



Tender Document
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SCHEDULE OF TERMS & CONDITIONS

No. DHSGU/PURCHASE/DORD/1/2010/21/9

Revised on 12.10.10

Subject: Supply of sophisticated equipments as per the technical details and specifications as given below:-

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Schedule of Requirements

Sealed bids are invited in a '**Two-Bid-System**' (Techno Commercial Un-Priced & Priced Bids) for supply of sophisticated equipments to the University as per the technical details and specifications given below:

A. List of Equipments:

S. No.	Name of Equipment
1	Ultracentrifuge
2	Flow Cytometer/Cell Sorter Flow Cytometer
3	Nano Spray Dryer
4	High Performance Liquid Chromatography (HPLC)
5	Confocal Laser Scanning Microscope
6	Transmission Electron Microscope (TEM)
7	Single Crystal X-ray Diffractometer (XRD)
8	Powder X-ray Diffractometer System (XRD)
9	Simulation Thermal Analyzer
10	Gas Chromatograph Mass Spectrometer (GC-TOF)
11	DNA Sequencer/ DNA Sequencer & Analysis System
12	Induction Couple Plasma MS (ICP-MS)
13	Laser Raman Spectrometer
14	Atomic Force Microscope (AFM)
15	Fourier Transform Infrared Spectrophotometer (FTIR)
16	High Performance Thin-layer Chromatography (HPTLC)
17	Nuclear Magnetic Resonance Spectrometer (NMR)
18	Laser Scattering Spectrophotometer for Particle Size Analysis
19	Superconducting Quantum Induction Design (SQUID)
20	BET Surface Area Analyser
21	Fluorescence Spectrophotometer-Lifetime
22	Spectroscopic Ellipsometer
23	Electrochemical Work Station
24	Dielectric Impedance Spectrometer
25	Super Computing System
26	Real Time PCR

B. Specifications & Allied Technical Details:

S NO.	Name of Equipment with specifications	Qty.
1	Ultracentrifuge: Max RPM; 1,50,000; Max Force up to 10,20,000xg; Drive: variable frequency Induction drive; Refrigeration System; Solid state, thermo electric Temp. control system; Vacuum system: Moisture purging; System can be operated placed in Laminar hood; able to employ gravity max technology for Fixed Angle & Swinging Bucket Rotor to carryout analysis in different volumes without compromising force; Screen & touch keypad operation for RMP/ RCF/ Temp./Vacuum display; Able to accept Fixed Angle/Vertical Tube/Near Vertical & Swinging Bucket Rotors.	1
Essential Accessories		
	1. Fixed Angle Rotors of variable volumes	

2	Flow Cytometer/Cell Sorter Flow Cytometer: with following lasers of mentioned wavelengths & laser powers: 351-355 nm solid-state UV laser with 100 mW or more; b) 488 nm solid-state laser with 200mW or more tunable laser power Capability of mini. 9 parameters (7 fluorescence & 2 scatter) measurements simultaneously with future upgradeability up to 17 or more fluorescence parameters; an open & user configurable optical platform; able to analyse cells at a rate up to 90,000 cells/sec. or more; able to sort cells at a rate of up to 60,000 cells/sec. or more with a mini. purity of 98% regardless of the number of lasers or fluorescence parameters being used; Data Resolution of 4.5 decades or more is desired with 24 bit or more digital signal processing ability; fully programmable, computer-controlled sample input station with provision to accommodate various tube formats with capacity of 0.5 ml, 1.5 ml, 5ml, 15 ml & 50 ml tubes respectively; operational features like automatic agitation & automatic back flush; have both 2-way & 4-way sorting capability with the ability to assign sort modes independently to each sort stream with individual stream deflection & collection control; Multi-well sorting ability with flexibility to sort cells into 96, 384 & more than 1000 well configurations & provision of single cell deposition on to slides or into wells; with multiple nozzles sizes including 50 to 200 for smooth analysis & sorting of different cell types; able to perform at high pressure 90 PSI or more; with proven capability of sorting various cells/cell lines like stem cells, T & B cell, somatic cells, fluorescent proteins & cancer cells etc. ; sample protection during sort interruption; able to alert the operator if sorting shuts down via either page, e-mail or through audible alarm; Colour compensation of all possible spectral overlaps with feature of the auto compensation.	1
Essential Accessories & Software		
	1. Computer-controlled sample input Station	
	2. Multiple nozzles (504-2004)	
	3. Window based acquisition & analysis software platform	
	4. Windows based acquisition & analysis software platform for on & offline use, import & export all standard FCS formats. Histograms, dot plots, & statistics easily imported into other applications, such as Microsoft Word, Excel & power point. Offline analysis at multiple sites. Provision for Autoclave-able sheath & waste tanks & replaceable sterile sample tubing is desired.	

S NO	Name of Equipment with specifications	Qty.
3	Nano Spray Dryer: with Piezo driven spray head with inert loop & dehumidifier for production of particle in size range of 300nm to 5 µm; mean droplet size range: 8 µm to 21 µm. Sample vol. 1 ml to 200 ml; drying gas: up to 10m ³ /h, drying gas flow: 40-160l/min; heating power 1.4KW; Maxi. inlet temp. 120±0.5°C Temp. accuracy; & Nozzle (spray nozzle, Piezo technology, ultrasonic).	1
Essential Accessories		
	1. Inset Loop: Rate of cooling: 800 watts at -10 ⁰ C. Mini. outlet temp.: down to - 25 ⁰ C; Power Consumption : 1.4 KW Max.	
	2. Dehumidifier: Rate of cooling: 600 Watts at 0 ⁰ C Mini. outlet temp.: ± 2 ⁰ C Power consumption: 700 Watts.	
	3. Aspirator with inlet filter.	
	4. Air maintenance unit.	
	5. Upgrade set closed cycle.	
	6. Trolley, spray cylinder, Particle scraper, spray caps.	

S NO	Name of Equipment with specifications	Qty.
4	<p>Hi-Performance Liquid Chromatography (HPLC): Autosampler, Column oven & detectors with following mini. specifications: Pump : Flow rate range: 1-10,000 µL/min; Flow rate accuracy: ± -1% at 1mL/min. With Precision of <0.1% RSD; Gradient delay vol. 690 µL with 4channel built in solvent degassing; Sample capacity of more than 100 vials with Injection vol. of 1-100uL, precision of 0.3% RSD at 5uL & accuracy: ± 0.5% at 50. Auto Sampler: Capacity: 96 samples; Injections: 1- 99 injections/sample; Injection Vol. Range: 0.1 - 10µl, in 0.1 µl increments Sample Delivery Precision: < 0.3% RSD; Temp. Control: 4 to 40⁰ C, programmable in 1⁰C increments; Carryover: < 0.005%. Column Management: Column Temp. Control: 5⁰ C above ambient to 90⁰ C, 0.1⁰ C increment. Photodiode Array Detector: Wavelength Range: 190 to 800 nm; Wavelength Accuracy: ± 1 nm; Cell Vol.: 500 nl.</p> <p>Quadrupole Time of Flight Mass Detector: Interface: Proven atmosphere to vacuum interface without direct heating of analytes to maintain their structural integrity like thermally labile molecules; Capable to handle large batches of complex samples over a long period of time without performance degradation; & preferably the interface between atmospheres to vacuum should be free from any capillary/heated capillary interface. Source: ESI & APCI source capable to handle flow rate from 10 ul/min to 2 ml/min without splitting; combination/dual source should be quoted to perform ESI & APCI in single run; & Atmospheric pressure Solid Probe. Sensitivity: In ESI+ mode 20 pg of reference standard; able to produce min. S/N ratio of 1000:1 or more than 1500 counts per sec. Resolution: More than 20,000 FWHM in MS alone without LC. Mass range (AMU): TOF Mass Range: 42,000m/z & quadrupole mass range better than 4000m/z. Mass Accuracy: less than 1 ppm with internal & external calibration both in MS & MS/MS mode. Collision Cell: Specially designed to automatically switch from low to high energy. Vacuum System: A fully protected air cooled vacuum system with mini. maintenance & utility requirements. Vacuum read backs & automated vent system in case of power failure. Operating Modes: Full Scan MS, Data directed analysis, Automated switching of low to high energy CID for MS & MS/MS acquisition. Software: Windows Based software with multitasking type to acquire & process data simultaneously & must be capable of performing the following functions & should be upgradable; Able to control MS, acquire, store process & reproduce data by same computer. Able to control LC; PDA detector, auto sampler & other devices from same software. Auto tune & auto calibration; Quantitation software for batch process; Metabolite ID Software.</p> <p style="text-align: right;"><i>Contd...4</i></p>	1

Essential Accessories & Software	
<p>1. Nitrogen generator with compressor, gas cylinder with regulator & 10KVA on line-UPS with 1Hr battery back up.</p> <p><u>ELSD Detector</u></p> <p>Nebulizer : Front mounted Snap Design</p> <p>Temp. Control : Thermally controlled Heater & Cooler 0 to 100°C</p> <p>Optics : Should be Heated Optics Bench</p> <p>Light Source : Tungsten Halogen Polychromatic, Front mounted, Pre Aligned, User Installable.</p> <p>Lamp Calibration : PMT Calibration.</p> <p>Detector : Photo Multiplier Tube</p> <p>Range : 0.1 to 2000 Light Scattering units full scale</p> <p>Analog Data Output : -0.1V to 2 VDC Fully attenuated signal Range</p> <p>Gas : N₂ , to be supplied, at least 65psi</p>	
<p><u>2. Fluorescence Detector</u></p> <p>Wavelength Range : 200 to 890 nm (Excitation)</p> <p style="padding-left: 20px;">: 210 to 900 nm (Emission)</p> <p>B& Width : 20 nm</p> <p>Wavelength Accuracy : ± 3 nm</p> <p>Wavelength Repeatability : ± 0.25 nm</p> <p>Sensitivity : S/N>1000</p> <p>Cell Volume : 2 µl</p> <p>Light Source : Hg / Xe Arc Lamp</p> <p>Pressure Limit : 500 psi</p>	

