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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
 | 19.05.20144:00 pmBID 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 psiMaximum temperature range: 450 degSplitRange: 1-10,000**Detector:****FID Flame Ionization Detector:**Maximum temperature: 450 °CDetectivity: 2 pg C/sec or betterLinear dynamic range: 107 or betterOperational quality: Flame-out detection and Auto re-ignition**Accessories :**Gas Purification PanelGas Cylinders2 Capillary Columns (30ml with 0.32 or 0.22 mm ID)PC and Printer 5 KVA line conditioner with surge suppressor. | 19.05.20144:00 pmBID 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 | 19.05.20142:00 pm |
| **High performance ,touch screenspecialized Spectrophotometer ( SAFTEST II ANALYZER)** | Wavelength : 550nm, 570nm and 690nmOptics : BichromaticReproducibility : R coefficient >.08; Standard deviation of < 0.005 AU whenmeasured with 20 samples of distilled waterLiquid Crystal Display : 320x240 STN LCD with Touch ScreenTube Size : 10 mm and 12 mm generic round-bottom glass or polystyreneLiquid Crystal Display : 320x240 STN LCD with 5.7” Touch ScreenAdaptor : 7.5 VDC, 3.5AInput Power : 100-240 VAC, 50-60 Hz, 0.8 AAbsorbance Range : 0 - 2.0 AWavelength : 550nm, 570nm and 690nmLight Source : High-intensity LEDOptics : Three optical filters on 550nm, 570nm and 690nmBandwidth : 10nmReproducibility : Standard deviation of < 0.005 A when measured with 20 samplesof distilled waterLinearity : < 0.005 A or 2% difference from calculated regression line;correlation coefficient, r= 0.9995 or betterPrinter : Onboard Thermal Printer, 284 dots per line, Up to 60mm/secPaper Width / Roll Size : 58mm / Maximum 49.5mm (external diameter)Tube Size : 10 mm and 12 mm generic round-bottom glass or polystyreneMemory : 64MB RAM, 32MB Flash | 5.5.20142:00 pm |
| **UV/VIS Spectrophotometer** | True Double Beam with Photo Silicon Diode Array System.Wavelength range : 190-1100nmBuilt-in Automatic 8 cell changerWork 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 CellsPair of cells 10mm Quartz  | 19.05.20142:00 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 barSFC/UHPLC in one system YesUnattended operation Leak sensors, diagnostic software featuresInlet CO2 bulk purity >99.99 % vapor; >99.999 % liquidInlet CO2 phase vapor from non-dip-tube high pressure cylinder; liquidfrom commercial CO2 delivery systemInlet CO2 supply pressure 40 - 70 bar 580 - 1000 psiInlet CO2 temperature 15 - 30 °CWash solvent HPLC grade alcoholLiquid coolant 30 % propylene glycol in deionized water; proprietaryantioxidants; red dye added for safetyCoolant volume < 280 mLHydraulic system Single piston with proprietary motor controlTotal hydraulic volume <5 mL @ pressure <70 bar<25 mL @ pressure up to 400 barChiller system Thermoelectric cooling with secondary air/liquidcooling circuitBack Pressure Regulation (BPR) system Low volume diaphragm type with proprietary drivecontrol; replaceable BPR head assay; No recalibrationrequired after head replacementChiller temperature -20 – 9 °CBooster pump speed range 0 – 6000 steps/sec average step rateBooster pump pressure range 100 – 400 bar up to 5 mL/min demandPressure pulsation <2 % amplitude at pump speed >300 steps/sec andoutlet pressure >100 barBPR thermal range 40- 70 °C104 – 158 FBPR thermal precision ±1 °CBPR pressure range 100 – 400 barBackpressure accuracy ±1 %Backpressure precision ±0.5 bar (±0.2 bar typical)Backpressure thermal precision ±1 °CControl and data evaluation station for LC with SFC Fusion A5 driver;Aurora A5 Diagnostic ProgramAnalog in pressure monitoring 1 V FS; one input; range set by calibration to host pumpCommunications USB 2.0; APG Remote: ready, start, stop andshut-down signals; relay contact closureMaximum Pressure: 400 barAdditional 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 | 19.05.20144:00 pmBID 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.**