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| Name of equipment | Specifications | Last date and time for receipt of BID and details for purchase and security of BID |
| \*[AUTOMATIC BOMB CALORIMETER](SBD_Automatic_Bomb_calorimeter.doc) | Bomb calorimeter should determine Heat of combustion, Gross calorific values of solid & liquid fuels as per Indian and International standards.  Bomb calorimeter should be compact bench top model. The Gross calorific value should display in BTU/lb, cal/g, J/kg, MJ/kg & etc., units on its color graphic touch screen display.  **Calorimetric System Measurement Range:** up to 10,000 Kcal/Kg for one gram of sample with a provision to extend up to 12,000 Kcal/Kg per 1 gram of sample.  Calorimeter software should identify different bombs automatically & maintain the history of the ignitions performed with each bomb.  Bomb & Bucket should be removable type.  **Resolution:** 0.0001 Cal/gm  **Analysis Mode:** Equilibrium mode / Dynamic mode or any other mode.  **Precision:** 0.1 % RSD or better on analysis of 1 gram sample.  **Repeatability / Reproducibility:** As Per BIS 1350 (Part –2 ), 1970, ASTM D-5865/04 &DIN 51900 Methods  **Oxygen Combustion Vessel (Bomb):** Combustion vessel should able to resist the mixed nitric acid and sulfuric acid produced in combustion.  **Temperature Measuring Resolution:** 0.0001 deg C  **Analysis Time:** 5 to 7 minute or better.  **No. of Tests per hour:** 6 samples or more in an hour.  **Correction:** Spiking, Ash/ Nitrogen or Acid, Fuse wire, Sulphur and Hydrogen.  **Memory Capacity:** Inbuilt data storage for minimum 1,000 tests results and data transfer to PC via Ethernet without using any additional software.  **Interface:** Inbuilt USB interface for Balance, Printer and computer without any additional accessories/software. Required extra software details should be mentioned separately.  **Additional software** if any required being included for PC operation.  **Sample Crucible:** Metal crucibles with Ni-Cr Alloy. Minimum for 5000 test sample crucible . will supply with main instrument  **Safety:-**Safe life of bomb vessel should be minimum 4000 tests continuously  **Power Requirement: -** 230 VAC+/- 10%, 50/60 HZ as per Indian condition  **Up gradation**: Calorimeter should have a facility to upgrade with different types of bombs by simply plug in without changing the main calorimeter configuration.  **Standard Accessories:**   1. Software to operate the instrument with PC 2. Consumable should be supply for minimum 4000 Analysis**.** 3. Electronic Balance (0.0001gram readability) with connecting cable | 19.05.2014  4:00 pm  BID purchase: Rs. 4,000/-  BID security: Rs. 30,000/- |
| \*[**GAS CHROMATOGRAPH**](SBD_Gas_Chromatograph.doc) | Temperature range: Ambient +4°C to 450°C and should be upgradable to -100°C with liquid N₂.  Temperature programmed ramps: 22 ramps or more having cool down rate less than 5 minute for GC oven Temperature of 400 – 50Degree C.  Should have built in 10 or more method storage.  Provision of EPC / EFC/PPC for all the pneumatic parameters with Pressure Range of 150 psi for use of wide variety of Capillary columns, Pressure Resolution of 0.001 psi which offers Retention Time Reproducibility of 0.0008 min & connectivity to Micro bore Capillary Column with id less than 0.10mm for Fast GC application.  Should be upgraded in future with MS OR MS-MS etc.  **INJECTOR:**  **Split/Splitless Injector (S/SL) QTY --- 01Nos.**  Pressure range: 0-150 psi  Maximum temperature range: 450 deg  SplitRange: 1-10,000  **Detector:**  **FID Flame Ionization Detector:**  Maximum temperature: 450 °C  Detectivity: 2 pg C/sec or better  Linear dynamic range: 107 or better  Operational quality: Flame-out detection and Auto re-ignition  **Accessories :**  Gas Purification Panel  Gas Cylinders  2 Capillary Columns (30ml with 0.32 or 0.22 mm ID)  PC and Printer  5 KVA line conditioner with surge suppressor. | 19.05.2014  4:00 pm  BID purchase: Rs. 4,000/-  BID security: Rs. 30,000/- |
| **Rotary Evaporator** | Rotary evaporator assembly with lift and rotation control, Glassware including specified condenser, 1L receivingflask; standard glass 1L evaporating flask Combi-clip. Versatile,expandable operation, Modular systems for distillationof all solvents, Perfect for hard-to-handle materials thatbump and foam, Available with integrated vacuumcontrollers to automate distillation and handle timepressuregradients, Multiple condenser assembliesfor numerous applications, Handle flasksizes from 50 to 4000mL, Chemical-resistant PTFEsealing system, water/oil heating bath having 1300w heating capacity;temperature range from 20° to 180°C; digital display ofboth the set and actual temperatures, Electronically controlled, variable-speed,sparkless motor, Rotaryevaporator assembly with lift and rotation control | 19.05.2014  2:00 pm |
