Specifications

Sr. No.	Instrument	Details
1	**Refrigerated table top centrifuge**	➢ Table top centrifuge for high volume applications ➢ Temp. range –9 to + 40 deg C ➢ Centrifuge should have a minimum capacity of 1Litter ➢ Short spin key, Rotor imbalance indicator ➢ Fast cool option & stand by cooling ➢ Facility to put "at set rpm" function ➢ 10 acceleration & 10 breaking ramps ➢ Should have a 35 user-defined programs ➢ Ability to spin 15 ml and 50 ml falcon tubes and U-shaped bottom tubes at 11000 rpm ➢ Adaptor should be available for volumes from 1.5 ml to 85 ml in the Fixed angle rotor. (Such as 2ml, 7ml, 15 ml , 18ml,20ml, 30ml,50ml) ➢ Swing-bucket rotors and adapters accommodate tubes and bottles from 0.2 mL to 250 mL. ➢ Ability to spin Plate rotor for centrifugation of all types of MTP, or Deepwell Plates ➢ Noise level should not more than <60dB ➢ Centrifuge should be European CE certified. ➢ IQ, OQ and PQ should be provided at the time of installation. **Required Rotors:** ➢ Swing out metallic autoclavable rotor which can withhold 16 x15ml and 4 x 50ml tubes at 4200g or more ➢ Fixed Angel Metallic autoclavable rotor and Metallic autoclavable rotor lid which can spin 6 x 15, 50 and 85ml centrifuge tubes with 11000 rpm/14000g or more. ➢ Adapter for 1.5/2ml tubes which can accommodate 24 x 1.5/2ml tubes at 15000g or more ➢ Adaptor for 5ml tubes which can accommodate 6 x 5ml tubes with 14000g or more
2	**ANALYTICAL HPLC**	**HPLC Pump** ➢ High Pressure Binary gradient Two pump System with a range from 0.001 to 10 ml/min with the possibility of increment of 0.01 ml/min. ➢ The machine should be operable both in isocratic and gradient mode. ➢ Flow Accuracy: +/- 1.0% or better. ➢ Max. Operating pressure: 6000 psi or better. ➢ Flow Precision: ≤ 0.1% RSD or better. ➢ Delay Volume: ≤ 250ul. ➢ The pump should be corrosion resistant and applicable to wide range of pH and solvents. **Manual Injector**

		➢ System should be quoted with Manual Sampling with 20,50 and 200ul loops and syringes **Column Oven** ➢ Should have provision for housing at least two or more columns ➢ Temperature setting rage: Ambient - 65^{o} C or better ➢ Operating temperature: ambient to 65^{o} C or better **PDA Detector** ➢ The detector should have wavelength range of 190-800 nm or more with wavelength accuracy of ± 1 nm ➢ Wavelength Repeatability: ± 0.1 nm ➢ Should be operable at high resolution mode (resolution : 1.2 nm per photodiode) with a total of more than 512 Photo diodes, digital, and optical (3D mode) ➢ Should be operable at noise level 1x10^{-5} AU at 254 nm or better ➢ Data Acquisition : Up to 80 Hz or better ➢ Flow cell Path-length: 10 mm; Flow cell volume: 10 µL or better. ➢ Lamp optimizing software to maintain light energy throughout its lifetime. ➢ Pre-aligned deuterium lamp should be used as light source with minimum life of 2000 hrs or more. ➢ Data Acquisition: Up to 80 Hz **Fluorescence Detector** ➢ Must have option for spectral scanning for determining the optimal emission and excitation wavelengths, with the ability to monitor upto four independent wavelength pairs. ➢ Excitation range 200-890nm ➢ Emission Range 210-900nm ➢ Bandwidth: 20 nm ➢ Sensitivity: S/N, Raman peak of water ≥ 1000 ➢ Wavelength Accuracy will be ± 3.0nm ➢ Repeatability will be ±0.25nm ➢ Measurement Range 0.001-1,00,000.000 emission unit ➢ Flow Cell volume 13µ or better, 10bar **Software** ➢ The software should be original, authenticated and compliant for GLP/GMP/CFR. ➢ Should have option for manual Integration ➢ Should have option for versatility for multitasking without multiple software packages ➢ Customizable data reports, online help and answer wizards. ➢ Should have option for data integrity along with advanced security measures ➢ The software should have option for maintain security and regulatory compliance ➢ Licensed Oracle Data base version software must be provided. **Hardware** ➢ Computer of standard make like HP, Dell or Lenevo should be supplied with mentioned specification: Processor: i5-quard core, 3.0 GHz, or higher version; 8GB RAM, 1TB hard higher