S NO	Name of Equipment with specifications	Qty.
5	<p>Confocal Laser Scanning Microscope: Inverted microscope (Fully Motorized): Bright field, Fluorescence & DIC illumination with accessories for confocal scan head attachment; Motorized beam path selection for visual & confocal imaging; Motorized Z focus drive with encoder with mini. stable resolution of 30nm or better; Online display screen on microscope body for the motorised functions; position or higher motorized FL filter wheel, 6 position motorized DIC nosepiece; XY stage for the movement of specimen; 12v/100w halogen illumination for transmitted light; High resolution plan apochromat objectives 4x, 10x, 20x, 40x, 60x/63xoil & 100x oil immersion; 120w/130w metal halide or mercury lamp with 2000 hours of lamp life for fluorescence observation with automatic shutter having DC (direct current) for constant & non-fluctuating light; capable of conducting long time live cell imaging applications without focus drift through hardware based continuous focus correction System; Onstage CO2 incubator for live cell imaging, which can hold petriplate & multiwall plate etc.; DIC attachment motorized for 10x to 100x objectives with analyzer & polarizer attachment, sliders & modules for the respective objectives; suitable anti-vibration table to be provided along with system; high resolution cooled monochrome camera with 1.45 million net effective pixel resolution with cooling of 10° below ambient. Confocal scan head & detection system: High transmission efficiency optics for confocal; Scan head with dual imaging capability with conventional fluorescence imaging (filter/prism based) & real time Confocal imaging. Both scanners possess point scanning method; Scan head with mini. 4PMT in standard detectors & preferably with 4 channel simultaneous image acquisition; equipped with spectral detector having multiple gratings options. Technology be latest & fast & capable to avoid any photobleaching or phototoxicity of the sample; Computer controlled continuously variable single pinhole system to cover more area for higher brightness & without affecting sectioning performance; High speed two independent Galvano scanner with the speed of 25-30 frames/second at 512x512 resolution preferably with simultaneous hybrid mode for photo activation studies. Flexible & should have different speed options useful for applications like high speed calcium flux signal capturing; efficient dichroic mirror with low angle incidence or acoustic optical beam splitter (AOBS) for better transmission efficiency; Maxi. scan resolution of up to 4Kx4K with a scan field of 18mm or higher; Scan zoom of 1-40X or more continuous variable. Multi step scanning zoom preferred; Transmitted light detector for capturing bright field & DIC images</p> <p>Lasers: Visible laser module with laser lines of Multiline Ar laser with 457/477/488/514nm; DPSS laser 561nm; Blue Diode 405nm; He-Ne 640nm; All the visible laser lines controlled through AOTF for laser attenuation & switching in synchronisation with scanner.</p>	1
	Essential Accessories & Software	
	<p>Confocal Software: Basic image acquisition, complete microscope control, Scan head control & Laser control; Saving of all instrument parameters along with image for repeatable/reproducible imaging; Frame/line/lambda capturing, Z-Stack, Time series imaging capabilities; ROI bleach for FRAP experiments; FRET Imaging; Co-localization analysis & volume rendering; Real time ratio-display; 2 D & 3D image deconvolution; Diverse measurement & statistical processing; Offline image analysis software, installed in off line computer</p>	

S NO	Name of Equipment with specifications	Qty.
6	<p>Transmission Electron Microscope (TEM): Resolution: Point to point: 0.20 nm or better & Lattice: 0.14 nm or better. Acc Voltage: Variable up to 200 kV; Lower Accelerating Vol.: 100KV or lower; Continuous Variable steps: 50V or lower. Electron Source: same core configurations with LaB6 source; FEG Source; Cold & Schottky Type. Spherical aberration coefficient: 1.0 mm as well as 0.5 mm or better. Spot size: 1 nm or better (in dia.); Magnification: Largely varies preferably from 100X to 1.0 million X or better in continuous variable mode. Imaging Camera: 2K/2K EELS Compatible High-resolution CCD camera. Sample Holder: Suitable holders for both Material Science & Biological; specimens including multiple sample loading type, high; Temp. & low Temp. uses, stress analysis type; biological single high tilt type, double axis tilt type. Stage: Computer controlled goniometer stage with recall functions; (3 & 5D) with high precision tracking near zero mechanical; backlash error & drift. STEM: BF & DF, HADDF Imaging Detector. EDS: TEM 200 X-ray Microanalysis System, Thermally recyclable EDS Detector, micro analytical processor with high speed microcontroller & memory, & associated circuitry for acquisition & processing of the X-ray signal for following applications: Elemental analysis, elemental mapping- single / multiple image acquisition, quant optimization. Latest version software(s) & upgrades. EELS: 1. Post-column energy filters for elemental mapping, zero loss & non-zero loss filtering as well as spectroscopy. Spectrum imaging with 2Kx2K digital camera, software for data analysis; Energy filter & spectrometer quotations should be in add on basis. Energy Resolution: 0.7 ev. or better. Imaging- Advanced 2KX2K cooled CCD camera with low noise threshold & side mounted, bottom mounted with plate camera. The CCD with own analysis software embedded in microscope operating platform without software conflicts & fully upgradeable. Tomography: compatible with electron topography applications. Cryo-Applications: compatible for cryo-imaging of biological samples under low dose condition. The tilt feature of the stage accommodates a tilt range of +/-30° or better.</p>	1
Essential Accessories & software		
	1. Additional FEG Source.	
	2. Software: Analysis of dimensions & SAD patterns, storing & recalling of alignment position for different users & important sample analysis softwares.	

S NO	Name of Equipment with specifications	Qty.
7	<p>Single Crystal X-ray Diffractometer: most advanced floor mounted system for small molecule crystal data collection & structural determination for samples such as poly-nuclear organo-metallic complexes, bioactive molecules etc. with most advanced mini. 3 KW or more sealed tube X-ray Generator, CCD Detector, necessary goniometer with other accessories & peripherals required to fully integrate the system including water chiller & all hardware & software starting from mounting of crystal to crystallographic information file generation to be able to use Cu & Mo radiation in the offered system with the following specifications: Mounting: Floor mounted for dedicated use in a laboratory. Sample/Detector Positioning System: Sealed tube Goniometer with three axis-stagefully automated; very high angular precision & high angular coverage of mini. 150° 2theta; color video microscope for easy alignment of samples should be in-built features. Detector & Optics: CCD detector for single crystal frame data collection & imaging/camera, large active area, very high sensitivity between 140eV to 180eV per Mo photon, having maxi. number of pixels, very fast 4 or more number of port readout system; equipped with adequate cooling facility, graphite monochromator with all other necessary accessories/optics. Generator: Computer controlled X-ray generator of 3KW maintenance free generator; stability of generator should be +/- 0.01% or better. X-ray Tube: Ceramic X-ray tubes with Molybdenum & Copper anode fine focus 2000 Watt or more; all necessary optics to be included in the basic system to ensure both tubes for crystallographic work. Radiation enclosure: Fully X-ray protected enclosure as per international safety norms with necessary certificates as per international radiation safety & CE norms. Low Temperature attachment: Low temp. (90K - 300K) with very low liquid Nitrogen consumption, no icing effect, equipped with liquid nitrogen Dewar of a capacity 60 Lts. or more, pressure regulator, transfer line, line heater & necessary accessories.</p>	1
Essential Accessories & Software		
	1. External water chiller System: Suitable external water chiller for the offered single crystal X-ray diffractometer system should be quoted from reputed brand with detailed technical specification of manufacturer.	
	2. Spares: Ceramic x-ray tube with molybdenum Anode: One (1) No. In addition, spares parts kit for at least 2 years normal operation to be included in the offer optionally. Supplier should confirm the availability of spares & support for next 10 years from the date of installation.	
	3. Capillaries: Capillaries made of special glass with wall thickness of 0.01 mm & outer diameter of 0.2mm, 0.3 mm, 0.5mm, 0.7 mm, & 1.5 mm -20 pcs. of each type & other necessary capillaries / accessories.	
	4. Test crystal: One test crystals to be included in the basic system.	
	5. Goniometer Head: 2 (two) Nos. of in the basic system.	
	6. Application licensed software: WINDOWS 2000/ LINUX based on GUI platform for instrumental control for single crystal, twins, low/high Temp., high pressure, charged density & modulated structure. Able to perform complete data acquisition, scaling, space group determination, structure determination & final report generation for publication purpose; Manufacturer's licensed software & structure solution software for many users for the structure determination software.	
	7. Warrantee: The single crystal X-ray diffractometer system including water chiller should be DDP basis warranted for a period of 24 months from the date of installation.	