| **High performance ,touch screenspecialized Spectrophotometer ( SAFTEST II ANALYZER)** | Wavelength : 550nm, 570nm and 690nm  Optics : Bichromatic  Reproducibility : R coefficient >.08; Standard deviation of < 0.005 AU whenmeasured with 20 samples of distilled water  Liquid Crystal Display : 320x240 STN LCD with Touch Screen  Tube Size : 10 mm and 12 mm generic round-bottom glass or polystyrene  Liquid Crystal Display : 320x240 STN LCD with 5.7” Touch Screen  Adaptor : 7.5 VDC, 3.5A  Input Power : 100-240 VAC, 50-60 Hz, 0.8 A  Absorbance Range : 0 - 2.0 A  Wavelength : 550nm, 570nm and 690nm  Light Source : High-intensity LED  Optics : Three optical filters on 550nm, 570nm and 690nm  Bandwidth : 10nm  Reproducibility : Standard deviation of < 0.005 A when measured with 20 samplesof distilled water  Linearity : < 0.005 A or 2% difference from calculated regression line;  correlation coefficient, r= 0.9995 or better  Printer : Onboard Thermal Printer, 284 dots per line, Up to 60mm/sec  Paper Width / Roll Size : 58mm / Maximum 49.5mm (external diameter)  Tube Size : 10 mm and 12 mm generic round-bottom glass or polystyrene  Memory : 64MB RAM, 32MB Flash | 5.5.2014  2:00 pm |
| **UV/VIS Spectrophotometer** | True Double Beam with Photo Silicon Diode Array System.  Wavelength range : 190-1100nm  Built-in Automatic 8 cell changer  Work as a stand alone and PC control Software.  Stray light less than 0.02%.  Variable Bandwidth from 0.5,1.0, 2.0 & 5.0.  Built in DNA/ Protein Software.  Built in 3D Software.  Upgradeable for reflectance Accessory ,Peltier& Sipper attachment.  Should accommodate Micro Cells  Pair of cells 10mm Quartz | 19.05.2014  2:00 pm |
| \*[**HybridSFC/UHPLC**](SBD_for_SFC_or_UHPLC.doc) | Flow range 0.1 mL/min to 5 mL/min (settable),  1 mL/min to 5 mL/min (recommended)  Maximum operating pressure 600 bar  SFC/UHPLC in one system Yes  Unattended operation Leak sensors, diagnostic software features  Inlet CO2 bulk purity >99.99 % vapor; >99.999 % liquid  Inlet CO2 phase vapor from non-dip-tube high pressure cylinder; liquid  from commercial CO2 delivery system  Inlet CO2 supply pressure 40 - 70 bar 580 - 1000 psi  Inlet CO2 temperature 15 - 30 °C  Wash solvent HPLC grade alcohol  Liquid coolant 30 % propylene glycol in deionized water; proprietary  antioxidants; red dye added for safetyCoolant volume < 280 mL  Hydraulic system Single piston with proprietary motor control  Total hydraulic volume <5 mL @ pressure <70 bar<25 mL @ pressure up to 400 bar  Chiller system Thermoelectric cooling with secondary air/liquid  cooling circuit  Back Pressure Regulation (BPR) system Low volume diaphragm type with proprietary drivecontrol; replaceable BPR head assay; No recalibration  required after head replacement  Chiller temperature -20 – 9 °C  Booster pump speed range 0 – 6000 steps/sec average step rate  Booster pump pressure range 100 – 400 bar up to 5 mL/min demand  Pressure pulsation <2 % amplitude at pump speed >300 steps/sec and  outlet pressure >100 bar  BPR thermal range 40- 70 °C104 – 158 F  BPR thermal precision ±1 °C  BPR pressure range 100 – 400 bar  Backpressure accuracy ±1 %  Backpressure precision ±0.5 bar (±0.2 bar typical)  Backpressure thermal precision ±1 °C  Control and data evaluation station for LC with SFC Fusion A5 driver;  Aurora A5 Diagnostic Program  Analog in pressure monitoring 1 V FS; one input; range set by calibration to host pumpCommunications USB 2.0; APG Remote: ready, start, stop and  shut-down signals; relay contact closure  Maximum Pressure: 400 bar  Additional Specifications  **Pumping System**    **Flow range:**     up to 5 mL/min    **Composition range:**    0-100%  **SFC primary fluid:**     CO2  **Metering pump noise:**   < 1%     **Back Pressure Regulation**    **Back pressure regulator range:**    100-400 bar    **Back pressure regulator noise:**     < ± 0.5 bar        **DAD**    **Short-term noise (ASTM):**     < ±0.025 mAU at 254 nm typical    **Wavelength range:**    190 – 950 nm | 19.05.2014  4:00 pm  BID purchase: Rs. 10,000/-  BID security: Rs. 1,00,000/- |

**\*The purchase process of these equipments has been postponed due to unavoidable circumstances. The new dates will be informed shortly.**