		drive or; DVD Read Write Drive, 22'' or more wider LED colour monitor; 101 keys key board, Mouse and Mouse Pad; with latest version of windows based operating software; ➢ Laserjet Printer ➢ Compatible Online UPS with 1 hour battery backup. **Columns** ➢ Analytical Column C18 RP (250 x 4.6 mm x 5µ) - 1 No ➢ Analytical Column C8 RP (250 x 4.6 mm x 5µ) - 1 No **Warranty:** 3 years Comprehensive warranty including Hardware consumables and spare parts.
3	**Motorized Inverted Research Microscope**	**MICROSCOPE STAND:** Large, Stable, bearing mounted Motorized Microscopy stand with provision to attach camera on Left Side port with 0:100% light sharing with 19mm or more FOV for Camera. The Left side port should be coded; Motorized Z focusing with Course and Fine knobs with travel range preferably 12mm or more & minimum step size of 3.8nm or better. **OBSERVATION TUBE:** Binocular tube with two eyepieces of 25mm FOV and 10X magnification **TRANSMITTED LIGHT:** Transmitted LED light continuously variable luminance. Adjustment of brightness, with Field Diaphragms. Transmitted light with 3300k -4500K (preferable white light); with inbuilt fast shutter of min 10ms, preferably LED for long life (50000 hrs or more). **CONTRASTING METHODS:** Microscope should be equipped for Bright field, Phase Contrast & Fluorescence. **XY STAGE:** Manual XY stage with universal sample holder for glass slides, petri-dish. **OBJECTIVE NOSEPIECE:** Coded 6 position nose piece for easy operation. Features must be high-grade smooth operation and with positive click stops. **CONDENSER:** Condenser with min. Working Distance of 70mm and should have Numerical aperture of 0.35. Should be suitable for Bright field, Phase Contrast. Should have atleast 5 positions. **FLUORESCENCE:** Motorized Fluorescence Filter turret with 6 or more positions. Adjustable aperture and field diaphragms; Should have body inbuilt 4 / 5 position light intensity filter wheel / slider. Along with LED Fluorescence illumination of life time of 25000 hours or better. Along with necessary pixel shift corrected filter cubes for DAPI, FITC/GFP, Rhodamine. **OBJECTIVES:** Plan objectives 20x/ 0.40 NA PH, 40x / 0.50 PH & 63x / 1.3 Oil PH & 100X/ 1.25 Oil PH. All objectives with better NA are preferred. **CCD CAMERA:** Digital high-sensitivity CCD camera monochrome, cooled , high sensitive, Minimum 1.3MP; 1296 x 966 Resolution. With a square pixel size of 3.75µm or better. Minimum of 31fps speed at full resolution. **SOFTWARE:** Software to control all the motorized components of Microscope, Light source/s, and above camera/s for acquisition of