S NO	Name of Equipment with specifications	Qty.
8	<p>X-ray Diffractometer for Powder, Thin Film & Rietveld analysis: Floor mounted versatile, upgrade for any other applications i.e. high & low Temp. study, texture, stress, small angle (SAXS) etc. Mini. alignment to changeover from different configuration with all advance feature & latest technology.</p> <p>X-ray generator: Rack mounted, compact with 3 KW with 60KV & 80mA or better; adjustable in step of 1KV & 1mA or better; stability of the generator should be <0.005% or better; software controlled generator.</p> <p>X-ray Tube: 2.2 kW, Cu anode, long fine focus Ceramic insulated. Warranted x-ray tube. Optics: All primary & secondary slits should be quote as per our applications requirement; Parallel Beam Monochromator should be quote for basic thin film analysis & any other optics to suitable applications. Mirror option for required applications. NI-Filter: Ni K beta filter to be offered for the X-Ray Tube. Sample Stages: Spinning Sample Stages with variable speed option. Goniometer: High Precision, vertical type goniometer with theta/theta configuration with mini. measuring circle diameter should be 430 mm or better. The movement of theta – 2theta & theta – theta arms should be with optical encoders for precise angular positioning. The smallest step size should be 0.0001° or better & reproducibility should be 0.0001° or better. The angular range should be -ve 110° to 165° or better. Detector: Should offer NaI scintillation crystal detector with large dynamic range with 0.4 counts per second for fast response & low background. Quote optionally high speed 1D solid state detector along with all necessary component. Specify the solid state detector including active area, number of active strip/crystal, maxi. capture angle, max. global count, efficiency etc. Data Quality</p> <p>Guarantee: The Vendor must provide data quality Guarantee on the Angular Position & Intensity ratio to be carried out on NIST Sample.</p> <p>Safety: Should compliance all radiation safety & international CE norms it should be confirmed with all certificates.</p>	1
Essential Accessories & Software		
	1. PXRD, with Multisamples to run 30 samples, one by one.	
	2. Eva software and latest configuration, license windows software, 19" TFT color monitor, keyboard, & mouse. Water Chiller: Indigenous suitable water chiller to run the XRD system.	
	3. Software: Windows based, to control all instrument parameters & provides best algorithms for solving analytical tasks. The software for qualitative & semi quantitative analysis. Complete search/match program with background subtracted, evaluation, phase analysis, easy simulation, automatic refinement, smoothening of measured data, peak search, integrated intensity, K alpha 1 & 2 separations etc. Rietveld package should include refinement, ab initio structure analysis, profile fitting, structure viewer, indexing, etc.; PDF2 ICDD data base with users license need to quote with basic system; The XRD with remote diagnostic facility & all necessary software need to quote by the vendors. The remote diagnostic to control & identify all instruments parameter from remote location through intranet facility.	

S NO	Name of Equipment with specifications	Qty.												
9	Simultaneous Thermal Analyser (STA): Simultaneous DTA/DSC & Thermogravimetry (TG) measurements for variety of sample like, Inorganic & organic compounds. Measurement Temp.: ranging from room Temp. to higher Temp. (\sim RT to 1500° C); From lower Temp. to high (-150° C to 1000° C)	1												
Essential Accessories														
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	3. Crucibles: Aluminum, Platinum, Alumina (Al ₂ O ₃).													
	4. Nitrogen flow system for inert atmosphere.													
	5. Liquid Nitrogen system.													
	6. Furnace – Silicon carbide furnace (RT-1550°c) platinum furnace (RT-1550°c) steel furnace (-150 to 1000°c).													
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	8. Crucibles – Aluminum, Platinum, Alumina (Al ₂ O ₃).													
	9. Liquid Nitrogen System.													

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10	<p>Gas Chromatograph-Mass Spectrometer (GC-TOF): Control both screen touch & hard keys. Column Oven: Temp. range: Ambient +4 °C to 450 °C; -100 °C to 450 °C with liquid N₂; -60 °C to 450 °C with liquid CO₂; Temp.-programmed ramps: 24 ramps with 25 isothermal holds; Max. Temp. ramp rate: 120 °C/min for all voltages; Cool-down rate: 400 °C to 50 °C in 4.5 min. Split/Splitless Injector (S/SL): Max. Temp.: 450 °C isothermal. Programmable Temp. Vaporizing Injector (PTV): Temp. range: -100 °C to 450 °C with liquid N₂; -60 °C to 450 °C with liquid CO₂; Maxi. Temp. ramp rate: 200 °C/min; Temp. ramps: 24. Injector EFC; Pressure: 0.1 % Full Scale; Flow: 0.5 % Full Scale & 3% Measured Value; Resolution: 0.1 psi or 0.1 mL/min.</p> <p>Optional GC features: Injectors: Up to three (one required); 1177 Split/Splitless or 1079 PTV; Detectors: Up to three detectors including the FID, ECD, PFPD, TSD (NPD) & TCD; maxi. of two PFPDs; Chromato Probe device: For solids, large volume liquids or slurries; requires a 1079 PTV Injector; Quick Switch Valve: Automated switching between different columns; Valves: Custom plumbed valves for a wide range of applications Foreline Pump; Dual stage, rotary vane. Voltage: 101, 120, 230 V; same as GC voltage.</p> <p>A. Bench top Time of flight Mass Spectrometer & Direct Insertion Probe Quadropole Mass range 3000 amu; & TOF mass range 20000 m/z. Mass resolution mini. 17500 with fast LC. have electron ionization (ESI), chemical ionization (PCCI); Direct insertion probe(DIP) for analysis of samples directly; coupling of CEMS & LCMR by particles; filament current & electron energy variable; Ion source temperatures variable & have independent control; have acquisition rate up to 20 spectra/sec; The Mass Accuracy < 5ppm throughout the mass range. Internal calibration 1-2 ppm, external calibration 5 ppm.</p> <p>Installation checkout Sensitivity : EI full scan for Hexacholrobenzene: 1 pg (S/N 100:1) peak to peak PCI full scan for Benzophenone: 100 pg (S/N 150:1) peak to peak</p>	1
Essential Accessories & Software		
	1. Air cooled turbomolecular pumps.	
	2. Source Isolation Valve to allow change of ionisation mode (EI/CI) without breaking Instrument vacuum. A probe vacuum lock to allow direct insertion probe to be inserted without breaking Instrument vacuum. Positive & negative ionisation capabilities included as standard on the instrument.	
	3. Software: Data acquisition, data processing, qualitative & quantitative analysis for complete equipment with its peripherals & inbuilt empirical formula calculation software & should automatically provide less number of possible hits.	

S NO	Name of Equipment with specifications	Qty.
11	<p>DNA Sequencer & Analysis System: Fully integrated system employing fluorescent-based capillary electrophoresis for Genetic Expression/analysis/DNA Sequencing, Hetero-zygote Detection, Confirmatory Sequencing, Mutation Analysis, Allele Identification, SNP Scoring, Microsatellite Instability, Fingerprinting/ Expression studies along with discovery of gene target, pathway analysis, biomarker discovery, microarray data validation, RNAi studies, Drug Characterization, development of signatures & monitor gene regulation; System should support multiple capillaries array- 8 capillaries minimum. Coated/Uncoated Capillaries: Capable of using mini. of 4 dyes (AGCT) for doing all genetic analysis; System should be completely automated, including sample denaturation, loading of gel into capillaries, electrokinetic injection of samples from 96-well microplates to the capillaries & electrophoresis; data recording & analysis. Sample denaturation within the system; Single Gel, single capillary array & a single software platform for all assays; Laser induced Fluorescence & detection by highly sensitive PMT/CCD camera; Read length of more than 700 bases & base calling accuracy of mini. 98.5%; and able to read 5-30 genes in a single reaction.</p>	1
Essential Accessories		
	Nil	

S NO	Name of Equipment with specifications	Qty.
12	<p>Induction Coupled Plasma Mass Spectrometer (ICP-MS): Floor-mounted, fully PC-controlled to analyze rock, soil, biological & water for trace & ultra-trace & rare earth elements et. 90° reflecting ion optics system for gigahertz sensitivity (1000 Mc/s/mg/L) & low background & interferences must reflect & focus the ion beam to the entrance of quadropole mass analyzer with high efficiency. Sample introduction system, solid state 27 MHz RF generator & patented Turner Interlaced Coils. Full PC control of plasma positioning X-Y-Z. Triple stage vacuum system, all plasma gas flows, mass analyzer, & Discrete Dynode Electron Multiplier (DDEM) detector. The vacuum system is fully contained within the instrument. Detector provides nine orders of dynamic range in an all-digital pulse design. Collision Reaction Interface (CRI) by injecting simple collision & reaction gases (HE & H) into the plasma. Gas injection through the sampler cone, skimmer cone, or both. All CRI gas flows controlled by mass flow controllers. Rapid switchover between gas on & gas off, or between different collision & reaction gases. External Sample Introduction Assembly (ESIA) with Double-pass Glass Spray chamber. Quadrupole features precision-machined, stainless steel/molybdenum, round rods locked into ceramic mounts for a near-perfect hyperbolic field. Stainless steel construction permits determination of Hg with high memory. All voltages are fully interlocked & under PC control. Solid-state, air-cooled power supply. Built-in, multi-channel scaler provides up to 40 channels per mass. Mass Range of 3 to 256 amu with 'zero blast' protection & adjustable resolution (0.5 to 1.2 amu). Mass calibration stability <0.05 amu per day; quadrupole RF frequency- 3.0 MHz; scan speed- 2000 amu/s; quadrupole settling time- <400 μs; mini. dwell time- 200 μs. Should have necessary software & the following features: radial or dual view of plasma; mini. detection limit of all the elements in ppb; necessary attachments for analyzing arsenic, mercury & selenium; nebulizer, spray chamber & injector should be corrosion resistant. Facility to eliminate polyatomic interferences.</p>	1
Essential Accessories		
	1. Auto-sampler, quartz torch, injector, tubes for peristaltic pump, metal ion standards along with other necessary items & perishable components enabling instrument to run uninterrupted for 4 years.	
	2. Gas cylinders, fume hood & chiller, digester for biological samples, online UPS of appropriate rating.	

