

JANKIDEVI BAJAJ COLLEGE OF SCIENCE, WARDHA

Detail specification of the tender items

Item No.	Name of the instrument	Specification
1	Complete and ready to use High Resolution Bench Top XRD System for phase analysis of powders with software support	<p>Complete and ready to use High Resolution Bench Top / Desk Top XRD System for phase analysis of powders with software support</p> <p>Features/Requirements:</p> <ol style="list-style-type: none"> 1 Instrument Type: Bench Top / Desk Top type and should allow Easy operation 2 Goniometer & Geometry: Theta/2Theta, Vertical. The sample should be horizontal 3 Smallest step size: 0.01 deg. or better, Achievable peak width: 0.05° or better 4 Instrument alignment accuracy $\pm 0.02^\circ$ or better throughout the entire 2 Theta measuring range. Should be demonstrated with any supplied XRD SRM (NIST LAB6 or NIST 1976 a/b or Silicon Powder) 5 X-ray Generator: 30 kV, 10 mA or better 6 X-ray Tube: Ceramic/glassinsulated line focus , Cu source, 500W (or higher). The Nickel foil thickness should be as per the Xray tube (Beta Filter) 7 Detector –Scintillation Counter or better 8 Computer- required for data acquisition and analysis should be provided meeting the minimum requirements. External PC & Printer: The XRD unit shall be supplied with an external PC with the following minimum requirements: Windows 7 (32 bit) operating system or higher, Intel i5 Processor or higher version, 4GB DDR3, 250GB HDD, DVD R/RW, Mouse, Keyboard, 22 inch LEDand Colour Printer. 9 System Software and Data Collection and Software: Software for smooth running of the XRD system along with data collection and data evaluation to be included in the basic system. This should include Search Match Software compatible for ICDD PDF2/PDF4 /COD file. 10 Separate itemized Compatible Chiller should be quoted. A Branded On-line UPS5 KVA in rating (dependable & ISI make with efficient local service support) with minimum 30 minutes back up time should be offered.

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		<p>11 Installation: Pre-installation guide should be submitted along with the technical bid. The installation charges, if any, should be clearly specified and itemized. Training XRD system operation and routine maintenance training should necessarily be provided at the campus free of cost. The consumables required for installation and standardization of system to be given free of cost.</p> <p>12 Warranty and AMC: Minimum 12 months warranty from the date of installation or 13 months from the date of shipment shall be provided. The bidder shall offer for 5 years AMC after the warranty period for the equipment as an option clearly indicating the scope of AMC.</p>
2	<p>NATIONAL INSTRUMENTS ELVIS-II HARDWARE & LabVIEW SOFTWARE</p> <p>NI ELVIS II (Educational Laboratory Virtual Instrumentation Suite)</p>	<p>NI ELVIS II (Educational Laboratory Virtual Instrumentation Suite)</p> <ul style="list-style-type: none"> • 12 instruments in one device <ul style="list-style-type: none"> • Digital Multimeter (5 1/2 digits, AC/DC Voltage, Current, Diode, Resistance, Inductance, Capacitance) • Oscilloscope (1.25 MS/s) • Function Generator (Sine, square, triangle) • Variable Power Supply(+/- 12V) • Bode Analyzer • Dynamic Signal Analyzer • Arbitrary Waveform Generator (2 Channels) • Digital Reader • Digital Writer • Impedance Analyzer • 2-wire Current-Voltage Analyzer (Diode) • 3-wire Current-Voltage Analyzer (NPN and PNP transistors) & more • Analog Inputs (8 differential or 16 single-ended) • 2 Analog outputs • Digital I/O & PF I (24 DIO, 15 PFI) • 8 LED O/P • On board breadboard • Counter/Timer (2) • USB connectivity • On board power supply (+5V, +/-12V, +/-15V) • LabVIEW & Multisim software compatible

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	NI LabVIEW FDS Software (1 User):	<p>NI LabVIEW FDS Software (1 User):</p> <p>Graphical programming for advance data acquisition, instrumentcontrol, and data presentation applications. It includes GPIB, VISA,VXI, RS-232, data acquisition, and instrument driver libraries fordata acquisition and instrument control.</p> <p>Summary of Features:</p> <ul style="list-style-type: none"> •Engineering-specific user interface design tools •Fundamental programming structures/data types •Instrument control (including Instrument I/O Assistant) •Data acquisition (including DAQ Assistant) •Configuration-based Express VIs •Property pages for front panel objects •Automatic wire routing and wire cleanup •Multithreading •Probes, conditional breakpoints, highlight execution, step functions •Modularity of VIs, subVI •Integration with plug-and-play devices for USB, PCI, PXI, Wi-Fi, Ethernet, GPIB, and more. •Development and reuse of code on Windows, Mac, Linux, and realtime Oss •Web publishing tools •File I/O designed for engineering data & flexible reporting generation tools •.NET,ActiveX,TCP/IP, UDP, XML support •Signal processing/measurement analysis function libraries •Event-driven programming tools with dynamic and user defined events •Advanced user interface design tools: native tree control, subpanel,drag-and-drop controls, graphs, charts and 3D visualization tools.
3	Polarograph with DME and computer	<p>Starting voltage: 2048 mv</p> <p>Accuracy: 0.1%,of range</p> <p>Readability: 1 mv</p> <p>Current</p> <p>Range: 1, 10, 100, 1000 mA</p> <p>Drop time: 0.5, 1 & 2 sec (selectable)</p> <p>Accessories (with instrument)</p> <p>1) Polarographic cell with electrodes and inlet & outlet tube</p>