		images with Image Overlay. Software should be capable for Interactive Measurements, Analysis of Image should be quoted. **OTHERS:** Microscope, Camera, XY stage and Control / Analysis software should be from same Manufacturer.
4	**Electrochemical Workstation**	Multichannel System for up to 11 potentiostat galvanostat in one single chassis. It should be possible to control all the channels through one PC or upto two PCs. Each channel should have following specifications. Price for each should be quoted separately. No of Channels: 1 No. **Electrochemical Workstation** **Specifications:** Compliance voltage: ± 20 V or better at ± 400 mA or more Maximum Output Current: ± 400 mA or better at ± 20 V or more Output Voltage Range: ± 10 V or more Current Ranges: smallest current range: ± 10 nA to current range 100 mA in mulitple ranges or more Measured current resolution: 40 fA on 10 nA full scale range or better Potentiostat Rise/fall Time: 300 ns or lower or better Interface: USB interface for connection with PC Input bias current: < 1 pA Input Impedance of electrometer: >90GΩ // 10 pF **Hardware for EIS measurements: Qty 1** Hardware and software for EIS measurements in potentiostatic and galvanostatic control, over frequency range of 10 μHz to 1 MHz. It should be possible to perform EIS measurements over entire frequency range from 10 μHz to 1 MHz upto 400 mA currents. Signal generator frequency range 10 μHz - 20 MHz, Frequency range in 10 μHz - 1 MHz combination with potentiostat galvanostat. Frequency resolution 0.003%, Input range ± 10 V. Data presentation: Nyquist, Bode, Admittance, Dielectric, Mott-Schottky, Data analysis: Fit and Simulation, Find circle, Element subtraction. **Electrochemistry Cell:** It should consist of the following: 20 mL to 80 ml Glass cell 1 no , Disc working electrodes with active area diameter 3 mm of GC, Pt each 1no, Pt wire Counter electrode 1 no, Ag/AgCl reference electrode double junction type for use in Aqueous and Non-Aqueous media 1 no , Suitable Lid for the cell **Electrochemical Software:** Software should have facility to record additional signal viz EQCM, bi-potentiostat etc. Import/export ASCII. Ready-to-use Vis & Generic interface for .Net applications should be included. It should have facility to display up to 4 plots simultaneously. The software should support following basic electrochemical measurements: Cyclic Voltammetry, Sampled DC Voltammetry. Taffel Plots, Differential Pulse Voltammetry, Square Wave Voltammetry. Electrochemical methods like Chrono-Amperometry, Chrono-Coulometry & Chrono-Potentiometry. **Computer & Printer:** Compatible branded PC with i5 configuration, Printer ,2 KVA Online

		UPS with one hour back up, should be quoted.
5	**Gradient PCR**	➢ Universal dual/single Block for 96 x 0.2ml PCR Tube, 48 x 0.5 ml PCR Tube or more, One 8x12 PCR plate ➢ Gradient PCR, capable of testing 12 different temperature simultaneously across a gradient range of 1-20deg C ➢ Gradient Technology ensures ramp rates are identical in both gradient and normal operation ➢ Heating and cooling via peltier technology. ➢ Should have concept allowing use of all types of consumables with automatic height adjustment of lid. ➢ Triple Circuit Technology, ensures precise control of temperature Temperature control range: from 4 °C to 99°C ➢ Block Homogeneity: 20° C to 72° C: ≤ ±0.3° C, 95° C: ≤ ± 0.4° C ➢ Temperature control speed: approx. 3 °C/s (heating) Temperature control speed: approx. 2 °C/s (cooling) ➢ Lid descent and closing pressure ➢ Administrator and user login with or without PIN for enhanced security Booking schedule allows users to reserve the instrument in advance ➢ Time or Temperature increment with cycles in PCR program Adjustable ramp rate from 0.1° C to 3.0° C to meet critical amplification conditions ➢ Customized programming allows a maximum of 20 steps and 99 cycles ➢ Auto Restart facility with user defined time interval when power fails and resumes Instrument status indicates the step, cycle and remaining runtime during the run ➢ Runtime display shows remaining time in larger font for better view from distance System memory of more than 100 ➢ User folders and more than 700 programs Two USB ports: for Protocol transfer, Self-test, USB, printer / mouse ➢ Log book function for error messages and new calibration ➢ Instrument should be provided with suitable UPS. ➢ Instrument should be European CE Certified. ➢ IQ, OQ and PQ should be provided at the time of installation.
6	**Spectrometer Kinetic**	➢ System should have preprogrammed methods for rapid and reliable analysis of Nucleic acids and proteins, OD600, dye methods (parallel measurement of biomolecule and dye label), FOI (frequency of incorporation) calculation. ➢ Should allow measuring and recording of UV/Vis spectral wavelengths from 200 to 830 nm or more, with smallest increment: of 1 nm. ➢ System should be compact & stand-alone system to handle sample volume ranging from 1.5ul to 3 mL and upgradable to micro volume measurements. ➢ Should have in-built methods with analysis via factor, standard or standard series ➢ Should allow performing Dual-wavelength method with subtraction and division analysis ➢ Should have freely selectable wavelengths providing maximum