S NO	Name of Equipment with specifications	Qty.
13	<p>Micro Raman Spectrometer integrated with Lasers of different wavelengths (514 & 633nm): An achromatic spectrograph equipped with gratings; Lasers with transfer & Filtering optics; a confocal microscope; a multichannel CCD Detector & necessary software.</p> <p>Major technical specifications:</p> <p>(a) Spectral range : 400nm-1050nm. (b) Spectral Resolution : 0.35cm⁻¹ pixel at 633nm with a 1800gr/mm (c) Spatial resolution : Truly confocal microscope. Laser diameter smaller than 1 micron & axial confocal performance better than 2 microns.</p> <p>Spectrometer: 800mm focal length achromatic flat field monochromator; Two gratings- 1800gr/mm & 600gr/mm mounted on motorized turret driven by software. Spectral Resolution: better than 0.35 cm⁻¹/pixel at 633nm.</p> <p>Lasers & associated Optics: Internal Laser: Air Cooled He-Ne Laser at 633nm & power nearly 15mW; External Laser: Air Cooled Ar Laser at 514nm & Power nearly 20mW; Necessary Optics for injecting external laser in the instrument; Set of "edge filters" & "interference filters" for measurement of Raman; shift down to 50cm⁻¹ (suitable for 514nm as well as 633nm Lasers); Laser spot: Diameter smaller than 1 micron on sample; 325nm He-Cd Laser as an option for PL measurements.</p> <p>Confocal Microscope: High stability with: XY Manual Stage; White light source for illumination of sample in reflection mode. Revolver equipped with 3 achromatic objectives of magnifications 10X, 50X & 100X with working distances 10.00mm, 0.30mm & 0.20mm respectively.; Axial confocal performance of 2 micron; Color monitor for viewing sample & laser spot.</p> <p>Multi Channeled CCD Detector with: 1024 x 256 pixel; Spectral Range: 200-1050nm; Quantum efficiency: >30% between 500 & 800nm; Dark Noise: <0.002 e/pixel/sec.</p> <p>Liquid Cell: Software permitting the control of instrument, data acquisition, data manipulation with work station; Operation voltage of 230-250 V/50Hz; Installation at customers site; Warranty for 1 year. System should have: Software controlled Microthermometric cell working (196° to 600°C); Photoluminescence measurement attachment with 325nm Laser; Power Meter to Measure laser power on sample surface; Spectral identification software with data bases developed for polymers, organic & inorganic compounds; & XYZ Automated Stage for Mapping Application.</p>	1
Essential Accessories & Software		
	1. Micro thermometric cell, photoluminescence measurement lit up. Spectra identification software for polyriel inorganic, organic compounds as mentioned in specification.	
	2. Supporting software for polymer, inorganic, organic compounds as mentioned in specifications.	

S NO	Name of Equipment with specifications	Qty.
14	<p>Atomic Force Microscope: Optics: Integrated optics with color CMOS camera; Computer controlled white LED illumination; 1.5 mm X 1.5 mm field of view; 12-μm optical resolution; have 45° optical view of the tip-sample area to facilitate tip approach. Closed-Loop Scanner: More than 90-μm by 90-μm scanner with closed-loop x-y scan linearization & sensed 12-μm z scanner using strain gauges to compensate for piezo hysteresis, creep & non-linearities. Software only linearization correction; tip scanning configuration with no sample size & mass limitation when not using sample stage; unipolar scanner for voltage controls for X, Y & Z in order to avoid scanner depolarization; closed-loop z for force-ramp measurements; software controlled digital feedback for x y & z. SPM Modes & Options: Contact, Tapping Mode & Phase Imaging AFM to perform Magnetic Force Microscopy & Electrostatic Force Microscopy; able to perform Lift Mode with closed-loop z; Microscope head open view/design/access for customized SPM experiment in conjunction with external stages or other accessories; able to use pre-mounted & un-mounted cantilevers; optional software package for nanolithography. SPM Sample Stage: Must accept sample sizes up to 50 mm diameter & 7 mm height or 25 mm diameter & 15 mm high; with motorized Z-axis control with fine adjustment manual pitch & tilt; allow the sample to be biased to the tip up to +/- 10V under software control. Pre-mounted & pre-aligned cantilevers for easy & rapid probe exchange. Controller: The scan generator with three independent 24-Bit DACs for xyz scan control; eight dedicated 16-Bit 100 kHz-A/D converter for acquisition of data; two A/D channels that are accessible to the user via BNC connections; two-channel lock-in amplifier for Tapping Mode operation; at least three digital feedback loops; an internal bus system for future expansion; a DSP board.</p>	1
Software		
	<p>Software: 'Real-time Oscilloscope' & digital voltmeters; to allow automated adjustment of amplitude & phase in Tapping Mode; allow analysis of data without interrupting data acquisition; screen-editor to prepare presentation quality images & save in a variety of formats, e.g. TIFF, BMP, WMF; allow the probe to be parked at user-selected location within & image by simply moving the mouse; Acquisition software for drag-&-drop of images into the nanolithography package or the image analysis.</p>	

S NO	Name of Equipment with specifications	Qty.
15	<p>Fourier Transform Infrared Spectrophotometer (FTIR): Covering a complete spectral range from 8000-50cm⁻¹. Provision for up gradation to work in NIR range up to 15000cm⁻¹ to achieve the above required beam splitter, source & detector, etc. The achievable signal to noise for a 1 minute 100% line measurement should be at least 45000:1 peak-to-peak between 2200 to 2100 cm⁻¹ b& width. The spectral resolution variable to a maxi. of at least 0.3 cm⁻¹. A/D converter must have a 24 bit dynamic range for accurate representation of spectra & best signal-to-noise. Include a software-controlled aperture wheel with 11 positions ranging from 0.25 up to 6 mm for optimization of throughput. Optical components such as detector, source & beam-splitter electronically coded (Automatic Component Recognition, ACR) to recognize components automatically when placed in the spectrometer/removed. Appropriate acquisition parameters must be automatically set in the software. Incorporates a high throughput 30 (or 60°) interferometer, permanently aligned for maximum light throughput & efficiency. All optics other than the beam-splitter & non-focusing isolation windows should be gold quoted. The interferometer must be permanently aligned & maintain the alignment during the scan or after beam-splitter exchange. Desirable should not require 24 hours 'on mode'.</p>	1
Essential Accessories & Software		
	1. Interface for GC.	

S NO	Name of Equipment with specifications	Qty.
16	<p>High Performance Thin-layer Chromatography (HPTLC): Sample applicator: Microprocessor controlled Sample Applicator; Control by software, Auto-sampler; Spray-on contactless technique; Multi samples at a time. Development Device: Comprise of computer controlled chromatogram development chamber & TLC sprayer with cabinet for ultrafine & uniform spray of reagent. Densitometer: Measurement of absorbance & fluorescence; Spectral range: 190 - 900nm; Built in Multi Wavelength up to 30 chromatograms ; Auto spectra scan for purity identification.</p>	1
Essential Accessories		
	<ol style="list-style-type: none"> Automatic Reagent Sprayer: Fully computerized & micro processor controlled apparatus; Easy controls & transmission of data; Spray reagents very precisely. HPTLC-MS Interface: Extraction of sample factors form different zones on pre-chromatographed HPTLC plates with a flow rate maintained at 0.1 to 1.0 ml/min. Digital Documentation System: Uniform illumination; High resolution digital camera; Software program for easy archiving of images; Superimposition & overlapping of images for comparison. 	