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		2) Mercury reservoir with T joint and capillary 3) Mercury: 500gm 4) Space capillary 5) Dot printer
4	Digital Balance	high precision digital balance (0.001g-120g), large LCD with multiparameter display, bidirectional RS232 interface, multiple weighing units, external calibration, auto zero tracking , display updation, capacity 120gm, readability-0.001gm, repeatability-0.001gm, pan size 100mm.
5	Orbital shaking incubator	Compact excellent accuracy, user-friendly, digital countdown timer, universal platform, c adjustable rollers. CIS-24 PLUS, Heating & cooling model: Temp range & accuracy : 5⁰C to 60⁰C, Internal Volume (liters) 215, platform size 580mm to 600 mm, maximum shaking capacity (volume x No of flask): 100ml x 49, 150ml x 149, 250ml x 33, 50ml x 24, 100ml x 15, 200ml x 9, Shaking speed range (RPM) 20 to 250, internal dimension: 660x765x 650 mm, Temp Control: Microprocessor with PT -100 Sensor Display: 4” LCD screen, large size display for ease of reading, 220-240 50Hz single phase
6	Centrifuge	Table top refrigerated (Cooling) centrifuge refrigerated microprocessor controlled centrifuge with LC display. compact size, centrifuge weight – above 50kg, dimensions-36cm (L) * 67 cm (D)* 35 cm (H). fixed angle rotor -1.5/2.0 ml microcentrifuge tubes, maximum speed – 15000 rpm, (additional rotor for 10ml - optional) adapter for 0.6-0.75ml microcentrifuge tubes adapter for 0.2 ml microcentrifuge tubes comprehensive warranty for one year from date of installation speed display-digital, time setting-60 minutes & hold, temp display -0 to 40 ⁰ c brush less motor, variable frequency drive, pulse mode with high accl./deccl. soft start/stop,solid counter balanced lid, CFC free, armoured chamber.
7	Air sampler	Tilak Air sampler (for indoor and outdoor use) the apparatus run on electric power supply (AC-230-V) air is sucked through the orifice projecting tube at the rate of 5 lit/min impinging on the transparent cello tape 1.5 cm in breadth the motor operating with 6-9 volts battery gives rotation speed of 2600 rpm.

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8	Autoclave	autoclave stainless steel (100 litres capacity vertical/horizontal) steam temp. 121.4 ⁰ C at 15 psi top lid – with dome shape die press stainless steel plate microprocessor based LCD temp controller (GMP mode optional) pressure controller-mechanically operated pressure/ steam release valve. pressure gauge-analog dial type pressure gauge standard coupling type PT 100 sensor (GMP model) capacity:100 Litres stainless steel quality max ramp up time – 45 min. upto 121.4 ⁰ C without load with respect to ambient (GMP)
9	Hall Effect Apparatus Set Up	Experimental set up including constant current power supply with digital voltmeter and ammeter, electromagnet (without Gaussmeter) Hall Probe (GE Crystal - N Type) and Hall Probe (GE Crystal - P Type)
10	G.M.Counter system	1) GEIGER COUNTING SYSTEM: 20 x 2 LCD dot-m elapsed time and HV or better. Single board design approach. Counts capacity 9999 sec or better Store and recall facility. Variable HV (0-1500V) 1mA or better. G.M. Input (From Counter) : (a) Polarity : Negative (b) Amplitude : 250 mV (min) 2) ACCESSORIES: G.M. Stand, G.M. Detector (preferably end window), Radioactive source kit, aluminium absorber set, beta source, Lead shielding (Optional) 3) Installation and training charges (if any)
11	Water & Soil Testing Analysis Kits	Parameter : pH/EC/TDS/DO/ ORP/Salinity Temp. Model No. : 172 Display : 3½ Digit LCD pH Range : 0 - 14 pH pH Resolution : 0.01 pH pH Accuracy : 0.01 ± 1 Digit Temperature Compensation : 0 - 100 °C Manual

Item No.	Name of the instrument	Specification
		<p>Conductivity Range : -20mS</p> <p>Conductivity Resolution : 0.01mS (10IJS)</p> <p>Conductivity Accuracy : $\pm 0.5\%$ FS ± 1Digit</p> <p>Temperature Accuracy : $\pm 0.1^{\circ}\text{C} \pm 1$ Digit</p> <p>Temperature Sensor : Semi Conductor Type</p> <p>TDS Range : 0-20 ppt</p> <p>TDS Accuracy : $\pm 0.5\%$ FS ± 1 Digit</p> <p>DO Range : 0-20 ppm</p> <p>DO Accuracy : 0.5 ppm ± 1 Digit</p> <p>DO Sensor : Gold/Silver Amperometric Probe</p> <p>Turbidity Range : 0-1000NTU</p> <p>Turbidity Accuracy : $\pm 3\%$ FS ± 1 Digit</p> <p>Sample System : 30mm Clear Glass Tube</p> <p>Salinity Accuracy : $\pm 0.5\%$ FS ± 1 Digit</p> <p>Colorimeter Storage : Abs.0-1.99A,</p> <p>Power : 12V Rechargeable Battery or 230V$\pm 10\%$AC, 50Hz</p> <p>Accessories : pH Electrode, Cond./TDS/Salinity Cell, Temp. Probe, DO Probe, Dry Cell container (161), Main Lead, Operation Manual, Bottles for pH Solution & pH Tablets Bottles (161 & 191), Turbidity Test Tube Set (191)</p>