons of Force Majeure such as Act of God, Act of War, Act of Public Enemy, Natural calamities, Fires, Floods, Frost, Strikes. Lockouts etc. Only those causes which have duration of more than 7 days shall be considered for force majeure.

2.8.2 The supplier shall within 10 days from the beginning of such delay notify the University in writing the cause of delay. The University shall verify the facts and grant such extension of time as facts justify.

2.8.3 No price variation shall be allowed during the period of force majeure and liquidated damages would not be levied for this period.

2.8.4 At the option of University, the order may be cancelled. Such cancellation, would be without any liability whatsoever on the part of the University. In the event of such cancellation, supplier shall refund any amount advanced or paid to him by the University and deliver back any materials issued to him by the University and release facilities, if any provided by the University.

Annexure -08

DEVIATIONS

Bidder's Name and Address

To

The Registrar,
Krantiguru Shyamji Krishna Verma
Kachchh University
Bhuj-370 001

_____

_____

Dear Sirs,

Sub:-Supply of _____against enquiry No._____dated _____.

***

We confirm that following are the only deviations and variations from any exception to specifications and tender documents for the above mentioned subject supplies against enquiry No._____which are irrespective of what-so-ever has been stated to the contrary anywhere else of our offer. These deviations and variations are exhaustive. Except for these deviations, the entire supplies shall be executed as per specifications and tender documents. Further, we agree those additional conditions, if any, found in our offer other than those stated below, save that pertaining to any rebates offered shall not be given effect to.

SL.No.	Description of Deviation	Ref. of page, Clause of the conditions of bid documents	*Monetary Implications in case of withdrawal ₹ (in figures) ₹ (in words)

_____

*Note: Here the tenderer should indicate the amount of money, if any, which he would, charge extra (i.e. in addition to the rates quoted by him) for withdrawal of his conditions/deviations and accepting the condition as stipulated in tender documents. (Use additional sheet of the same size and format if necessary).

Signature: _____

Designation:

Annexure – 09

Guide-lines for Submission of Bank Guarantee towards Performance Security

The Bank Guarantee shall fulfill the following conditions failing which it shall not be considered valid:

1. Bank Guarantee shall be executed on non-judicial stamp paper of applicable value purchased in the name of bank.

2. Non-judicial stamp paper shall be used within 6 months from the date of purchase. Bank Guarantee executed on the stamp paper of more than 6 months old shall be treated as invalid.

3. The contents of the Bank Guarantee shall be as per our Performa (Annexure- 10).

4. The Bank Guarantee should be executed by a scheduled bank or banks viz._____
_____
_____.

5. The executor of Bank Guarantee (Bank Authority) should mention the Power of Attorney No. and date executed in his/her favor authorizing him/her to sign the document or produce the Photostat copy of Power of Attorney.

6. All conditions, corrections, deletion in the Bank Guarantee should be authenticated by signature of Bank Officials signing the Bank Guarantee.

7. Each page of Bank Guarantee shall bear signature and seal of the Bank.

8. Two persons should sign as witnesses mentioning their full name and address.

Registrar
Center of Excellence in Chemical Science & Technology,
Department of Chemistry
K S K V Kachchh University,Mundra Road, Bhuj

Annexure –10

BANK GUARANTEE PROFORMA FOR PERFORMANCE SECURITY

This agreement has to be executed on a Non-Judicial stamped paper worth ₹ 100/-

Whereas the …… here-in-after called (The Bidder) has submitted their bid dated……for the supply of…….. (Here-in-after called "the Bid")…… KNOW ALL MEN by these presents that we…….(Hereinafter called "the Bank") are bound unto Registrar, Krantiguru Shyamji Krishna Verma Kachchh University, Bhuj,Gujarat. Hereinafter called "the purchaser") in the sum of `…… …… for which payment will and truly to be made to the said purchaser, the bank binds itself, its successors and assigns by these presents. Sealed with the common Seal of the said Bank this ……day of……200

THE CONDITIONS OF THIS OBLIGATION ARE:

1. When the successful tenderer does not accept the order after issue of preliminary acceptance letter/letter of indent/purchase order.

2. When the successful tenderer fails to furnish the security deposit within 30 days from the date of issue of preliminary acceptance letter or the letter of indent or Purchase Order _____.

3. When tender is disqualified for reasons outlined in _____.
4. When tenderer alters his prices or withdraws his offer during the validity period.

We undertake to pay to the purchaser the above amount within one week upon receipt of its first written demand without the purchaser having to substantiate his demand, without referring to the supplier and without questioning the right of University to make such demand or the propriety or legality of the demand provided that in its demand the purchaser will note that the amount claimed by it is due to it owing to any of the occurrence of the above mentioned conditions, specifying the occurred condition or conditions.

Notwithstanding any thing contained in the foregoing our liability under this guarantee is restricted to ` _____ (Rupees_ _____ only). Our guarantee shall remain in force until _____. Unless a claim within 3 months from that date, all your rights under this guarantee shall be forfeited and we shall be relieved and discharged from all liability thereafter.

We _____Bank Limited lastly undertake not to revoke this guarantee during its currency except with the previous consent of University in writing.

Date the _____Day _____200 for _____Bank Ltd.,

Signature: Designation: Address: Seal:

ANNEXURE-11

TECHNICAL BID FORM

S.No	Documents	Copy submitted or not (Yes/No)
1	The Company / the tenderer should be in existence for the last 5 Years As per Annexure -02	
2	The Company/ the tenderer should have earlier supplied TWO FIVE TIMES the quantities of the items being in the current tender in any of the last two financial years to the Universities or Research organizations.	
3	The tenderer should be a Manufacturer or the authorized representative of equipment or other respective products/items	
4	The tenderer/tenderer's group should have a turnover a minimum of more than 5 times the Bid value of the tenderer in each of the last three financial years.	
5	Audited financial statements, that is Balance Sheet, Income & Expenditure and Profit & Loss accounts in support of having required turnover in each of the last three financial years. IT returns for the last three financial years.	
6	Technical Specifications of Annexure – 05 (Complied or Not-Complied report) along with supporting documents of the items bided (items 1 to 9), for the scientific equipment clearly mentioning the make and model	
7	The latest Income Tax Clearance Certificate	
8	List mentioning the addresses and contact persons with phone numbers of the Service Centers	
9	The list of customers, to whom the bidder had supplied identical materials in the past along with P.O. details and performance report, if any.	
10	Annexure - 08	

ANNEXURE – 12
COMMERCIAL BID FORM
(To be Submitted online only)

Sr. No.	Description of Work (Equipment names)	Quantity (No.)	Price in ₹ / Foreign Exchange Equivalent (inclusive of all Taxes)
1.	Nuclear magnetic resonance spectrometer (NMR)	1	
2.	Preparative High performance liquid chromatography	1	
3.	High performance thin layer chromatography (HPTLC)	1	
4.	Thermal Analysis Equipment (TGA, DTA, DSC)	1	
5.	Flash Chromatography	1	
6.	Nano Particle size analyzer with zeta potential	1	
7.	Autotitrator with software	1	
8.	Accelerator Solvent Extractor	1	
9.	Oil extractor	1	
10.	Microwave Synthesizer	1	
11.	Atomic absorption spectrometer (AAS)	1	
12.	Flash point tester	1	
13.	Tandem Quadrupole Mass Spectrometer	1	
14.	Laboratory Furniture and Accessories		