S NO	Name of Equipment with specifications	Qty.
17	<p>Nuclear Magnetic Resonance Spectrometer (NMR): High performance actively shielded Ultra Shield superconducting magnet system. BC-94/54, 54 mm bore (operation field at 9.397 Tesla), helium hold time >200 days; helium level meter with alarm function for low helium level; standard magnet stand with vibration damping by rubber pads; frequencies damped have 30 Hz.</p> <p>Shim System/Lock Channel: High performance Orthogonal Shim System (BOSSI) with 20 shim gradients, low current & low heat dissipation design; Magnet Control System (BSMS) for shim & lock control & Digital Lock control unit, including; Digital lock frequency, generation, variable frequency for operation at selectable fixed field; Digital lock frequency lock receiver; Fast field adjustments with sample-&hold circuit; Shim control boards (SCB) with ultra-stable high-precision, low-noise shim current sources; BSMS Shuttle: USB keypad with jog knob for manual adjustment of lock, rotation & shims; can be used remotely.</p> <p>Stainless Steel Cabinet 0.83x0.63x0.96 m; conforms to the main requirements with regards to electromagnetic compatibility & safety regulations of the EU Member States.</p> <p>RF section</p> <p>Frequency Generation, Digital Control & Acquisition System: Fast Ethernet based communication & control system for bi-directional connection to the host computer; Pulse generating system with a time based to highest precision for the ultimate timing accuracy; controls the entire spectrometer during NMR experiment including frequency synthesizer, transmitter, receiver & gradients, timing resolution is 12.5 ns; - Frequency generation (FCU's & SGU's) for two channels by digital frequency synthesis, frequency range each 6-430 MHz; for generation of phase, amplitude & frequency using Direct Digital Synthesis (DDS) Provides <0.01° phase resolution an <0.005 Hz frequency resolution. Covering the entire NMR frequency range at the specified field above 6 MHz. Includes wave form memory for pulse shaping in frequency, amplitude & phase & composite-pulse decoupling generator for synchronous & asynchronous operation; Receiver control unit for NMR (DRU) signal accumulation with real-time digital filtering in combination with oversampling technology. The fast RISC coprocessor with buffer memory ensures flexible real-time data management; High performance digitizer for superior & highly flexible data acquisition at ultimate digitizer dynamic range; Digital quadrature detection for complete elimination of quad-spikes, artifacts in the centre of the spectrum.</p> <p>Transmitter/Digital Receiver DRU</p> <p>Channel Amplifier System: including two high performance linear broadband amplifiers (<14-400 MHz each) for observation or decoupling; pulse power 1H, max. 50W; Pulse power 13C max. 135W. Solid state power control for both channels over the entire power range; compact design. With routing capabilities for frequency/amplifier selection under full computer control; ATR transmitter/receiver system & high dynamic range, computer controlled indirect detection capability, quadrature detection.</p>	1

Contd...17

	<p>One hardware platform for HR, Solids & Imaging</p> <p>MULTIPLE LINK HPPR Preamplifier: 1H preamplifier, low noise GaAs design; Broadband preamplifier with standard filters; 2H preamplifier for lock & 2H observation; Microprocessor control.</p> <p>Ultra Long Holdtime dewar, standard bore only: liq. Helium hold time = 365 days on initial order only.</p> <p>Dual Probehead 5mm: with 2H lock; ¹³C/¹H high resolution probe for 5mm sample diameter; optimized for ¹³C sensitivity, outer coil be tuned for 1H detection/decoupling; for variable temp. operation from -150 to + 180° C.</p> <p>Z-Gradient for high resolution probes: for 50 Gauss/cm on initial order only; max. operating Temp. range from -150 °C to + 180 °C if not limited by probe type; surcharge.</p> <p>Gradient Amplifier Board</p> <p>Option(s) (surcharge in exchange of Dual Probe) Broad & Probehead 5mm; 'BBO': 2H lock; for observation of nuclei in the range ¹⁵N to ³¹P with 1H decoupling; 5 mm sample diameter; for variable Temp. range; 150 to + 180 deg. C; including standard set of R.F. filters.</p>	
Essential Accessories & Software		
	1. Liquid Helium System	
	2. Software: Windows XP/LINUX; NMR data acquisition (arbitrary dimensions) & processing (1D, 2D, 3D, 4D & 5D); Top-Guide, menu guided acquisition setup; NMR Guide for training of users in use of 1D & 2D; experiments with NMR literature library; Icon NMR automation interface.	
	3. Structure Analysis Software: Relaxation analysis (T1/T2); integration of 1D & 2D spectra; de-convolution of 1D & 2D spectra; NMRSIM for experiment simulation; Daisy spectrum simulation software; TopSpin interactive & automatic multiplet analysis; TopSpin solid state line shape analysis; TopSpin integrated structure editor.	

S NO	Name of Equipment with specifications	Qty.
18	<p>Laser Scattering Spectrophotometer for Particle Size Analysis: Photon correlation spectroscopy-electrophoretic light scattering based analyser, measuring particle size range: 0.6 nm -7 µm & 30µm for zeta potential. Conductivity range up to 200 mS/cm.</p> <p>Sample Volume: (min) 60 µm & 2ml for zeta potential. Scattering angles(s) 15°.130°.165°. Light source 2 laser diodes, 658 nm, 30 mW. Detector: photomultiple tube. Temp. range 15°C ±0.3° below ambient to 90° C ±0.3° C.</p>	1
Essential Accessories		
	1. Autotitrater with three titrant, vol. 50 ml; sample vol. 30ml; Titrant dispense volume Min. 0.1 µl; circulation flow rate 10-40 ml/min; pH range 1-13.	
	2. Software & computer suitable for instrument operation.	

S NO	Name of Equipment with specifications	Qty.
19	Superconducting Quantum Induction Design (SQUID); Telsa High Uniformity Magnet: with C050A MPMS Ever Cool Dewar, (New Systems only); RSO option; RSO AIRLOCK Assembly; Continuous Low Temp. Control; UPS; Telsa Ac Measurement; M1pace Oven; External Devise Option; C111 Manual Insertion Utility Probe; G EMS-3 Environmental magnetic Shield; H M12 7A 7 Telsa Unit Ultra Low Field (EMS Shield Required).	1
Essential Accessories		
	1. He-leak detector.	

S NO	Name of Equipment with specifications	Qty.
20	<p>BET Surface Area Analyzer: A high sensitive thermal conductivity detector. Onscreen Adsorption, desorption curves.</p> <p>Surface Area range: 0.1 m²/gm to 1500 m²/gm -Normal. Extendable up to 2500 m²/gm; Accuracy- Typically better than ± 5%; Reproducibility- Typically better than 3%; Sample Holder- Typical Sample holder capacity 7 ml Bigger sizes are available; Dimensions- 45 cm (L) 25cm (B) x 35 cm (H); Weight- 10 Kg.; Electrical- 230 V AC, 50 HZ; Regeneration System- Temp. Range: Ambient to 300°C; Accuracy: Better than ±5°C of Set Point; Operating temp. - 15°C to 40°C (non condensing).</p> <p>Features: Wide Range of Surface Area Measurement. Easy to use with direct display of Surface Area after completion of analysis. High Speed Analysis - within 10-15 minutes. Meets USP-24, EP/BP, ASTM D- 3037, ISO S4652, IS 877 & 2752 standards. High Accuracy & Reproducibility. Built in micro-controller permits to use the instrument in manual mode. Utilizes a modified BET equation for Single Point Surface Area determination. Ultra stable detector eliminates drift & need for constant readjustment. Separate regenerating system for sample preparation, which degas three samples at a time. Total pore vol. & multi point Surface Area determination with additional gas mixtures. Surface area range selection for Low to High Surface Area.</p>	1
Essential Accessories		
	1. BET Surface area Analyses with 5 samples can, run 1 by 1 are required.	
	2. Helium, Argon, Nitrogen & Oxygen (1 each).	
	3. Liquid Nitrogen (1).	
	4. Sample Tubes (20).	

S NO	Name of Equipment with specifications	Qty.
21	<p>Fluorescence Spectrophotometer-Lifetime: Steady state Fluorescence-cum-Picosecond lifetime spectrophotometer should be complete with laser, sample compartment, PMT detectors, interface.</p> <p>Steady state Fluorescence: Monochromators (Excitation & emission); Single concave holographic grating; Wavelength range: from 200 to 1200 nm (dependent on selected grating); Wavelength accuracy: ± 0.2 nm; Wavelength reproducibility: ± 0.25 nm; Slew rate: 160 nm/s; Signal to noise ratio 5000: 1.</p> <p>Lifetime: Automated 4 cuvette holder for IRF measurements & low Temp. multi-sample measurements without exposing the samples to the air. Speed – complex decays are acquired in less than one minute in FD & in a few seconds in TD; Measurements: Single- & multi-exponential intensity decays; Anisotropy decays (rotational correlation times); Time-resolved spectra for measurements of samples up to 70ps possible; Frequency responses of multi-exponential decay times; Phase- & modulation-resolved kinetics Phase- & modulation-resolved spectra; Millisecond lifetime kinetics; Time-resolved protein fluorescence; Time-resolved energy transfer.</p> <p>Light Sources: TD; Laser diodes (375, 405, 436, 473, 635, 655, 690, 785, 860 nm); Pulsed LEDs (280, 300); Ti: Sapphire; White & other pulsed lasers; Parallel beam design for most precise polarization measurements, Polarizers UV-grade.</p> <p>Detectors: Selected side-on photomultiplier tubes (PMTs); Multi-Channel Plate Detectors (MCPs).</p>	1
Essential Accessories		
	1. Double grating; Reference PMT for lamp intensity monitoring; Emission PMT set for 250-850nm; Instrument Features; Compact & portable.	
	2. Light source: TD laser diodes (375-800 nm) pulse LEDs (280, 300).	
	3. Ti Sapphire; White & other pulsed laser, polarizers UV-grade.	
	4. PMT, MCP.	