		flexibility for all current and future applications ➢ Should have technology to analyze and process curve sections in detail view directly on the instrument display and for peak detection ➢ Should allow direct operation on the device and must not require PC to operate ➢ Should have facility for saving > 1,000 measured results in the instrument directly ➢ Should allow user to program and save > 100 new methods ➢ Should have the combination of Absorption single-beam spectrophotometer with reference beam as measuring principle with Xenon flash lamp as light source and beam receiver as CMOS photodiode array ➢ Temperature control of cuvette shaft should be through integrated-peltier element and not from an external peltier or through circulatory water. ➢ Should allow to set temperature between +20°C to 42°C, with smallest increment of 0.1°C ➢ Kinetic method should allow for end point, two-point, linear regression-based analysis ➢ Spectral band width should be < 4 nm ➢ Photometric measuring range should be 0 A to 3.0 A at 260 nm ➢ Random error should be ≤ 0.002 if A = 0, ≤ 0.005 (0.5 %) if A = 1 ➢ Systematic error should be ±1% if A = 1 ➢ System should be small, lightweight and should be easy to operate with its integrated color display in combination with the keys of the device ➢ Light beam height should be 8.5 mm ➢ Power consumption should be as low as 30 W during operating step ➢ System should be provided with a set of Quartz Cuvettes and 80 disposable Cuvettes. ➢ One-year warranty ➢ Instrument should be European CE certified. ➢ IQ, OQ should be provided at the time of Installation.
7	**Water Purification System**	It should be a compact system capable of producing Ultra Pure Water from Potable feed water **Prefiltration System:** Three stage pretreatment system with 10, 5 & 1 micron spun filters for removal of suspended particles and to take care of F.I. in water **Microprocessor** - controlled Management Systems for continuous monitoring of water purity ➢ Should produce Ultra-Pure water (Type- 1) from tap water for different applications ➢ It should be single stage system with the filter at the tap with bacteria <0.1CFU/ml ➢ Should have R.O; D.I; and UV in a single unit ➢ It should have an integrated docking vessel of 25 ltrs for storing the water to save space

		➢ It should have recirculation facility to maintain consistent peak water purity ➢ Instrument should show water volume in reservoir graphically and in percentage ➢ It should have cartridge change indicator. ➢ The production rate of the unit should be minimum 7 Litre/hr or more and the dispense rate should be minimum 1.0L/min ➢ It should have dual wavelength UV (185/254 nm) ➢ 2 years warranty for RO cartridges **Output Water Quality should be:** 1. Rate of production: 7Ltrs./hr. @ 25 Deg C and upgradeable to 15 Litre/hr and accessories for same should be quoted as optional items 2. Dispensing Rate: 1 L / min. 3. Inorganics: 18.2 MΩ- cm @ 25 Deg Celsius 4. TOC: 1-3 ppb 5. Bacteria: <0.1 CFU/ml 6 pH: Effectively Neutral 7 Endotoxin : <0.001 EU/ml 8 RNase : <0.002 ng/ml 9 DNase : <20 pg/ml

Mandatory Note

- ***The manufacturer should be reputed one and must have worldwide presence and must have minimum 50 installations in India and 5 performance certificates from national institutes must be submitted.***
- ***Any other accessory required for smooth working of the instrument and installation should be quoted.***