S NO	Name of Equipment with specifications	Qty.
22	<p>Spectroscopic Ellipsometer: Spectroscopic Ellipsometer for transparent multilayer thin film thickness and n & k measurements with the following specifications.</p> <p>Spectral range of operation: About 370 to 1000 nm upgradable to 190nm & 1700nm. Angle of incidence (Goniometer): Variable, from $\leq 45^\circ$ to 90°, automatic (computer -controlled) operation. Step size, repeatability & accuracy: $\leq 0.01^\circ$. Detector system: CCD detector to measure all wavelengths simultaneously & FAST. Optical design; Continuously Rotating Compensator Ellipsometer (RCE) combined with CCD array detector. Spectral resolution: Wavelength step ≤ 1.6 nm (resolution at all wavelengths). Precision: Film thickness (δd) $\leq \pm 0.002$ nm. Sample stage features: X-Y translation up to 300 x 300 mm. Z (vertical) adjustment, rotation & tilt adjustment. 40X 40mm Micropositioner to move the sample precisely with μ m resolution. Spectral facility: Photometry Absorption, reflectance & Transmittance. Glass substrate: Auto retarder or Auto compensator to be included for the glass & other transparent substrates. Measurable film parameters/ operations: Refractive index, extinction coefficient & thickness (few nm to at least 10 μ m) of thin films, transparent or absorbing, over wavelength range of operation (i.e. including dispersion), Graded composition of graded index film with depth. Anisotropy, birefringence, Mueller Matrix elements. Hardware & software: with provision for Muller Matrix elements since some of our layers are anisotropic in nature. Multilayer programs should be included. Calibration Standard sample-Calibration standards of various thickness at least 4 standard wafers should be provided in the range of 10A to 10000A.</p>	1
Essential Accessories & Software		
	1. Optional ≤ 150 μ m spot size, to examine small features on film & other applications. Automated XY stage 150 X 150mm. Variable Temp. provision with Temp. range: 70 to 600C. NIR up to 1700nm.	
	2. Software: Comprehensive ellipsometric data acquisition & analysis package for accurate & reliable thin film (single layer/multilayer) characterization of optical constants, mechanical features like surface roughness, porosity & void fraction, modeling to determine fractional composition of constituents in mixed composition films, etc. Up-gradation of software for 2 years. Extra hardware lock to work in different computer for analysis. CCD Camera, 4-Quadrant Silicon detector for accurate sample alignment. Low volume Liquid sample holder for biological samples ~ 0.5 ml capacity.	
	3. Spare parts for a trouble free operation with spare optical fiber, replacement bulb etc.	

S NO	Name of Equipment with specifications	Qty.
23	<p>Electrochemical Work Station: Instrument should be capable to use multipurpose applications of various departments including voltammetry, electrochemical bio sensors, corrosion, AC impedance.</p> <p>Techniques Required; Cyclic; Linear Sweep Voltammetry & Staricase Voltammetry; Tafel Plot potentiodynamic deactivation, pitting corrosion, corrosion rate, linear Polarisation, Corrosion current etc.; Chrono Amperometry; Chrono Coulometry; Differential Pulse, Normal Pulse, Differential Normal pulse, Square Wave, AC & Second Harmonic AC Voltammetry; Amperometric i-t Curve; Differential Pulse Ampero-metry; Double Differential Pulse Amperometry; Triple Pulse Ampero-metry; Integrated Pulse Amperometry Detection; Bulk Electrolysis with Coulometry; Hydrodynamic Modulation Voltammetry; Sweep-Step Functions; Multi-Potential Steps; AC Impedance; Impedance-Time; Impedance Potential; Chronopotentiometry; Chronopotentiometry with Current Ramp; Multi-Current Steps; Potentiometric Stripping Analysis; Open Circuit Potential-Time; Galvanostat; RDE control (0-10V output); Full version of CV simulator; Impedance Simulator; IR Compensation External Potential Input.</p>	1
Essential Accessories		
	1. Electrochemical Cells, Temp. regulated cells, Large volume cells 50ml, 3no.s, (1 each).	
	2. Platinum working electrodes, GC working Electrodes, Au working electrodes. Ag/AgCl reference electrodes (1 each).	
	3. Ag/AgCl non aqueous reference electrodes, SCE colomel electrodes, Hg/Hgs0A electrodes.	
	4. Cell stand with required electrode holding arrangement.	
	5. Electrode Polishing Kit.	

S NO	Name of Equipment with specifications	Qty.
24	<p>Dielectric Impedance Spectrometer: High performance Dielectric Spectrometer analyzer including active Sample cell with gold plated electrodes & shielding unit. Supplied with Liq N2 dewar & heating arrangement with automatic Temp. control s/w to do the automated frequency sweeps at different pre set temperatures. System should be suitable for conducting materials for material science sample in the form of pellets, dielectric materials line bio samples, ceramics, polymer, suitable sample holder for powders & liquids. Software should be exhaustive with 3D display, different type of plots & fitting.</p> <p>Frequency Range: 3 μHz-20MHz; Measuring voltage range: 0-3 Vrms/70 mA; Dc-Bias. Voltage: + 40V/70 mA; Impédance Range: 0.01 Ohm-100Tohm; Capacitance Range: 0.01pF-1 F; Temp. Range -160°C to 400°C; Capacity Range: 1fF. 10F; Electronic loss factor tan delta resolution 30u-10k; Tan Delta resolution: 10e-5; Higher harmonic measurement should be up to 40MHz;</p> <p>Calibration: User calibration for low, short, open internal self laboratories, where the instrument is installed.</p>	1
Essential Accessories		
	1. High Voltage booster & High pressure setup (1).	
	2. Option: High vol. booster up to +/- 2000V; High pressure up to 3000 bar.	
	3. Liquid Nitrogen System (1) & Additional Sample Cell (1)..	

S NO	Name of Equipment with specifications	Qty.
25	<p>Super Computing System: A four-socket, 4U rack-mounted server that offers processor cores that can run at a frequency of 3.3 GHz; maxi. of 64 GB of memory for each processor card, making for a system maxi. of 256GB of memory in the four-processor card system. The server with 32 cores to deliver a peak performance of 845 GFLOPS in the Linux operating environment. 3 Power 7 based Compute nodes is proposed in this solution (Model P755) thereby delivering a speak performance of $3 \times 845 \text{Gigaqflops} = 2535 \text{Gigaflops}$. This solution will take care of higher computing power needs in future. Maximum Performance: The POWER7 processor technologies that maximizes performance based on client workloads & computing needs. Intelligent Threads technology to enable workload optimization by selecting the most suitable threading mode: Single Thread (per core) or Simultaneous Multi Thread-2 or 4 modes. Use Less Energy: POWER7 to deliver the first RISC-based ENERGY STAR- qualified servers designed with features to help clients become more energy efficient. The leadership performance of the IBM Power 755 translates into outstanding performance per watt. Enhanced Availability & Diagnostics: The Power 755 server includes world-class RAS capabilities by including a sophisticated service processor; hot-plug, hot-swappable & redundant components; The Power 755 also implements Light Path diagnostics, which provide on obvious & intuitive means to positively identify failing components. This enables system engineers & administrators to easily & quickly diagnose hardware problems.</p>	1
Essential Accessories		
	1. Head/Login Node: Head Node to perform the control function; provide services that help the other nodes in the cluster work together to obtain the desired result.	

S NO	Name of Equipment with specifications	Qty.
26	<p>Real Time PCR: Compact, latest, fast & on line Real-Time PCR amplification system for SNP & Allelic detection, Gene expression & Quantification assays with multitasking facility; System to provide on line Cycle by Cycle monitoring with continuous display of readings for Fluorescence, Temp. changes & progression of amplification; Flexible & open system for all available chemistries including SYBR Green, Taqman/Hydrolysis probe; Should be 96 well real time PCR (Based Technology only) with option to upgrade into higher version; Excitation source should be Tungston Halogen/Xenon with mini. 5 colour detection filters for multiplexing capabilities; Detection is through CCD/cooled CCD Camera only; Only licensed PCR should be quoted (copy of PCR license should be enclosed); Should have a linear dynamic range up to 9X; System should be supplied with original & licensed Probe/Primer design software for designing the primers & probes; Licensed & authorized Real Time PCR platform with licensing rights for software applications, including relative quantification.</p>	1
Essential Accessories		
	1. PCR work Station (1).	

I. General Information:

1. Last date and time of receipt of the Tenders: **Monday, 01.11.2010, 3.00 pm**
2. Date & Time of opening of Tender: **Thursday, 18.11.2010, 1.00 pm.**
3. **Tender Document Fee: Rs. 2500/-** per item. **Ernest Money Deposit: One per cent** of the price quoted by bidder for each instrument. **Processing Fee: Rs 5000/-** per bid.
4. For all the Equipments, 'Two- Bid-Systems' has to be strictly followed. (one for Technical Bid and another for Commercial Bid in separate covers).
5. However, the Tender document fee and EMD as specified be remitted by each firm/bidder, separately for all their bids advertised under this Tender.
6. **Quoting merely the lowest price does not confer any right to any bidder for award of supply order. The University's Purchase Committee, reserves the right to select the equipment any bid under the grounds of specification compliance, technologically advanced quality, proven performance track record, brand reputation, service backup support, additional warranty, offer of additional/special features, compatibility with existing system, training, etc.**
7. The Tender Document Fee and EMD should be submitted in a separate cover super-scribing Bank Demand Draft, enclosed with the technical bid.
8. The Photo Copies of the Bank Instruments on payment of EMD should be attached with each bidding covers.
9. The tenders sent through fax / e-mail will not be accepted
10. The bids should be addressed to the **Dean, Research & Development, Dr. Harisingh Gour University, Sagar-470003, M. P.** The example for super-scribing the envelopes of the different categories of tender is given below:

<p>Tender submitted under two bid system for sophisticated equipments advertised for the Central Instrumentation Lab.</p> <p style="text-align: right;">To</p> <p style="text-align: right;">Dean, Research & Development, Dr. Harisingh Gour University, Sagar SAGAR-470003 M. P.</p> <p>From Supplier's Address</p>
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II. Common Conditions Import or Indigenous items

1. **Purchase of Tender Document:** The Tender document may be either downloaded from the University website www.dhsgsu.ac.in or procured from Office of the Dean, Research & Development, Admn. Building, Dr. H S Gour University, Sagar on payment of fee as specified above, by **22th October 2010**, before 3.00 pm, drawn in favour of the Registrar, Dr. Harisingh Gour Vishwavidyalaya, Sagar. The downloaded application should be accompanied with the tender document fee, in the form of a Demand Draft.
2. **Price Schedule:** The bidder may either quote for the entire equipments or individual items. The price should include the Delivery, installation, training charges (if any), etc. at the University. The prices quoted shall remain final until equipment is supplied to the University.

3. **Quoting the Core price & Tax, Duties, Discount etc.;** The taxes / duties / discounts, if applicable, are to be explicitly and separately shown in the bid.
4. **Eligibility:** The firm must have the requisite domain expertise with regard to supply, installation and post-sale service of the items they are quoting. The firm should have been in existence for at least six years as on the date of this tender and must have executed at least three orders for this kind of equipment during the last three years.
6. **Warranty:** The equipments covered under this tender, when purchased and installed, shall be warranted for the quality, workmanship, trouble free operation and performance for a period of at least 36 months from the date of putting the system into operation at the University, or at least 42 months from the date of receipt of the last lot of the consignment in India. If any item covered under warranty fails, the same shall be replaced free of cost including all the applicable charges including shipping cost both ways. (A signed Bidder's Warranty as per **ANNEXURE-IV** has to be submitted along with the Bid Document)
7. The information pertaining to infra-structural, power and any other requirement for satisfactory installation and commissioning of the whole system must be provided by the bidder, at least 120 days in advance of the installation to be commenced if purchase order is issued. All drawing for electrical connections, electrical safety items piping work etc. must be provided in detail.
8. Complete technical specifications and literature, including process flow, to be included with the quotation. Manufacturers of various major parts/equipment must be mentioned explicitly.
9. A clear statement regarding availability of after-sales service and availability of spare parts for next 5 to 10 years should be included.
10. A recent customer list (within last five years) with contact details including email address is to be submitted with technical bids/bids as the case may be.
11. If the bidder is an authorized representative in India, they are requested to inform their technical ability to take care of the problems in the system, if developed later within the warranty and outside the warranty period. The responsibility of the Indian agent must be clearly specified.
12. The bidder from abroad shall obtain, if required, export permission from the appropriate authorities in his country or the country of origin for items to be shipped to India in case of items to be imported. The University shall provide necessary information if required for this purpose.
13. All equipment must operate at 230V/50 Hz single phase and / or equivalent three phase electrical power.
14. The validity of the each quotation should be at least 180 days from closing date of the bid.
15. The offers will not be considered if received after the bid closing date and time.
16. The offers received through telex/tele-fax/e-mail will not be accepted by the University under any circumstances.
17. The University shall not be responsible for any delay/loss or non-receipt of tenders by post / courier service.
18. No unsolicited correspondence shall be entertained after submission of the offer.
19. If an order is placed with the firm, the purchase shall be governed by an agreement as per the University rules in force at the time.
20. Additional terms and conditions will be incorporated in the purchase order, if needed, to safe guard the interests of the University.
21. Tender is not transferable.

22. **Dispute:** In case of any dispute in respect of the tender, all legal matters shall be instituted within the jurisdiction of the place where the purchaser ordinarily resides.
23. **Power to reject the offer:** The University reserves the right to accept /reject any offer in full or in part or accept any offer other than the lowest offer without assigning any reason thereof. Any offer containing incorrect and incomplete information shall be liable for rejection.
24. **Liquidated damages:** Timely supply of the ordered items, installation, commissioning (wherever is applicable) and training etc. is the essence of the contract. In case of failure to supply within the time specified in the Purchase order, a penalty/LD of 0.5% of the total value per week or a part thereof shall be levied subject to a max. of 7.5% in respect of items which are not supplied. The decision of the University shall be final in this regard.
25. **Training:** The training should be provided by the supplying companies on the specimen and operation of the equipments for a minimum period of two weeks from the date of installation with an expert team.
26. **Deadline:** The bids received after the deadline will be rejected or returned unopened. However, the purchaser may extend deadline by amending the Tender Document, duly notified on the University website.
27. **Clarification:** For any clarification with respect to technical specifications, please contact the Dean, Research & Development.

III. Specific Condition for Imported equipments

1. **Payment of EMD:** The Tender must be accompanied by EMD (**One per cent** of the quoted price of the Instrument) by a Demand Draft) in favour of **Registrar, Dr. Harisingh Gour University, Sagar**, payable at **Sagar** separately. *The amount is refundable after Bid is awarded.*
2. **Payments Terms:** Normally a letter of Credit will be opened for 90% of CIP price, on receipt of order acknowledgement. 100% of LC payable at sight. 10% PBG to be submitted after shipment valid for 1 year from the date of installation or 15 months, whichever is later. Bank charges in India shall be borne by the purchaser and outside India shall be borne by the University/supplier.
3. The offer must be in English. The rates should be indicated both in figures and words against item specified in the given table. It the price be quoted in **Indian Rupees** also (in case it is in US Dollars/major foreign currency, furnishing the exchange rate on the date of bidding).
4. The total cost should be quoted for FCA as well as CIP Indian airport – Dr H. S. Gaur University, Sagar.
5. However, the price quoted under FOB or should also include the following cost if they are required during the initial stage:
 - a) Local freight/insurance to the University laboratory, at Sagar;
 - b) Installation cost, if any; and
 - c) Cost of consumables which are required for the equipment for initial operation up to a reasonable time.
6. The fee of local agent should be paid by the bidder in INR.
7. The bidder from within India shall obtain the requisite approval for Imports etc., if required.

IV. Specific Condition for Indigenous Equipments

- 1. Price Schedule:** The **FOR** price quotes on Indian Rupees should also include the expected installation cost in the University and also cost of consumables which are required for the main equipment for initial operation up to a reasonable period.
- 2. Time Limit for the supply:** The Successful bidders should supply the items. etc, within 15 days after receipt of the firm supply orders.
- 3. Payments terms:** Out of total contract/purchase price, 90% of the amount will be paid on satisfactory installations. Balance of 10% of the amount shall be retained as Security Deposit, towards satisfactory performance of the equipment, and which may be released on submission of a performance bond supported by a Bank Guarantee (format enclosed in **ANNEXURE -III**) (obtained from Nationalized Bank of India) for the 10% of the total contract/purchase value, for the duration of the Warranty period.

V. Specific Conditions for supply of software (Single Vendor/Multiple Software Distributor)

1. The Bidder(s) must be authorized business partners of Global/National service providers of the respective Software Packages.
2. The Bidder(s) must enclose authorization letter from the respective global/ national service providers of the above said Software particularly mentioning an undertaking that in case of default by the Bidder, they (Global Service Provider) shall take over all the responsibilities of the Bidder.
3. The Bidder(s) should not be involved in any Bankruptcy filing for protection from it.
4. The necessary service support should be provided by Bidder(s) during the agreement period.

Sd/
(Prof. P. K. Kathal)
Dean, Research & Development
12th Oct 2010

Note: This is a computer generated document, which does not need signature.

The Tender Document Contains:

1. Schedule of Requirement;
2. Specifications & Allied technical Details
3. General Information;
4. Common Conditions Import or Indigenous items
5. Specific Condition for Imported equipments;
6. Specific Condition for Indigenous Equipments
7. Specific Conditions for the supply of software;
8. Tender Form (Techno Commercial Unpriced Bid)

ANNEXURE-I

9. Tender Form (Priced Bid) **ANNEXURE-II**;
10. Format of the Bank Guarantee (BG) Form
11. Bank Guarantee **ANNEXURE-III**;
12. Bidders Guarantee **ANNEXURE-IV**

TENDER FORM
(Techno Commercial Unpriced Bid)

ANNEXURE-I

(On the letter head of the firm submitting the bid)

Tender No.....

To
 Dr. Harisingh Gour Vishwavidyalaya,
 Sagar, 470003, MP

Dear Sir,

1. I/We hereby offer to supply the item..... as listed in the schedule to this tender hereto/portion thereof as you may specify in the acceptance of Tender at the price given in the said Schedule and agree to hold this offer open for a period of 90 days from the date of opening of the tender. I/we shall be bound by a communication of acceptance issued by you.
 2. I/We have understood the Instruction to bidders and Conditions of Contract in the form as enclosed with the invitation to the tender and have thoroughly examined the specifications quoted in the Schedule hereto and am/are fully aware of the nature of the goods required and my/our offer is to supply the goods strictly in accordance with the specifications and requirements.
 3. A crossed Bank Draft in favour of the **Registrar, Dr. Harisingh Gour Vishwavidyalaya, Sagar**, payable at Sagar for Rs..... (Rupees..... only) as Earnest Money is enclosed. The Draft is drawn onBank payable at Sagar.
 4. The following have been added to form part of this tender.
 - (a) Schedule of requirements, quoting the make only duly signed and stamped.(without indicating price)
 - (b) Income Tax clearance certificate.
 - (c) Copy of last audited balance sheet.
 - (d) Copy of Valid Central/State sales tax registration certificate.
 - (e) Copy of relevant major purchase orders valuing more than Rs. 200000/- executed during last two years for Govt. Depts., PSUs & Central Autonomous bodies.
 - (f) Proof of manufacturing Unit, dealership certificate/general order suppliers.
 - (g) Statement of deviations from financial terms & conditions, if any.
 - (h) Any other enclosure. (Please give details)
 5. We undertake to execute all orders which have been placed to meet emergent requirements on priority basis.
 6. Certified that the bidder is:

A sole proprietorship firm and the person signing the bid document is the sole proprietor/constituted attorney of the sole proprietor,

Or

A partnership firm, and the person signing the bid document is a partner of the firm and he has authority to refer to arbitration disputes concerning the business of the partnership by virtue of the partnership agreement/by virtue of general power of attorney.

Or

A company and the person signing the document is the constituted attorney.
- (NOTE: Delete whatever is not applicable. All corrections/deletions should invariably be duly attested by the person authorized to sign the bid document).
7. We do hereby undertake, that, until a formal notification of award, this bid, together with your written acceptance thereof shall constitute a binding contract between us.

Yours faithfully,
 (Signature of bidder)

Dated this day of _____

Address:.....

.....

Telephone:_____

FAX_____

E-mail_____

Company Seal

Tender Form

(Priced Bid)

(On the letter head of the firm submitting the bid document)

To
 Dr. Harisingh Gour Vishwavidyalaya,
 Sagar, 470003, MP

Ref: Tender No Dated-----

Sir,

Having examined the bidding documents and having submitted the techno commercial unpriced bid for the same, we, the undersigned, hereby submit the priced bid for supply of goods and services as per the schedule of requirements and in conformity with the said bidding documents.

We hereby offer to supply the Goods/Services at the prices and rates mentioned in the enclosed schedule of requirement.

We do hereby undertake, that, in the event of acceptance of our bid, the supply of Goods/Services shall be made as stipulated in the schedule of requirement and that we shall perform all the incidental services.

The prices quoted are inclusive of all charges net F.O.R University. We enclose herewith the complete Financial Bid as required by you. This includes:

Price Schedule as per schedule of requirement.

Statement of deviations from financial terms and conditions.

We agree to abide by our offer for a period of 90 days from the date fixed for opening of the bid documents and that we shall remain bound by a communication of acceptance within that time.

We have carefully read and understood the terms and conditions of the bid document and we do hereby undertake to supply as per these terms and conditions. The Financial Deviations are only those mentioned in the statement of deviations from financial terms and conditions.

Certified that the bidder is:

A sole proprietorship firm and the person signing the bid document is the sole proprietor/ constituted attorney of sole proprietor,

Or

A partnership firm, and the person signing the bid document is a partner of the firm and he has authority to refer to arbitration disputes concerning the business of the partnership by virtue of the partnership agreement/by virtue of general power of attorney,

Or

A company and the person signing the bid document is the constituted attorney.

(NOTE: Delete whatever is not applicable. All corrections/deletions should invariably be duly attested by the person authorised to sign the bid document.)

We do hereby undertake, that, until a formal notification of award, this bid, together with your written acceptance thereof, shall constitute a binding contract between us.

Dated this day of _____

Signature of Bidder

Details of enclosures

Full Address:

Telephone No.

Fax No.

E-mail:

Company Seal

Format of the Bank Guarantee (BG) Form

1. This BG should be furnished by a National Ban/scheduled Bank Authorised by RBI to issue a Bank Guarantee
2. The BG should be furnished on the stamp paper of Rs. 100/-
3. The stamp-paper should have been purchased in the name of the bank Executing the Guarantee.
4. In case of foreign bidder the BG may be furnished by an international reputed bank acceptable to the PURCHASER countersigned by any Nationalised/ Scheduled Bank in India authorized by the Reserve Bank of India.

BANK GUARANTEE

To

Dr. Harisingh Gour Vishwavidyalaya,
Sagar, 470003, MP

1. This guarantee made this-----day of-----200_ by-----Bank having its Registered Office at-----and one of its-----branches at----- (hereinafter referred to as "the Guarantor" which expression shall, unless it be repugnant to the subject, meaning or context thereof, be deemed to mean and include its successors and assigns) in favour of the Dr. Harisingh Gour Vishwavidyalaya 470003 represented by its Registrar, having his office at the University hereinafter referred to as the "University" which expression shall include his successors in office for an amount not exceeding Rs.------(Rupees ----- only) at the request of M/s.----- (more fully described hereunder)
2. Whereas the University has placed Work Order No: *PU*/----- dated for----- with M/s.-----having its office at -----and hereinafter referred to as the "Contractor" which expression shall include their successors and assigns.
3. And whereas the Contractor has accepted and agreed to execute the work as per the work order as per undertaking *I* agreement dated -----within the time stipulated and in the----- manner specified therein.
4. And whereas the University has called upon the Contractor to furnish Bank Guarantee for the sum of Rs.------(Rupees-----only) for fulfillment of the said work as specified in the work order and as agreed to by the Contractor.
5. And whereas the Contractor has requested the Guarantor herein to furnish an irrevocable and unconditional Bank Guarantee in favour of the University for an amount of Rs.-----as guarantee towards execution of the work as agreed to by the contractor to the University.
6. Now, therefore, we -----Bank, the Guarantor herein, do hereby----- irrevocably and unconditionally Guarantee the payment to the University the sum not exceeding Rs. ----- (Rupees -----only) in the event of any breach, failure, neglect or inability on the part of the Contractor in the execution of the said work, on demand without reference of the matter to the Contractor and without any prior consent of the Contractor, at all times throughout the period of execution of the work, without demur, cavil or argument or delay.
7. The Guarantor agrees and undertakes that the decision of the University as to whether the contractor has committed any breach of the obligation with respect to the work to be executed, and the quantum of amount therefore payable by the Contractor to the University in that regard, shall be final, binding and conclusive as against the Guarantor and the Guarantor shall make payment accordingly, on demand by the University.
8. The Guarantor further agrees and undertakes to pay to the University the amount demanded by the University irrespective of and notwithstanding any dispute raised by the Contractor in any suit or proceeding before any judicial forum relating to the Contracted work and the Guarantor's liability under this Guarantee shall be absolute and unequivocal.

9. This Guarantee is issued subject to the condition that the liability of this Guarantor under this guarantee is limited to the maximum of Rs----- (Rupees-----only) and the guarantee shall remain in full force up to----- and----- cannot be invoked otherwise than by a written demand or claim by the University for the payment of the said amount by the Guarantor on or before ----- or any extended date as decided by the University.
10. This University shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the contracted work or to extend time for performance of the work by the Contractor_ Any change to the contracted work shall not in any way release the Bank (Guarantor) from liability under this Guarantee and we waive notice of any such change. The University shall have full liberty to forbear or enforce any of the terms and conditions of the contracted work.
11. This Guarantee shall not be affected by any legal limitation, disability or other circumstances relating to the Contractor or the Guarantor.
12. This Guarantee shall be valid for the period up to ----- and shall extend further and Beyond ----- for such period as determined by the University.
13. The Guarantor undertakes not to revoke this guarantee except with the previous consent of the University in writing.
14. Notwithstanding anything contained herein:
- Our liability under this guarantee shall be limited to Rs. ----- (Rupees only)
 - This guarantee shall be valid up to and for such further period as determined by the University for fulfillment of the contract.
 - We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if you serve upon us a written claim or demand on or before -----or such extended period/date.

In witness whereof, this Guarantee has been executed by ----- for an on behalf of the Bank (Guarantor) on the day, month and year first above written.

SIGNATURE AND SEAL
NAME OF THE BANK (GUARANTOR)
ADDRESS:

BIDDER'S WARRANTY

The Registrar, Dr. Harisingh Gour Vishwavidyalaya, Sagar invited Bid Document for supply and installation of the equipment(s) namely,-----
----- at-----, Dr. Harisingh Gour University, Sagar

AND M/s.-----

Thereinafter referred to as "The Bidder" having carefully studied all the bid documents, Specifications, etc. accompanying the tender for supply of the above mentioned Equipment and desirous to submit the bids as per the Tender Document advertised vide Notification No. **DHSGU/Pur/DORD/1/2010/18/9**_dated 20.09.2010.

DO HEREBY WARRANTY THAT

1. The bidder is familiar with all the requirements of the bid documents.
2. The bidder has investigated the site and satisfied, he regarding the character and scope of the work and local conditions that may affect the supply or its Performance.
3. The bidder is satisfied that the supply can be performed and completed as required in the contract.
4. The bidder accepts all risk directly or indirectly connected with the performance of the contract.
5. The bidder has had no collusion with other contractors, with any of the men of the University, Sagar or with any other person in preparation of the bid.
6. The bidder has not been influenced by any statement or promise of the Officials of the University but only by the bid documents.
7. The bidder is financially solvent.
8. The bidder is experienced and competent to perform the contract to the satisfaction of the Dean, Research and Development of the University.
9. The statements submitted with the bid are true.
10. The contractor is familiar with all general and special laws, acts, ordinances, rules and regulations of the Municipal, District, State and Central Government that may affect the work, its performance or personnel employed therein.
11. All the terms & conditions of the Supply Order will bind the bidder once his quote is accepted and supply order issued.

Signature of the Bidder